

The society under the optics of sustainability

Fábio Luiz Papaiz Gonçalves

Student in the Sustainability Master Program
PUC Campinas, Brazil

Cibele Roberta Sugahara

PhD. Professor in the Sustainability Master Program
PUC Campinas, Brazil

Denise Helena Lombardo Ferreira

PhD. Professor in the Sustainability Master Program
PUC Campinas, Brazil

Cândido Ferreira Silva Filho

PhD. Professor at PUC Campinas
PUC Campinas, Brazil

Abstract—*The world has had a production pattern that is destroying the environment. The only concern of the human being is economic, leaving the social and environmental areas aside, without the attention they deserve. So if something does not change, in a few years the planet will not be able to survive and the human species will no longer exist.*

Keywords—*sustainability; human development; environment*

I. INTRODUCTION

Today, the world has serious economic, social and environmental problems that have occurred for a long time and do not receive the correct treatment by governments, companies and the population. In general, people live without many basic resources, such as an inefficient health system, a low level education and many other problems. The environment also suffers from all man-made destruction, mineral extraction, vegetation, air pollution, climate change, deforestation, extinction of species of animals and plants, soil degradation, among others.

The issues pointed out above are important so that institutions such as the State and organizations, especially, rethink the conditions of consumption and the factors of production. The standard of living of the population, especially in the richest countries, greatly degrades the environment, putting at risk the survival of the planet.

Therefore, it is necessary to take some actions in relation to the economic system and the environment so that the countries can grow without harming the environment to attack too much the environment in which one lives and without further worsening social inequality and the condition of life of the poorest populations.

Development for sustainability must be thought of in an integral way taking into account the interrelationship between the economic, social and environmental dimensions. The objective of this study is to discuss the conditions that affect society from the point of view of sustainability.

II. LITERATURE REVIEW

The Earth does not support the human presence that destroys its balance and reduces its biodiversity. The human being places himself, often, as outside of nature, as if it did not depend and was not part of it; a limited Earth does not support

unlimited human development. Over the years, humans have plundered natural resources, exploited the workforce, created accumulation of wealth in some countries and much poverty in others, and devastated nature [1].

The capitalist economy is efficient in producing goods, but it also produces social and environmental ills; these can only be reduced by producing public goods for poverty reduction and protection of the environment. The concern is about inequalities in access to job opportunities, pay, social participation and income generation [2].

The planet can't sustain and stand the level of economic activity and human consumption of raw materials; energy consumption has increased more than population growth; the current development model is self-destructive; unlimited growth is not possible; and the products of nature are used at a speed that does not allow their regeneration [3].

In the twentieth century, the industrialization process prioritized large-scale production, excessive consumption of water, energy, raw materials and cheap labor; this process has limitations because it causes many social and environmental impacts, pollution, excessive garbage production and precariousness of labor relations. Sustainability addresses the continuity of the economic, social and environmental aspects of society; alternative sources of energy, responsible consumption and investments in the conservation of natural resources and human rights should be used [4].

The countries' natural reserves (minerals, forestry and oil) are finite, current climate changes and inequality mean that the government must rethink its development model and how it should position itself on the major sustainability issues in the world. Efficiency in extracting natural resources, reducing the greenhouse effect, preserving forests and rivers, and other actions are the solution to economic growth and social justice [5].

The level of economic activity has significantly affected the biocapacity of the planet, which has already exceeded 30% of this capacity with a huge waste of, approximately, 30% of the products offered (in industrialized countries). The part of the population that goes hungry is considered by the economic-social system as economic zero, considering the low consumption, then this population is practically abandoned by the system [1].

Only from the 1970s onwards, studies began to be made on sustainability, using Environmental Economics and Resource Economics. However, environmental problems could not be solved at that time, since environmental goods and services do not have a monetary value, consumers do not demand ecological services and the stock of natural capital is not taken into account [6].

Thirty years ago, society was little concerned with sustainable development, because everything was possible through technological progress. However, they began to realize that environmental problems had already reached a high level and were a challenge to the survival of humanity. The first major step was the Stockholm Conference in 1972 (UNO-Conference on the Human Environment) and then the United Nations Conference on Environment and Development (Rio-92) [7].

The development of the countries is considered sustainable when it meets the needs of the present generation without compromising the needs of the future generations. The sustainable development has limits imposed by technology and the environmental resources, however, the technology and social organization can be improved to create a new way of economic growth and meet the basic needs of all the populations. A world with poverty will always create ecological catastrophes [8].

The concept of sustainability has a transdisciplinary approach. In its logical sense, this is the capacity to sustain itself; a sustainable activity must be maintained forever and the exploitation of a resource when it is done sustainably, should last for a long time and will not end. Sustainable development improves the quality of man's life and respects nature's production capacity [7].

Only a global solution can guarantee a sustainable future, a healthier relationship with nature, rejection of consumerism and new community ties. However, it is important to note that there was no change in the harmonization of social, environmental and economic objectives [9].

The term sustainability has been used for any activity that preserves resources for future generations, but these activities must be evaluated to determine their effects on the environment. The current concept of sustainable development involves improving people's quality of life and states that natural resources should not be used beyond the Earth's capacity [7].

For [10] sustainability is the ability of a system to resist changes indefinitely; sustainable development is an intentional change that responds to the needs of the present population. For [11], sustainability is the balance between three dimensions: environmental, economic and social. Companies should contribute to sustainability because they need stable markets and technological, and financial skills. Sustainable development is the goal to be achieved; sustainability are the means to this end [12].

Sustainable development is the maintenance of essential ecological processes and the sustainable use of ecosystems [13]; is equality of opportunity for the next generations [14]; is a process of changing the exploitation of resources and

institutional change for the future, considering the present needs [15].

Sustainability refers to ecological conditions to support human life through future generations [16]. For [17], it is a normative concept about how humans should act in the environment and are responsible for future generations [18].

The sustainability represents fairness for future generations. Sustainability is related to consumption that can continue without degrading material capital, human capital and natural capital; however, natural capital is the only one that can not be reproduced by future generations [7].

Sustainability seeks to solve three problems: the interest of the current generation in its assets (economic sustainability), the reduction of social inequality (social sustainability) and the interests of future generations (environmental sustainability) [19]. Sustainability is processes and activities and sustainable development focuses on people and their well being [20].

For a sustainable global development, the countries need to have lifestyles within the capacity of the planet; the growing populations increase the pressure on the resources, that's why they need to grow protecting the productive potential of the ecosystem. Sustainable development is a process of change because the exploitation of resources, the financial investments and the technological development are consistent with the future, thus, it must rest on political decisions [8].

Humans have to find other sources of energy as they have reached the world's peak oil production; almost everything is made of oil, such as cell phones, fertilizers, pesticides, medicines, building materials, electricity and fuels; there are renewable energies scattered throughout the world, such as solar, wind, geothermal, biomass and waves that do not pollute and are better than others. Some new buildings in Europe generate more electricity than they use and when this model spreads, it will generate millions of jobs. In the future, a distribution network should be created that allows the sharing of these energies by all users. It is now possible to digitize the power grid and turn it into a bidirectional network, so that it can energize the end user and receive energy produced by it [21].

For this reason, it is urgent to use less non-renewable resources and respect the reproduction levels of renewables; the ability of nature to assimilate should not be impaired, such as the possibility of a river transporting waste or the atmosphere to absorb CO₂ [9].

The current mode of production and consumption brings threats, because if countries continue in the pace of economic growth of the last century, there will be 120 million people a year entering the consumer market; therefore, natural resources will not be sufficient to provide a decent way of life for all new entrants in the market [22].

The slowness in changing the behavior of the powerful has its costs; the market mechanisms are insufficient, it is cheaper to spend the oil, burn the cane and produce cars; the prejudiced with all this, nature and the next generations, are quiet interlocutors and can not complain. The richest 10% of the population have more than 50% of the world's income, the increase in inequality comes from high disparities within

countries and the increase of population in poor countries; this is the main problem of the world today along with the destruction of the environment. The vast majority of the world's population is out of progress, with the economic exclusion of more than two-thirds of the population [23].

In recent times, efforts to achieve sustainability have fallen far short of what is needed; countries have not reconciled the preservation of the environment with economic development and have not bothered to meet the needs of the present without compromising the ability of future generations to survive [22]. The slowness in changing human behavior has a direct effect on the planet's ecosystem.

By the end of the last century, the greater ease of access to information by the public and increased awareness of the risk of consumerism and the depletion of natural resources made consumers and entrepreneurs begin to change their behavior and actions of large companies [24].

Organizations have given emphasis on the social and environmental responsibilities to the processes of production of goods and services and to movements that formulate more balanced development models with a harmonious relationship between economic, social and environmental factors [25].

Development should not arise with economic and material progress, but with economic growth, increased social welfare and environmental sustainability; the finitude of resources demands respect for the natural limits [26].

The economic expansion of the last few years was caused by industrialization; the current development model seeks results and profit at any cost, with socio-environmental impacts. The schools and the society are important for building ethical behavior in people; these entities should teach sustainability, environmental management and social responsibility; if there is no engagement of managers and servers, there will be no change in the habits of the population in relation to socio-environmental issues [27].

Environmental education is a transformative process that causes people to have new postures and behaviors; however, citizenship and political education are neglected by the economical logic and consumer dynamics. Brazilian educational institutions should consider environmental education as permanent in their programs, as part of general and school education, training human resources, studies, research and production of materials. Another problem of this Brazilian environmental education is that they are palliative arrangements and do not motivate students to be critical and to change their realities [27].

When preventive actions are implemented, they can enhance environmental sustainability, the ecological characteristics of the countries and the economic and social environment. An important way of reducing the human activities and preventing the presence of undesirable substances in the environment is the control of detergents and fertilizers; certain measures can promote changes in lifestyle, as recycling techniques and better management practices [28].

The green economy has three characteristics: low carbon use, efficient use of natural resources and is socially inclusive.

Brazil has many problems regarding social inclusion, as it occupies an intermediate position in the Human Development Index (HDI) and social inequalities are present throughout the country [29]. Sustainable development is formed by environmental sustainability and social sustainability; the growth obtained at the expense of social and environmental exploitation must be eliminated. Its pillars are: social (perspective of social disruption that threatens the life of society), environmental (provides resources and receives the disposal of waste), territorial (spatial distribution of resources and people), economic (economic feasibility for things to happen) and (democratic governance and freedom) [2].

Sustainability, the limitation of natural resources, environmental and social impacts are increasingly important for businesses and governments; recovery and recycling of materials are very important for all. Many companies do different kinds of recycling, as mechanical and chemical, they try to reuse products and decrease the waste they produce [30]. The consumption of the population depends on large amounts of materials, water and energy [31]. In the current economic environment, the perception of consumers for sustainable products is increasing, so, the producers have to invest in the quality of their products and waste management [32]. The recovery and recycling of products is necessary because of the environment and the economy. It reduces the need for landfill space, water, energy and natural resources [33]. Recycling uses a product or its components to create something new, minimizing the use of raw materials and waste disposal [33].

There is not yet a sustainability measure that is a consensus among all but the indexes that already exist have an important role in oversight of governments and international organizations. It is no longer true that in order to have more production, more work is needed and to produce more means to live better. The needs of people in developed countries are met without producing more, but producing otherwise. The microelectronic revolution can be an example of this, because it reduces the need for work and provides cultural, educational, philanthropic and sports activities. Trash can be recycled, treated water, recovered soil; environmental techniques must be conserved, eco-energy calculations and diversity indicators must be created. The ecological crisis of the world is global and not local, ecological policy must be radical and realistic and must have the support of rich countries and the upper and middle classes. The rate of development must be sustainable and reach a balance between humanity, the resources it consumes and the effects of man on the environment [9].

From the above discussion it is clear that strengthening citizenship is important for a sustainable society. The school should be the space of analysis of nature and its relations with social practices [34].

A sustainable society is achieved with democracy, which is based on cooperation, solidarity and inclusion of all; cities are formed by citizens and institutions, landscapes, animals, rivers and other beings of nature. It is sustainable only when it has renewable and recyclable resources, it is autonomous, it overcomes extreme poverty, it has social and political equality, it reduces economic inequality among people, it has citizens who conserve and regenerate nature [1].

There is a recognition of the need for long-term strategies with cooperation between developed countries and those with different levels of economic and social development as a way of dealing effectively with environmental and social problems [35].

Planning is needed to accelerate economic growth, seize idle capacities, but primarily mobilize resources for a long-term social strategy, provide food and other goods to meet workers' demand, increase employment elasticity and growth without inflation. One must act in the well-being of the people, providing opportunities of education, health, sanitation, housing; redistribute GDP, eradicate poverty and promote social inclusion through work. The search for inclusive development that guarantees the civil and political rights of all, preaches democracy, transparency, responsibility is a way [2].

It is important to avoid performing at present the actions that result in detriments on our more direct descendants and those that will come in a more distant future. A more adequate conceptualization of sustainable development can lead us to do the impossible, that is, to leave our descendants a pristine nature, a society exactly like that inherited from our ancestors. However, he stresses that while this is ideal, this is not possible. In this sense, what we can demand of ourselves is to act towards a sustainability that is conceptualized in a way that will allow future generations the possibility of access to levels of well-being at least equal to those we have today, that is, without generating more impoverishment for the future generations [11].

In relation to the companies, there are three generations: in the first, there is a maximum prioritization of the economic aspects to the detriment of the environmental and social aspects; in the second, there is an equalization of the three aspects, generating eco-efficiency, security and economic-social development; in the third, there is the integration of the three aspects for a truly responsible performance. Although sustainability is recent and unequal, the expansion of environmental management and corporate social responsibility models is indisputable; the management of people aimed at obtaining competitive advantages should ensure the involvement of human assets for better results [37].

Companies began to seek sustainable development "from the outside to the inside" to respond to the criticisms that government and society made of them about the socio-environmental degradation they caused on the planet; nowadays, companies try to be sustainable because of competitiveness, differentiation and qualification. These must change their way of acting to reduce the social and environmental impacts that they cause to the planet and to make sustainable innovations. Innovative organizations introduce novelties on a systematic basis and, with these attitudes, reap good results, develop resources to innovate on a permanent basis; are economically efficient, respect the capabilities of the environment, promote social inclusion and protect minorities. These companies innovate considering the social dimension (they care about unemployment, social exclusion, misery), environmental dimension (they care about the use of resources and emission of pollutants) and economic dimension (they are

concerned about their economic efficiency, profit and advantage competitive) [38].

Sustainable companies with a performance measurement system to actually check are sustainable. A system for measuring the performance of people with a high degree of knowledge about human, environmental and social resources companies [39]. Companies are almost always looking for opportunities, environmental and social [40]. The Social Accountability (SA8000) and Dow Jones Sustainability Index (DJSI) [41]. An indicator of performance and effectiveness of an action [42].

The term indicator means to discover, to estimate; these can communicate progress toward a goal or leave a more noticeable phenomenon [43]. An indicator is a parameter that provides information about a phenomenon that is significant (OECD, 1993). Indicators have the functions of assessing conditions and trends, comparing places and situations, assessing trends in relation to objectives, and anticipating future trends. [44, 45].

Sustainability indicators have grown and many conferences have been organized by international organizations [46]. Sustainability indicators help monitor sustainable development and provide information on the state of environmental, economic, socioeconomic, and other dimensions [47]. These gather and quantify information about complex phenomena [3]. The indicators are adequate to reconcile economic growth, environmental preservation and social justice [48].

The main indicators of sustainable development are: PSR (Pressure / State / Response), DSR (Driving Force / State / Response), HDI (Human Development Index), DS (Dashboard of Sustainability), EFM (Ecological Footprint Model) (Barometer of Sustainability), SBO (System Basic Orientors), SEEA (System of Integrating Environment and Economic), SPI (Sustainable Process Index), ESI (Environmental Sustainability Index) and some others that are also important [49].

An evaluation tool helps transform sustainability into public action; the Ecological Footprint Method ("ecological footprint") represents the ecological space needed to sustain any system; this tool analyzes human sustainability and builds public awareness. It transforms the consumption of raw materials and waste into a corresponding area (land area or productive water); this method is the area of ecosystem that guarantees the survival of a certain population [50, 51]. This method defines the necessary area for a given population, with energy and resources and capacity to absorb its residues [49].

The Dashboard of Sustainability is a visual dashboard of three displays that measure the economic, social, and environmental performance of a venue. Each display has an arrow that shows the current system performance. It is an aggregate index of several indicators and calculates the average of these to reach an overall sustainability index [52]. One of the models considers the human system and its ecosystem and others more specific, the economy and the social institutions are separated [53].

The Barometer of Sustainability measures systems through indicators; Reliable indicators portray the state of the environment and society. It is a tool that combines indicators and shows their results by indexes; these indices are shown in

graphs and facilitate understanding of the state of the environment and society [54]. Each indicator emits a signal and a large number of indicators causes more signals to be observed. The Barometer of Sustainability assesses sustainability using biophysical and social health indicators, combining human well-being and ecosystem. Indicators are defined in numerical terms [55].

The Pressure-State-Response method is based on the concept of causality, where human activities pressure the environment by changing the quality and quantity of resources [56]. The indicators are divided into three categories: environmental pressure (human activities on the environment), environmental conditions (quality of the environment and natural resources) and social responses (response of society to environmental changes, prevention of the effects of human action and damage to the environment) [48].

The DPSIR (Motor Forces, Pressures, State, Impact and Responses) model perceives connections between the environment with environmental indicators and society; this considers that the economic activities of the companies and the human beings affect the environmental quality; makes the interaction between the causes of the problems, their impacts and the responses of society [48]. The Framework for the Evaluation of Natural Resource Management Systems (MESMIS) assesses the sustainability of different systems on a local scale. It is a process that is related to the agroecosystems that are being evaluated and values the participation of all the actors [57].

Weak sustainability indicators only use economic indicators and are measured in monetary units; the indicators of strong sustainability are measured in physical units and environmental losses are not offset by the financial benefits. The Environmental Sustainability Pilot Index tests the feasibility and benefits of creating a more ambitious project. The ESI-2002 is the first global ranking that uses 20 cross indicators, ranging from 0 to 100 (the cleaner a country, the higher its score). The evaluation considers the present, the past and future inclinations and the economic, cultural, political and institutional environment of sustainability [7].

III. DISCUSSION

From the theoretical foundation it is evident that a sustainable society requires the harmonization between the dimensions of sustainability. The major concern of the economies is to grow economically, increase their output, produce, create new technologies. However, this notion of growth that is still practiced, which has always referred to the economic growth of countries is no longer accepted as possible, although in recent years, some countries have grown economically, but not necessarily developed.

The thought that economic growth is unrestrictedly linked to development is outdated; what is being sought today is to discover what leads to the development of a society in a sustainable way? And how this is expressed in the living conditions of the population. These changes come from the fact that there are limits to the regeneration capacity of the planet.

In fact, it is important to note how economic activity relates to the current and future generation. The world studies and

thinks that what is important is the quantity of materials and energy in the economy, this is the main point of the ecological issue of humanity [58].

Especially in rich countries, the standard of living of the population destroys the environment and puts the planet at risk. It seems that development is something external to the reality of the ecosystem, highlighting the words of Georgescu-Roegen [59].

Society does not seem to think of the conditions of present reality as finite. In fact, even with all these problems, society's efforts toward sustainability are far from ecosystem balance. The behavior change is very slow and the degradation pattern of land resources unlimited.

With greater access to information and increased knowledge about sustainability and the risk of consumerism and the depletion of natural resources, it seems to be observed that consumers and entrepreneurs start to rethink their behavior, but this movement is still timid. It is true that society must ensure the conditions for rebuilding the resources of the ecosystem.

However, it is important to create a global solution for a sustainable future, with a healthier relationship with nature, readjustment to consumerism, public goods for poverty reduction and protection of the environment, solutions to inequalities in access to work, and strengthening of citizenship. It can be said that sustainable society depends on democracy, cooperation, solidarity, inclusion, equitable distribution of income, social and political equality and reduction of inequality. The notion of sustainability depends, fundamentally, on the functioning of the contemporary economic system [36].

IV. CONSIDERATIONS

From the above, it can be seen that sustainability is a concept and a standard of living that has come to redefine the ways in which human beings should treat the environment, their productive system and the people themselves. With all the problems of the world today, it is no longer possible for this theme to go unnoticed and nothing to be done to change the way the world behaves.

Sustainability advocates economic growth, which is the main engine that drives people to pursue their goals and develop the world; social development, with the improvement of the standard of living of the population, especially the poorest, with better health, education, housing, sanitation, jobs, resources and food; and protection and development of the environment, because without it, the human being can not survive.

It is past time for governments, companies and people to be concerned about sustainable development and start taking better care of the planet so that it continues to survive in the future and does not prevent the human species from becoming extinct.

ACKNOWLEDGMENT

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001".

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