Historical Evolution of the Conceptual Practice Sustainability Terminology

Fátima Terezinha Silva Santos

Universidade do Extremo Sul Catarinense – UNESC, Brasil – Programa de Pós-Graduação em Ciências Ambientais – PPGCA, fatadv@terra.com.br

Nilzo Ivo Ladwig

Universidade do Extremo Sul Catarinense – UNESC, Brasil – Programa de Pós-Graduação em Ciências Ambientais – PPGCA, ladwig@unesc.net
orcid.org/0000-0003-3031-0192

Juliano Bitencourt Campos

Universidade do Extremo Sul Catarinense – UNESC, Brasil – Programa de Pós-Graduação em Ciências Ambientais – PPGCA, jbi@unesc.net
orcid.org/0000-0002-0300-1303

Vilson Menegon Bristot

Universidade do Extremo Sul Catarinense - UNESC, Brasil – Núcleo de Estudos em Engenharia de Produção – NEEP, vilson.bristot@unesc.net
orcid.org/0000-0003-1814-6262

Jori Ramos Pereira

Universidade do Extremo Sul Catarinense – UNESC, Brasil – Programa de Pós-Graduação em Ciências Ambientais – PPGCA, jori@unesc.net

Abstract

The article aims to analyze, in a formal historical approach, the conceptual evolution of sustainability terminology, which initially has an essentially ecological interaction, but begins to incorporate social values in its definition when establishing relation with the welfare of future generations. As a result, international society coined the term "sustainable development," which presupposes a preventive action, with practices of governmental regulations associated with initiatives that involve economic growth, social equity and global environmental conservation.

Keywords: Society; economy; environment; sustainable development.

1. Introduction

The study of the environment is necessary in view of the impacting reality to which humanity is exposed. World economic and technological expansion has subjugated ecosystems throughout history. Since the Middle Ages, nature has been seen as a mere resource for the economy. As a result, the process of environmental degradation is triggered in such a way that it ends up depleting natural resources. Nature ceases to exist giving way to a transformed environment, modified by modern society.

Starting from this perspective of transformations throughout history, we begin to analyze the origins of the term and the concept of sustainability, establishing the counterpoint to the concept of sustainable development in the different policies recommended in several international documents.

2. Origins of the Sustainability Concept

The concept of sustainability is broad and has evolved throughout history, because, according to Bell and Morse (2008, p. 12), "people differ in the environmental, social and economic conditions in which they have to live, and have a the only definition that one tries to apply in all this diversity can be both impractical and dangerous ".

Every construction of a concept for sustainability is the result of the industrialization process that Western Europe went through in the period of the Low Middle Ages between the 11th and 15th centuries, considered a pre-capitalist phase, and the period of the Modern Age between the 15th to the 18th centuries, with the expansion of the consumer market and the emergence of manufacturing (ARRUDA, 1999). For Marquardt (2006, p. 175, our translation), "the basic environmental problems of pre-industrial societies were not based on air or water pollution, but on the excessive use of forests and pastures". It can be seen that in the period between the 12th to the 18th centuries there was great deforestation in central Europe, all due to the growing expansion of Eurasian colonization attracted by the nobles to the formation of agricultural societies. In other words, with the increase in population, there was a need to obtain wood for building houses, firewood for heating and obtaining coal for the industries that were beginning to move Europe (MARQUARDT, 2006).

The concern with the scarcity of wood in the seventeenth century was portrayed by Hanns Carl von Carlowitz, in 1713, in the work entitled Sylvicultura oecômica, in which the author foresees the need to preserve the key resource of the time. The issue addressed in the book is the cultivation of wood and its conservation, because, according to him, "there will be no continuous, stable and sustained use". Carlowitz uses and creates the term "nachhalternd" or "nachhalting", which literally refers to sustained income. Carlowitz foresaw a serious economic crisis with the extinction of forests, which in the long run would ruin Saxony's silver mines and metallurgical industry. His work suggests practices (saving wood) to solve the natural resource crisis, such as improving the thermal insulation of buildings and reducing the use of wood for energy in homes and industries (GROBER, 2007).

The concept of nachhalting became part of a new scientific approach to forestry. In Germany, forests had their soils evaluated, animals and plants classified and wood reserves calculated, aiming at sustainable production. For Carlowitz, there would be a need to take care of forest renewal, that is, use natural resources sparingly and in the long run, recognizing that there are limits to the use of these resources (GROBER,

2007).

It is seen that the main characteristic of this historical period is the agricultural dependence, the use of the land above its ecological load capacity and the pressure to create a sustainable system for the use of the environment (MARQUARDT, 2006).

From 1730, some factors contributed to the increase in the European population. After the period that was the black plague epidemic, which decimated a large part of the population, industrial production, mainly of textile products, grew and was concentrated in large urban areas. Policies in some kingdoms stimulated the birth rate, as this would mean a greater military contingent and greater tax collection. All this contingency came against the objective that was the optimization of the population in relation to its ecosystemic capacity (MARQUARDT, 2006).

The changes that took place between 1789 and 1848 triggered the removal of the agrarian system. First, the Enlightenment preached liberal, physiocratic and state economic theories, with a new mechanistic view of nature.

Legislative state intervention removed the protection of the environment by individualizing property, resulting in the disappearance of the traditional right to sustainability. The new model allowed the individual to have absolute power over nature without public protection (MARQUARDT, 2006).

The Industrial Revolution was also significant in the environmental context, replacing a renewable energy system, based on wood, with a non-renewable one, based on fossil energy from coal, and later on, oil. This whole phenomenon was called economic growth (MARQUARDT, 2006). For Cameron (2004, p.26), "economic growth is a sustained increase in the total production of goods and services produced by a given society".

At the end of the 19th century and the beginning of the last century, more precisely in 1900, several European countries still used coal as an energy source. Fossil fuels and electricity created the modern world, increasing agricultural productivity and mechanizing industrial production, taking the agricultural workforce to megacities, mainly in the service sector, globalizing trade and culture (SMIL, 2004).

It should be noted that economic growth and wealth creation increased by 1730 times between 1800 and 1970, together with the triple increase in the world population from 978 million to 3,632 million inhabitants (DU PISANI, 2007).

However, this twentieth-century energy transition raised the population's standard of living, but disparities between rich and poor societies remained. And, even more, the use of energy causes an imbalance in urban life, such as pollution and environmental degradation from thermonuclear plants, for example (SMIL, 2004).

For Smil (p. 561), "the only guaranteed result of greater use of energy is the increase in environmental burdens whose global impacts can put the biosphere's habitability at risk" (our translation). It must be understood that "we are a part of nature, not part of nature" (RICKLEFS, p. 521).

The crucial question, since the beginning of the last century, is to determine what types of policies should be applied efficiently and effectively in building a sustainable global economy. As Costanza et al. (2013, p. 78), we need to reconstruct the concept of what the economy is, and what it is for. According to the author and co-authors, the objective of the economy must be to sustainably improve human well-being and quality of life and that material consumption and GDP are mere means to that end.

Likewise, Gardner (2013, p. 53) considers that "industrial nations continue to build economies based on disposable". We are consolidating a sterile economy in material terms. If there is no serious world policy, consolidated in projects for the rational use of non-renewable resources, as well as in the effective recycling of these resources, the trend will be the use of new technologies in the creation of new materials that will replace those that have been exhausted.

Morin (2010, p. 54) highlights that "we are on a planet that lives, falters, without certain provisions for tomorrow". The author establishes a dialectical conception of the world, in which he states that the first difficulty in thinking about the future is the difficulty in thinking about the present. This "blindness" puts us in a connection between the past and the present and from the present to the future, because everything that is evolutionary "is drift, transgression, creation; it is made of ruptures, crises "(Ibidem, p.15). It is in this tuning fork that economic growth presents itself with the idea of qualitative progress. However, "all progress is partial, local, provisional, the product of degradation, of disorganization" (Ibidem, p. 29).

3. Sustainability and Development

As we mentioned earlier, global societies are growing alarmingly and are "not only interconnected through political, economic and technical systems, but also through biophysical systems to support life on Earth" (FOLKE, 2013, p. 20).

Humanity has not yet awakened to the sense of responsibility it has over planet Earth. Folke externalizes this concern by referring that the development of society will start from the moment that people "contemplate and manage natural capital and systemic services, not only to save the environment, but for the sake of our own development" (Ibidem, p. 27).

Holistic reflections made by Capra (2005, p. 268) exalt that "the objective of the global economy is to raise the wealth and power of the elites to the maximum, while the objective of the ecological project is to raise the sustainability of the web to the maximum of life".

According to Capra, in the 21st century we must change our values in terms of the global economy, with responsibility, human dignity and ecological sustainability (Ibidem, p. 268).

We see, therefore, that the term sustainability appears to be linked to a global economy that must be focused on the well-being of environmental and social systems.

In the strictest sense, global sustainability means the indefinite survival of human species in all regions of the world. In a broad sense, human beings who are born and reach adulthood must have quality of life beyond mere biological survival (BROWN, 1987).

The sustainability of the development process implies the reorganization of urban settlements and the establishment of new functional relations between the countryside and the city. The challenge is to generate strategies that make it possible to articulate and integrate populations in a diverse and sustainable world (LEFF, 2001, p. 61).

The term sustainability is related to unchanged environments, but, to the extent that no natural system can be immutable, it is desirable to limit the impacts of human action on the environment (MCKENZIE, 2005).

In this same understanding, Boff (1999, p. 111) considers sustainable that economic growth and social

development that were made according to the community of life, that produced according to the capacity of the biome, that met the demands of our generation with equity, without sacrifice natural capital, and be open to the demands of future generations.

Sustainability should not be analyzed in isolation. It is transdisciplinary, existing where there is cooperation, synergy and permanent dialogue between global society and natural ecosystems. At the beginning of environmental studies, sustainability had its concept linked to man / nature issues. However, as Elkington (2001, p. 1) asserts, the world managed by sustainable capitalism guided sustainability under the focus of harmonization between traditional financial pillar and emerging environmental thinking. But now the focus is on "economic prosperity, environmental quality and social justice".

This dynamic, the interconnection of the so-called development and sustainability, had its inaugural mark with the anxiety of Rachel Carson on the occasion of the launch of her book Silent Spring in 1962. It is in this work that Carson refers us to the impacts of technology and, mainly, of industries on human life and the environment. The chemical industry in the United States was booming, and the indiscriminate use of pesticides in crops was contaminating humans and biota.

Carson (2010, p. 22) makes an analysis and argues that "the human being acquired significant power to change the nature of his world" and that "this power not only increased until it reached a worrying magnitude but also changed its character". She situates this issue as moral, as she questions "whether any civilization can wage an incessant war against life without destroying itself without losing the right to be called civilized" (Ibidem, p. 95).

From the considerations made by Carson in his work, the world became aware of the consequences arising from technological and scientific progress. It was seen that the development of society as a whole is a process that requires interactions, it cannot be achieved by individual initiatives.

After Carson, environmentalists and scientists like Barry Commoner emerged, concerned with environmental issues. Commoner, in his work The Closing Circle (1971, p. 1), reports that, with Earth Week, instituted in April 1970, in the United States, there was an awakening to the environmental danger that advanced over the American and world population . The author seeks to understand why, starting in 1956, environmental pollution increased dramatically and mentions that the "urgency of public understanding of the origins of the environmental crisis and its possible solution" (Ibidem, p. 4) should be accessible to the general public so that citizens could participate and know the risks to which they would be exposed.

Other concerns were noted in 1972 by the authors of the document entitled Limits to Growth (MEADOWS et al., 1978, p. 11), a report produced by the Club of Rome, an informal and international organization.

The report draws attention "to the exponential nature of human growth, within a closed system" (Ibidem, p. 185), requiring that "society be returned to objectives of balance and not growth" (Ibidem, p. 188), requiring "an effort of understanding, imagination and political and moral determination" (Ibidem, p. 189).

Amid all the alerts made by the Report, in the same year of 1972, the United Nations Conference on the Human Environment (UN, 1972), better known as the "Stockholm Declaration", was held in Stockholm, Sweden. In it, there was recognition by the legal system of the environment as a fundamental right of man,

in which it was established in the first principle that "man has the right to freedom, equality and to enjoy adequate life in a quality environment for lead a dignified life with well-being and the solemn obligation to protect it for present and future generations ". This essential character of the environment for the dignity of human life and its preservation is revealed as an affirmation, as a fundamental right of all humanity.

The Stockholm Conference served to indicate to the UN General Assembly the creation of the United Nations Environment Program (UNEP), which started operating in 1973 with the aim of coordinating the World Environment Fund, implementing international actions to regulate human activities and prevent the degradation of the planet.

Adams (2006, p. 1, our translation) points out that in the creation of UNEP, the concept of sustainability "was created explicitly to suggest that it was possible to achieve growth and industrialization without environmental damage".

In 1992, twenty years after the Stockholm meeting, the UN organized in Rio de Janeiro the Second Conference on the Environment, ECO-92 or Rio-92. More than 170 countries participated in this Conference, where they concluded that development must be adequate to the pace of environmental processes and that preserving a healthy environment is an indispensable condition to guarantee a peaceful future for new generations.

For Sachs (2000, p. 49), "the imperative ethics of synchronic solidarity with the current generation was added to the diachronic solidarity with future generations [...] the social contract on which the governability of our society is based must be complemented by a natural contract ".

As Oscar Motomura (2009) rightly states, no deliberation on sustainability should take place without taking into account the systemic in time and space, that is, the question of the legacies received and those we will leave for future generations. For the author, integrating with time means giving respect to the natural assets that are a legacy received in the construction of a sustainable future.

With the advent of modernity, the unlimited expansion of the productive forces generated ecosystem imbalances and attacked the environment as a whole. These are systemic problems that are interconnected and interdependent. The systemic view of life presupposes a way of thinking with an emphasis on the whole, that is, living systems are organized in a connected and interrelated way. In the case of the environment, systemic thinking encompasses man and nature with all its elements. Any damage to the environment is reflected in the community due to its character of interaction and interdependence (CAPRA, 1999).

For D'Ambrosio (1999, p. 647), "the challenge posed by the search for understanding the world in its entirety presupposes that the dimensions of survival and transcendence are assumed in their complementary relationship". The author describes the phenomenon of life as a result of integrality, of the harmony of the individual connected mutually between the reality that surrounds him, in an eternal search for survival, and the interaction with society in respect for the other in the search for the preservation of natural and cultural.

Ribeiro (2009) reinforces the idea of D'Ambrosio by constituting the term ecologize in the context of the harmonization of natural processes. For the author, society, organizations and individuals have been ecologizing "by collective and participatory action methods, strategies and long-term planning" (p. 28) in an "internalization of ecologically responsible values and behaviors" (p. 35).

In this same understanding, Weiss (1992), when creating the Intergenerational Equity Theory, relates human generations to the natural system without distinction within a temporal dimension. In an

anthropocentric view, a generation that degrades the environment has a responsibility and a duty to restore the system for future generations.

The organizational capacity in the face of perceived threats arising from modernity is spreading across the social network, and the problems of the accompanying risks are a crucial point of responsibility for all.

To understand the living conditions of contemporary society is to be led to reflect on the development of modernity. Modernity, understood here, according to Giddens (1991, p.11) as "style, custom of life or social organization that emerged in Europe from the 17th century and that later became more or less worldwide in its influence". And the influence is linked to social evolutionism, to the changing world that the era of modernity presents to us.

The period of modernity that we are experiencing is characterized as a Reflective Modernity, in which "social practices are constantly examined and reformed in the light of renewed information about these own practices, thus constitutively altering their character" (Ibidem, p. 45).

There is, therefore, a need to understand environmental problems, conflicts generated in the face of uncertainties regarding viable alternatives to sustainable development. The development of modern society, according to Giddens, is based on personal self-flexibility, in which one must reflect on oneself, on the practices that are in the structure, seeing oneself to recognize a society at risk.

The uncertainty and lack of security in what is to come are characteristic and evident features of contemporary society. The lack of defining parameters of control over industrial modernization leads us to believe and admit that we are in an abstraction system, in which information is complex, but it is believed and trusted that the understanding of the transformations is being realized, even that "actors", according to Giddens, are unaware of the technological involvement and responsibilities that they imply.

It turns out that the term sustainability due to its "weaknesses, inaccuracies and ambivalences", as described by Veiga (2006), had its notion added in world politics due to the concept of sustainable development instituted by the Brundtland Report.

The Report Our Common Future, prepared by the UN World Commission on Environment and Development in 1987 (CMMAD, 1991), under the direction of Norway's first Minister, Gro Brundtland, defines sustainable development as "one that meets the needs of the present without compromise the possibility for future generations to meet their own needs"(p. 46).

The Brundtland Report, as it became known, criticizes the development model to which we are subjected, shaped by economic growth at the expense of social differences and without harmonization with the ecosystem. Likewise, it points to the incompatibility between sustainable development and the current production and consumption patterns.

In the analysis of the report, it is seen that measures are proposed linking the population, food security, ecosystems, energy, industry and urban issues in promoting sustainable development. Likewise, it recommends research in the field of renewable energy as a central point for long-term investments, as it considers an untapped potential.

We recall that, during Rio-92, a document called Agenda 21 was signed that proposed numerous actions for environmental recovery of the land to be operationalized until the 21st century, which did not actually occur, but served to map the environmental conditions of the entire planet.

Agenda 21 aimed to promote, on a worldwide scale, a new standard of development combining

environmental protection, social justice and economic efficiency.

The Agenda 21 document (1995), organized in 40 chapters, served as a guide, a roadmap to be followed by industries, companies and governments in driving economic growth combined with sustainable development. Among the principles to be followed for its implementation, are:

a) cooperation and partnership between countries at government, national, local levels and among various segments of society;

b) promoting education as an instrument for analyzing and raising awareness of community participation in solving global environmental problems;

c) strengthening of the main socially vulnerable groups;

d) integrated planning with national and international cooperation instruments and mechanisms to achieve development;

e) information for decision-making by improving the availability of social, economic, ecological, environmental and development-related data.

Ten years after Rio-92, the countries were again summoned to address the environmental issue. The World Summit on Sustainable Development - RIO + 10, which took place in 2002 in Johannesburg, South Africa, was an attempt by the UN to reassess and implement the conclusions and guidelines obtained at Rio-92. With the presence of 189 countries, Rio + 10 ended with little progress in relation to public policies.

Reaffirming the commitments at the previous Conferences, in 2012 the so-called Rio + 20, United Nations Conference on Sustainable Development, took place in Rio de Janeiro, which produced a 53-page document entitled "The Future We Want", which highlights the effort for the combating poverty and hunger, protecting the oceans and biodiversity, as well as encouraging agriculture and renewable energy.

As a result of Rio + 20 and the need to face new development challenges, in 2015, the 193 Member States of the United Nations established an action plan to end in 15 years the extreme poverty, inequalities and injustices on our planet. To this end, the States built the 2030 Agenda for Sustainable Development composed of 17 objectives and 169 goals to be implemented in an integrated and indivisible way in a balance of the economic, social and environmental dimensions of development. Here are the objectives outlined:

a) Objective 1. End poverty in all its forms, in all places;

b) Objective 2. End hunger, achieve food security and improve nutrition and promote sustainable agriculture;

c) Objective 3. Ensure a healthy life and promote well-being for all, at all ages;

d) Objective 4. To ensure inclusive and equitable and quality education and promote opportunities for lifelong learning for all;

e) Objective 5. Achieve gender equality and empower all women and girls;

f) Objective 6. To ensure the availability and sustainable management of water and sanitation for all;

g) Objective 7. To ensure reliable, sustainable, modern and affordable access to energy for all;

h) Objective 8. To promote sustainable, inclusive and sustainable economic growth, full and productive employment and decent work for all (AGENDA 2030, 2015).

Many criticisms were received in the formulation of global policies for the achievement of objectives and targets. According to Langford (2016, p. 173), there are a large number of commitments, with a more

"decorative" than "operational" agenda. Likewise, there is no mention of the participation of civil society in achieving the objectives, nor political, legal or administrative responsibility for non-compliance by States.

Jeffrey Sachs (2016) recognizes that objectives and goals are necessary, but require local activism and real politics, such as pressuring governments to produce their plans to achieve sustainable development, involving universities, companies and civil society in proposing actions to achieve the objectives and inspection in its implementation.

We live in a time of the "Age of Sustainable Development", when the challenge is to strengthen all institutions in an integrated way in the planning of multisectoral actions with a view to reaching and guaranteeing the social, economic and environmental dimensions in the development of Nations.

4. Conclusion

There is a complexity in assigning a concept to the term sustainability. Its historical trajectory is related to the environmental discourse "man / nature", in the sense of interdependence of ecosystems. From the 1970s onwards, sustainability began to be seen as an impediment to development and the environmental issue started to be incorporated into world policies. In the 1972 Limits to Growth document, the warning is given when seeing a society being swallowed up by unbridled economic growth. In the Stockholm Declaration of the same year, economic development linked to environmental conservation is advocated, and cannot be achieved by isolated initiatives. There is a need for interdependence between society and the environment.

All international documents after the initial Stockholm landmark advocate sustainable development in line with the three pillars created by Elkington (Ibidem, p. 75-77): economic, social and environmental (Triple Botton Line), in which society depends on the economy and the economy of the ecosystem, which, in turn, represents global health, that is, the ultimate pillar, the environmental. The author maintains that these pillars are not stable, they are subject to social, political, economic, environmental pressures and to cycles and conflicts.

However, we must reflect on the following questions: What should be sustained? Who is sustainability for? What is the time period to arrive at the expected results?

We must keep in mind that sustainability is a process that, in order to be operationalized, requires the integration of preserved environmental assets with sustainable economic development.

9. References

[1] ADAMS, W. M. The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century. Gland, Switzerland: World Conservation Union, p. 1-18. 2006. Disponível em: <https://portals.iucn.org/library/sites/library/files/documents/Rep-2006-002.pdf>. Acesso em: 4 fev. 2018.

[2] AGENDA 21 – Brasília: Câmara dos Deputados, Coordenação de Publicações, 1995. Disponível em: <http://www.onu.org.br/rio20/img/2012/01/agenda21.pdf>. Acesso em: 24 fev. 2018.

[3] AGENDA 2030. Objetivos do Desenvolvimento Sustentável (ODS). Disponível em: <https://nacoesunidas.org/pos2015/agenda2030/>. Acesso em: 22 fev. 2018.

[4] ARRUDA, José Jobson. História Total 4. Idade Moderna e Contemporânea. 2. ed. São Paulo: Ática, 1999.

[5] BELL, Simon; MORSE, Stephen. Sustainability Indicators: Measuring the Immeasurable? 2nd. Ed. Londres: Earthscan Publications Limited, 2008.

[6] BOFF, Leonardo. Saber Cuidar Ética do humano – compaixão pela terra. Petrópolis, RJ: Editora Vozes, 1999.

[7] BROWN, J. B.; HANSON, M. E.; LIVERMAN, D. M.; MEREDITH, R. W. Global Sustainability: Towards   Definition.   Environmental   Management   11   (6),   1987.   713-719. <https://doi.org/10.1007/BF01867238>. Acesso em: 22 de fe.2018.

[8] CAMERON, Rondo. História Económica do Mundo. Publicações Europa-América, 2. ed. Mem-Martins, 2004.

[9] CAPRA, Fritjof. As conexões ocultas: ciência para uma vida sustentável. Tradução de   Marcelo Brandão Cipolla. São Paulo: Cultrix, 2005.

[10] CAPRA, Fritjof. A teia da vida. 4. ed. São Paulo: Cultrix, 1999.

[11] CARSON, Rachel. Primavera silenciosa. Tradução de Claudia Sant'Anna Martins. São Paulo: Gaia, 2010.

[12] CMMAD. Comissão Mundial sobre Meio Ambiente e Desenvolvimento. Nosso futuro comum. Rio de Janeiro: Editora Fundação Getúlio Vargas, 1991.

[13] COMMONER, Barry. The closing cirle: Nature, Man, and Technology. New York: Knopf, 1971.

[14] COSTANZA, Robert et al. Construindo uma Economia-na-Sociedade-na-Natureza Sustentável e Desejável. In: ASSADOURIAN, Erik; PRUGH, Tom (Orgs.). Universidade Livre da Mata Atlântica. Estado do mundo 2013: A Sustentabilidade Ainda é Possível?/Worldwatch Institute. Salvador, BA: Uma Ed., 2013. p.78-94.

[15] D'AMBROSIO, Ubiratan. Ética ecológica. Uma proposta transdisciplinar. In: VIEIRA, Paulo Freire; RIBEIRO, Maurício Andrés (Orgs.). Ecologia humana, ética e educação: a mensagem de Pierre Danscreau. Porto Alegre: Palotti; Florianópolis: APED, 1999, p. 639-654.

[16] DU PISANI, Jacobus A. Sustainable development – historical roots of the concept. Environmental Sciences, 3:2, 83-96, DOI: 10.1080/15693430600688831. Downloaded by [168.196.182.175] at 13:35 09 January, 2018.

[17] ELKINGTON, John. Canibais com garfo e faca. Tradução de Patrícia Martins Ramalho. São Paulo: Makron Books, 2001.

[18] FOLKE, Carl. Respeitando os Limites Planetários e nos Reconectando à Biosfera. In: ASSADOURIAN, Erik; PRUGH, Tom (Orgs.). Universidade Livre da Mata Atlântica. Estado do mundo 2013: A Sustentabilidade Ainda é Possível? /Worldwatch Institute. Salvador,B A: Uma Ed., 2013. p.19-27.

[19] GARDNER, Gary. Conservando recursos não-renováveis. In: ASSADOURIAN, Erik; PRUGH, Tom (Orgs.). Universidade Livre da Mata Atlântica. Estado do mundo 2013: A Sustentabilidade Ainda é Possível? /Worldwatch Institute. Salvador,BA: Uma Ed., 2013. p. 51-64

[20] GIDDENS, Antony. As consequências da modernidade. São Paulo: UNESCP. 1991.

[21] GROBER, Ulrich. Wissenschaftszentrum Berlin für Sozialforschung gGmbH (Ed.): Deep roots - a conceptual history of 'sustainable development' (Nachhaltigkeit). Berlin, 2007 [23] (Discussion Papers / Wissenschaftszentrum Berlin für Sozialforschung 2007-002). Disponível em: <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-110771>. Acesso em:22 fev. 2018.

[22] LANGFORD, M. Lost in Transformation? The Politics of the Sustainable Development Goals. Ethics & International Affairs, 30(2), p. 167-176. 2016. Disponível em: <https://www.cambridge.org/core/journals/ethics-and-international-affairs/article/lost-in-transformation-the-politics-of-the-sustainable-development-goals/B564424E327013BE5CBA0F6715C23F7F>. Acesso em: 23 fev. 2018.

[23] EFF, Enrique. Saber ambiental. Sustentabilidade, racionalidade, complexidade, poder. Tradução de Lúcia Mathide Endlich Orth. 2. ed. Petrópolis, RJ: Vozes, 2001.

[24] MARQUARDT, Bernd. Historia de la sostenibilidad. Un concepto medioambiental en la historia de Europa central (1000-2006). hist.crit., Bogotá, n. 32, p. 172-197, dic. 2006. Disponível em: <http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S012116172006000200008&lng=es&nrm=iso>. Acesso em: 26 dez. 2017.

[25] MEADOWS, Dennis L; MEADOWS, Donella H; RANDERS, Jorgen. Limites do crescimento. Um relatório para o Projeto do Clube de Roma sobre o dilema da humanidade. Tradução de Inês M. F. Litto. 2. ed. São Paulo: Perspectiva, 1978. (Coleção Debates)

[26] MORIN, Edgar. Para onde vai o mundo? Tradução de Francisco Morás. Petrópolis, RJ: Vozes, 2010.

[27] MOTOMURA, Oscar. Desenvolvimento sustentável. Princípios éticos para um efetivo fazer acontecer. Disponível em: http://www.ecodesenvolvimento.org/colunas/oscar-motomura/desenvolvimento-sustentavel-principios-eticos-para#ixzz3pR9TXO6F Acesso em: 5 fev. 2018.

[28] MCKENZIE, Stephen. Social sustainability, religious belief and global ethics: outlines for research. Hawke Research Institute Working Paper Series, n. 0, University of South Australia, 2005.

[29] ORGANIZAÇÃO DAS NAÇÕES UNIDAS. Conferência das Nações Unidas sobre Meio Ambiente. Disponível em: <http://www.un-documents.net/aconf48-14r1.pdf>. Acesso em: 4 fev. 2018.

[30] RIBEIRO, Maurício Andrés. Ecologizar: Princípios para a ação. Brasília: Universa, 2009. v. I.

[31] RICKLEFS, Robert E. Economia da Natureza. 6. ed. Rio de Janeiro: Guanabara Koogan, 2010.

[32] SACHS, Ignacy. Caminhos para o desenvolvimento sustentável. Rio de Janeiro: Gramond, 2000.

[33] SACHS, Jeffrey. The Conversation. Disponível em: <https://theconversation.com/jeffrey-sachs-on-meeting-the-sustainable-development-goals-we-need-a-victory-of-ideas-66839>. Acesso em: 23 fev. 2018.

[34] SMIL, Vaclav. World History and Energy. Reference Module in Earth Systems and Environmental Sciences, from Encyclopedia of Energy, 2004, p. 549-561.

[36] VEIGA, José Eli da. Meio ambiente & desenvolvimento. São Paulo: Editora Senac, 2006.

[36] WEISS, Edith Brown. In Fairness To Future Generations and Sustainable Development. American University International Law Review 8, n. 1, p. 19-26, 1992. Disponível em: <http://digitalcommons.wcl.american.edu/auilr/vol8/iss1/2/>. Acesso em: 8 fev. 2018.