

# A Review of Studies on Sustainable Development

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**Abstract** - Human action is moving the levels of environmental, social and economic systems far beyond the limits of sustainability. We contribute to this problem by proposing a framework for a methodologically developed indicator using systems theory as a background the systematic indicator of sustainable development (SISD). Problem such as resource depletion, climate change, and social and economic contingencies have been generating pressures to create strategies to minimize or mitigate this issues. To achieve that purpose, a systematic literature review was conducted using the Methodic Ordination methodology. The software programs N vivo 12 and VOSviewer were employed to make the in depth content analysis. India faces high inequality with the bottom 50% of its population owning only 2% of total national wealth. Other development challenges include 304 million people living in poverty, 269 million without access to electricity, 92 million without access to safe drinking water, and around million homeless. We use a hybrid architecture that combines the strengths of the AIM/Enduse bottom-up model of Indian energy systems and the IMACLIM top-down economy-wide model of India. This hybrid architecture stands upon an original dataset that RECONCILES NATIONAL accounting, energy balance and energy price statistics.

**KeyWords:** Sustainable Development, Sustainable development Goals, indicators of sustainable development, technology transfer.

## 1. INTRODUCTION

Sustainable Development is the organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and ecosystem services based upon which the economy and society depend.

Since then, various definitions for SD were suggested and some of them are as follows (Elliott, 2006; Rogers et al., 2008; Richards, 2009):

- ✓ Maintaining a balance between the development and the environment.
- ✓ Improving the quality of citizens' life without the degradation of natural resources due to excessive pressure.
- ✓ Creating a situation in which the desirability and facilities are not reduced over time.
- ✓ The ability of the society, ecosystem or any current system to continue functioning in the indefinite future without being

necessarily drawn to weakness due to the lack of resources upon which the system is dependent despite too much load on them.

- ✓ Integrating the economic, social, and environmental objectives to maximize the welfare of the current generation without harming the ability of future generations to meet their needs.

According to the above definitions, the concept of SD is holistic and encompasses all aspects of social, economic, cultural, environmental, and other human needs. In fact, the main attraction of SD is its holistic nature (Rajaram et al., 2005; Botin, 2009).

Sustainable development has been a topic of discussion over the last three decades due to environmental crises and recurring problems (Wang, 2016). The deterioration of the environment will only stop with the establishment of a new economic order, new environmental ethics, and the stabilization of human relationships, making sustainable measures the rule rather than the exception (IUCN, 1980). The World Commission on Environment and Development (WCED) presented, in 1987, the first definition for sustainable development in the Brundtland Report, also known as *Our Common Future*. The document states that every generation should achieve social and economic development by making mindful use of natural resources, preserving species and natural habitats (WCED, 1987). According to the UN (2019), sustainable development aims to promote economic opportunities, social welfare, and environmental protection, offering a better path for improving people's lives. It encompasses social and moral justice, ethical acceptance, and economic stability (Wang, 2016), with the purpose of social and economic progress without destroying natural resources (Wang, 2016; Kırılı and Fahrioğlu, 2018). The term has received several definitions over the years and revolves around the TBL, which means examining the three sustainability pillars: the social, the environmental, and the economic (Wang, 2016; Kırılı and Fahrioğlu, 2018). The TBL arose with Elkington (1997) and addresses the social responsibility, the sustainable use of the environment, and the creation of economic value. According to Martins et al. (2019), comparing the TBL to the sustainability of a company, the social axis relates to the well-being of people, both directly and indirectly affected, and the communities around the enterprise. Environmental impacts are described as the impacts of an activity on the environment, which can reduce or generate/aggravate environmental damage. Finally, economic impacts refer to the organization's ability to make profits. The authors also address the relation of the dimensions to health

and well-being, environment and its resources, and financial prosperity, respectively.

Human activity has contributed negatively to sustainable development (SD), moving the subsystems of the Earth out of the natural limits of viability (Biermann et al., 2012). In this sense, society must change course and take steps to move away from this critical point. Otherwise, Earth's systems will collapse (Griggs et al., 2013). This requires a reorientation and restructuring of national and international institutions toward global governance and management (Biermann et al., 2012), considering not only economic viability but also environmental sustainability and social justice (Elkington, 1998) so the development can meet "the needs of the present, safeguarding the life support system on which the well-being of present and future generations depends" (World Commission on Environment and Development, 1987, p. 41; Griggs et al., 2013). Due to this state of alert, the UN's 17 sustainable development goals (SDGs) were proposed as an important compass for social, economic and ecological systems, seeking the well-being of humanity (United Nations [UN], 2015, 2018). The SDGs were developed by working groups "relating to their work/practice, rather than by individual leaders or national or regional representatives in an abstract and intellectual mode" (Burford, Tamás, and Harder, 2016, p. 3), and appear as an integrated vision for SD, where member states of the UN begin to adopt the goals of SD jointly in 2015. With this, the SDGs also seek to search for a political expression of a global understanding of what is needed to achieve SD on the planet (Müller, Janetschek, and Weigelt, 2015) With this scenario in mind, we identified three main goals to debrief practical and theoretical challenges for SD indicators and the decision-making process:

- Deliver to practitioners and the academic environment a framework of an indicator that is capable of measuring SD, based on the SDGs and systems thinking theory;
- Analyze and generate insights about the possible structure of latent correlations of variables that belong to different SDGs; and Show an empirical application of the systemic indicator of sustainable development (SISD) framework

### 1.1 Mechanisms to promote sustainable development

The United Nations has taken up the responsibility of promoting sustainable development, holding congresses, events and different initiatives aiming at protecting natural biodiversity, ensuring human rights and carrying out conventions, accords and international partnerships for peace and security (Shah, 2008). The current effort promoting sustainable development is the Agenda 2030, containing the 17 Sustainable Development Goals and presenting actions and expected results for the evolution of sustainability until 2030. These objectives must be widely accepted by all the interested parties to achieve them (UN, 2015). Other mechanisms also aid in the promotion of sustainable development, like teaching and education, acting also as a sustainable development pillar (UNESCO, 2011). Sustainability is not achievable only by

raising technical solutions, creating regulatory policies, or relying on financial tools. It requires changes in the culture, mindset and lifestyle, which rely heavily on investments in education at all levels (Wang, 2016). Furthermore, science, technology and innovation can and should be employed to help countries construct capabilities, develop national policies on science, technology and engineering, and find solutions for problems involving climate, energy, food, among others (UNESCO, 2011). Another tool widely discussed in the literature is the CDM. Introduced by the United Nations Framework on Climate Change (UNFCCC) (2010), it aims at reducing the emissions of greenhouse gases and achieving sustainable development. According to Olsen et al. (2019), the CDM categorizes benefits to the TBL. These authors explain that the definition of parameters and the assessment of sustainable benefits in CDM projects are the responsibility of host countries. Due to the lack of globally accepted parameters and criteria, the way through which countries define and apply them varies

considerably (Olsen et al., 2019). In addition, through the CDM, developing countries can receive financial support and still benefit from the technology transfer promoted by the developed countries, which in turn achieve their sustainable goals (Park, 2018). Cooperation and bilateral partnerships are yet another engine for sustainable development. The Paris Agreement, signed in 2015 as a response to climate change, establishes that parties must engage in a cooperation involving the international transfer of solutions and outcomes to achieve sustainable goals (UNFCCC, 2015). Moreover, the SDGs present cooperation and partnerships between entities as a tool for sustainable development, mentioning the North-South, the South-South, and the triangular cooperation (UN, 2015). The SDGs also state that technology transfer is a way to implement sustainable goals. This process is employed to transfer eco-friendly technologies suitable to the needs of developing countries in mutually-agreed terms (UN, 2015).

### 2. Component of Sustainable Development



**1. Economic component:** Economic development desired to produce a maximum flow of income in terms of rational use, resource efficiency, particularly scarce resources. As a manifestation of macroeconomic dynamics, economic

development requires a set of quantitative transformations, structure and quality, both in economic and in scientific research and manufacturing technologies in organizational structures and mechanisms of economic functioning in thinking and people's behavior (Becker, 2001). In this approach, the main concern is related to how countries develop their economies. It is shown that rapid economic growth with obtaining maximum benefits, especially for developing countries, creates a heavy burden on the ability of the planet to support. From the perspective of sustainable development, economic growth should be such that negative environmental impact is limited. The concept of sustainable development represents a paradigm shift in this area - sustainability is not just about pivota environmental protection but is discussed in the context of connection with other areas, especially those involving economic activity (Krajnc & Glavic, 2005). Therefore, development must be conceived as a process multidimensional, involving major changes in social structures, attitudes popular and national institutions, aiming at accelerating economic growth, reducing inequality and poverty eradication. On the one hand, the economic dimension aims to ensure a balanced and sustainable economic environment by producing goods and services continuously to maintain manageable levels of government and external debt and avoid extreme sectoral imbalances affecting agriculture and production industrial, and in order to achieve needed training a competitive industry, diversification of industrial production and attracting investment. On the other hand, the economic dimension of the strategy is strangled by other countries that fail to recover from the economic crisis, putting its future difficulty. Moreover, the common objectives, they must reach a certain level joint and above this impediment can change the results (Stefanescu et al., 2009). These issues need to be resolved in a manner that inspires even if the problems are difficult, however, to have full exhalation solutions. Instruments that lead to economic purpose is achieved education, scientific and intellectual potential that is available, the target technology and natural resources, thereby triggering role in economic activity, which in turn helps in achieving the ultimate goal of the strategy.

**2. Ecological component:** Environment development can be defined as the ability to hold whiles the three basic functions of the environment: the power function of resources, waste receptor function and the direct utility (Wardle & Giller, 1996). By its complexity, ecological component of sustainable development captures not only the actual economic development in relation to the environment, but the entire development. Ecological development is closely correlated growth and interrelation with environmental laws, the ecological balance. Wheeler (2004) says that currently witnessing a transition from an economic perspective toward an environmental perspective. This dimension is oriented towards satisfying specific practical requirements, and long, proposing harmony and complexity, excluding unilateral orientation to a branch or another of the industry. In other words, in an area

environmental development is the capacity to grow and to bring the environment and its peculiarities, while ensuring the protection and renewal of natural resources and environmental heritage. Environmental protection is considering physical and biological system stability, developing their capacity to adapt to change and less conservation status considered ideal (Bran, 1991). Assuming a complex structure, diversified term eco-development is characterized by greater capacity according to the requirements of a stage and some major goals. It requires caution in ecologically; stimulates the development of knowledge based on consumption, but subordinate planning 810 Dan Cristian Duran et al. / Procedia Economics and Finance 26 (2015) 806 – 811 opportunities; expected a harmonious development, cautious, in full agreement with the possibilities at a time and in a particular place. Thus, economic growth should not affect the environment in order to talk about sustainable development. International organizations have proposed environmental policy, but there are a lot of people who do not like the actions targeting the environment, on the issue as a political commonplace. As said above ecological development is an objective of developing countries that stretches over a long period.

**3. Human component:** Assuming that viable alternatives have been identified to maintain ecological balance, and authorities everywhere so converting raw materials purchasing in material goods to be made in accordance with the requirements for efficiency and optimality, quality of life and labor standards is the prerequisite fulfillment and satisfaction professional, social or otherwise. Human sustainability has regard to social interactions, relationships, behavioral patterns and values of humanity (Dempsey et al., 2011). Human component aimed at socio-cultural stability, achieve fairness both at the same time a generation is concerned maintaining cultural diversity "world village", as the prevention or cure of "social ills" of contemporaneity: loneliness or alienation, lack of job satisfaction (continue under a narrowing of specialization on the basis of "knowing more and more about less and less" that difficult for the worker to perceive the finished product and understand the usefulness of his work), the relativism of values, the end of history, uncertainties about the nearer future or more distant "disease" postmodern age specific. Realizing the need for further social development (without harming the environment) is imperative to protect and improve the state of the environment represents the only possibility to create and maintain the welfare of both the present generation and those to come, this balance was the factor that can and should ensure development company whole.

Minica and France (2008) synthesize the human aspect of sustainable development worldwide involves the following objectives:

- Promotion of education, training and public support for the environment



- *Protecting and promoting human health (focused on access to medical facilities, especially in rural areas, control of infectious diseases, risks pollution and ecological risk).*
- *Fight against poverty (through access of the poor to sustainable livelihoods, promoting human development and integrated policy investment in human capital).*
- *Demographic threatening sustainable development (focusing on population growth, especially in developing countries).*

### 3. CONCLUSIONS

*Sustainable Development is the result of a series of interrelated economic, social and environmental factors that meets different needs with proper planning in the long term. Therefore, this concept is not merely an environmental attitude, but also a theory that has stressed the economy and quality of life of people before the environment. By applying the Sustainable Development measures, on the one hand it is expected that the resource are exhausted in a longer period of time and on the other hand it is hoped that modern methods are developed with the advancement of technology, so that with minimal use of resources, maximum benefits are achieved.*

*Technology transfer is mentioned by the sustainable Development Goals(UN2015)as a mechanism that promotes sustainable development. However, the transfer process may present different flows and diverse technologies. These aspects need to be aligned with the Sustainable Development Goals so that technology transfer can fulfill its role as a tool for advancing sustainability. Therefore, it is necessary to understand how technology transfer has been approached in studies about sustainable development in order to achieve more sustainable practices.*

*In this study to work with three trending issues that orbit Sustainable Development. First we explored structure of latent correlations of variables that belong of different Sustainable Development Goals. Secondly we contributed the academic environment and practioners a first attempt of a framework that is capable of measuring Sustainable Development and third we demonstrated how Systematic Indicator of Sustainable Development is cxapable of measuring sustainability. Despite these limitations, We belived Systematic Indicator of Sustainable Development frame work is a powerful tool to deal with anthropocene problems, such as social quality, environmental and economic growth and brings some insight on how we should think, measure, and control indicators and variables of the earth systems in order to guarantee the well bring of all living beings.*

*One of the most significant findings to emerge from study of sustainable development discourse in smart specialization Strategiesis that Centro RIS3 needs to be revisited if it aims to help address Sustainable Development Goals specific targets. A*

*second finding shows that social issues are disregarded in centro RIS3 despite the overall aim of Cohesion Policy emphasizing social development towards reduced disparities between regions. The third findings regards the fact implementation of Centro RIS3 is mainly being done through projects financed under the economy pillar, strengthening the previous results ,and showing a greater alignment of Centro RIS3 with economic growth while disregarding environmental and social issues. A fourth important findings reinforces the need to develop regional innovation policies towards sustainable development with an alignment from the regional to the national level.*

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