

A CONCEPTUAL MODEL FOR INTEGRATING NON-MATERIAL COMPONENTS IN SUSTAINABILITY ASSESSMENT

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1. Introduction

From the moment the concept of Sustainable Development (SD) was strengthened by the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 (ECO-92), sustainability indicators and indexes became widely developed (BOSEL, 1999; SINGH, *et al.*, 2009) and, over time, innovations have been implemented, such as the inclusion of participatory processes in SD evaluation (MARQUES *et al.*, 2013; RAMOS *et al.*, 2014; DISTERHEFT *et al.*, 2015). However, several authors have noted the need for indicators that can assess non-traditional aspects of sustainability, such as individual values, principles and attitudes (SUMI, 2007; KAJIKAWA, 2008; RAMOS, 2009; FRUGOLI *et al.*, 2015), considered to be cultural elements and often referred to as non-material components of sustainability (term used in this study).

The present work has the following aims: (1) development of a conceptual model for non-material components, and (2) identification and exploration of the concept of sustainable development and non-material themes for sustainability assessment through the involvement of key actors from the state of Alagoas and its capital, Maceió, located in the Northeast of Brazil. State and capital city represent the regional and local scales of the model, respectively, and contain characteristics of geographic dimensions and socioeconomic, environmental, institutional, and cultural diversity that make them suitable for the purpose of the present investigation.

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The conceptual model and the proposed themes will provide a basis for the development of indicators of non-material themes of sustainability through which the worldview of individuals about SD can be assessed.

2. Culture and Non-Material Components of Sustainability

The discussion about the importance of the cultural elements for SD precedes its conceptualization and acceptance in ECO-92. Schumacher (1973), in discussing development, warned that it does not begin with goods, but rather with people – and their education, organization and discipline. Moreover, he argued that these three conditions must be the legacy of society as a whole and proposed a new ethics, according to which ecological knowledge is not only important but establishes an interface with economy.

The inclusion of a cultural dimension to sustainability was proposed by authors such as Sachs (1993), Bossel (1999), and Burford *et al.* (2013). The latter presented a proposal with a fourth pillar, comprising intangible components and a basis for ethical values. The authors advocate the use of indicators for these themes, aiming at a more adequate evaluation of SD.

It is important to clarify that culture, for the purposes of this study, is understood broadly, comprising all the material and immaterial elements of human production. Candeas (1999) grouped the immaterial components into two categories: the first one, comprising the structures of thought and perception of reality that involve worldview, values, ideologies, knowledge, beliefs, symbols, and meanings, while the second one encompasses immaterial manifestations in the behaviors and organization of society that refer to lifestyles, customs, institutions, and techniques. The present work falls within the scope of Candeas's first category.

Throsby (1995) advocated the need for a systemic and integrated analysis, suggesting the concept of "culturally sustainable development," defined by a set of criteria related to four principles: (1) advancement of material and non-material well-being; (2) intergenerational equity and maintenance of cultural capital; (3) intragenerational equity; and (4) recognition of the interdependence between both cultural and economic systems, taking into account that the maintenance of cultural processes is as vital as the maintenance of biological processes to the continuity of the development of humankind.

In 1996, the World Commission on Culture and Development (UNESCO, 1996) defined five ethical pillars that are necessary to our treading the complex and ambitious development path: (1) human rights and responsibilities; (2) democracy and civil society participation; (3) protection of minorities; (4) commitment to the peaceful resolution of conflicts and fair negotiation; and (5) intergenerational equity. Cavalcante (1998) stated that, in order to achieve sustainable development, it will be necessary to establish new patterns of individual and social behavior, "ethics being one of the foundations required for the sustainability of development" (CAVALCANTE, 1998, p.103).

Although not explicitly mentioning sustainability, the Millennium Declaration (UN, 2000) lists values that are relevant to it: (1) freedom, (2) equality, (3) solidarity, (4) tolerance and respect for nature, and (5) shared responsibility. Leiserowitz *et al.* (2006),

reviewing values linked to sustainability, highlighted those related to the Millennium Declaration, characterizing values as abstract elements that frame our attitudes and at the same time establish parameters to evaluate our behaviors.

According to Schwartz (2003), values act as principles, guiding people's lives, allowing them to predict and explain their opinions, attitudes and behaviors, influencing social groups and being influenced, as well as revised and reformulated, by them. In other words, principles and values should be aligned with sustainability in order to achieve SD. They will guide the necessary strategies and actions that can be defined by consensus among social groups and that should be adopted by individuals through effectively sustainable attitudes and behaviors. In order for these elements to be evaluated, it is important to focus on the worldview of both individuals and the social group. Hedlund-de Witt (2012) considered the worldview to be central to the promotion of SD and stated that it is not receiving due attention. Worldview is intimately linked to values and constitutes a cultural expression of the inner world – at the level of ideas, affections, perceptions, orientations, and intentions. It is this worldview that needs to be transformed if we are to walk towards sustainable societies. Horlings (2015) reaffirmed the importance of changing worldview to meet the challenge of sustainability while discussing the importance of values and attention to personal and collective levels of awareness.

Burford *et al.* (2013) advocated the use of indicators based on ethical values and stated that they have been neglected. The authors presented a survey of values of this less tangible dimension of sustainability based on four international documents: Earth Charter, Millennium Declaration, Rio+10 Final Report and Rio+20 Final Report. Moreover, they identified values in a content analysis research that evaluated international documents from 1945 to 2006. In addition, Harder *et al.* (2014), working value assessment aspects in environmental projects, listed as most important the following: care and respect for community life, personal and group empowerment, integrity, justice, trust, and unity in diversity.

Last but not least, it is important to remember the approval of the Sustainable Development Goals (SDG) in September 2015 with its 17 goals that set a course for the SD and goals to be achieved by 2030. In all its member countries, the United Nations (UN) portrays our cultural diversity and, among the various themes related to SDG, such as well-being, inclusion, gender, inequality and justice, indicators of non-material themes can play an important role as tools to evaluate both the understanding of SD by (and the engagement of) different social and cultural groups in the quest for sustainability.

3. SD Indicators and Non-Material Components

After more than two decades of development SD indicator systems and their practical application, there are several findings referring to the set of existing indicators (e.g., SINGH *et al.*, 2009; MORENO PIRES, 2011). The concept of indicator has often been abusively used, prone to include all kinds of quantitative information or to justify certain statistics. According to Ott (1978) and Ramos (2009), an indicator is a sign that conveys a special message and its added value, developed from a particular variable

(reported in the original units or transformed into a given dimensionless scale), and can be either qualitative or quantitative. An indicator is based on either objective or subjective elements, and assures that complex information be conveyed in a standardized, simple, useful way for a specific target audience. An index results from an arithmetic or heuristic cluster of variables or indicators (OTT, 1978).

The development of indicators and indexes took place initially on national scale, and then on other scales. However, despite the large number of alternatives generated, shortcomings were identified – and corrected over time. The lack of involvement of the society was one of them, therefore participatory processes were increasingly adopted at various points in SD assessments (e.g., Mascarenhas *et al.*, 2010; Dlouhá *et al.*, 2013). The movement for community indicators, which emerged in the 1990s, was also emphatic in valuing participatory practices (HOLDEN, 2006).

Another critique of these indicators, highlighted by several authors in their studies, was precisely the absence of non-material components in sustainability assessments. Sumi (2007) mentioned subjective aspects and individual values that must be taken into account in the search for a sustainable society, while Kajikawa (2008) pointed out individual and cultural differences – which make a given sustainability topic to be understood and evaluated in different ways. According to the latter, people are different and have their variegated aspirations within varied sociocultural contexts and periods of time. Ramos (2009), in turn, stated that SD indicators should also include non-traditional values of sustainability – with reference to ethics, cultural values and democracy, as well as public and private responsibility and justice. Thus, these three authors indicate a new area of research, different from that of the usually studied indicators – which make use of observable and objective variables (GHIGLIONE and MATALON, 1993) and are generally quantifiable. We call these, for the purpose of the present study, traditional indicators, as opposed to indicators of non-material themes of sustainability, which are the object of our research work. According to Frugoli *et al.* (2015), it is of paramount importance that a more qualitative area of study be developed, with the incorporation of subjective elements and intangible variables.

4. Methods

Based on the characteristics ascribed to the non-material components by the authors who reported they are lacking in the sustainability assessment systems (e.g., SUMI, 2007; KAJIKAWA, 2008; RAMOS, 2009; FRUGOLI *et al.*, 2015), a critical review of the literature on the theme of culture, sustainability and SD dimensions was carried out in order to identify the relevance of non-material components to the cultural dimension, which resulted in a proposal to reconfigure the dimensions of sustainability. With this reconfiguration, it was possible to outline a conceptual model for the non-material components of sustainability, according to the characteristics listed by the authors who champion their incorporation in SD evaluations.

The literature review also comprised the analysis of SD indicator systems, covering references between 1998 and 2013, seeking to identify possible non-material themes.

A survey was carried out in available academic databases and the following terms were browsed: sustainability indicators, SD indicators, SD indicator systems, intangible indicators, non-material indicators, well-being and culture indexes, and sustainability. In almost one hundred scientific papers and reports from Brazilian and international organizations, referring to sustainability assessment systems, indexes and indicators, ten presented themes that were deemed adequate to the characteristics established for non-material components. From the initial list obtained, redundant themes were eliminated, with the exception of those that were included in more comprehensive themes. This preliminary list of possible non-material themes was submitted to appreciation by the key actors.

The term “well-being” was given special attention, on the one hand, because several authors have made references to the interactions between sustainability and well-being (NEUMAYER, 2004; KJELL, 2011; BAKAR *et al.*, 2015); on the other hand, because welfare indicators present themes pertinent to the elements preliminarily mentioned as non-material components of sustainability. It goes without saying that our review of well-being indicators was carried out in order to identify possible non-material themes for sustainability, not implying here that they do indeed constitute indicators of sustainability. According to Bakar *et al.* (2015), sustainability is a future-oriented concept, while well-being is by definition an element of the present; therefore, from the point of view of interaction, one may conclude that sustainability requires well-being; however, well-being is not necessarily sustainable.

The preliminary list of non-material themes was evaluated in semi-structured interviews (GIL, 2012), with key actorsⁱ from the city of Maceió and the state of Alagoas. The sampling was non-probabilistic and intentional or by evaluation (MATTAR, 2005), given that the interviewees were chosen by the researcher. Table 1 presents the set of key actors interviewed, as well as the profiles selected and the number of interviews. Engagement in both the Maceió and Alagoas development processes was adopted as a selection criterion, which led to the identification of representatives of civil society, state and municipal public authorities, workers, entrepreneurs, and the academia. In addition, we sought representatives of organizations working in the three usual dimensions of sustainability, and the universities were considered transversal and multidimensional.

Table 1. Set of key actors interviewed

Key Actors		Interviewees	
Public Managers	Executive power	State	5
		Municipal	4
	Legislative power	State	1
		Municipal	2
	Judiciary power		1
Representatives	Business community		6
	Workers		2
	Financial sector		2
	Organized sectors of civil society		4
	Academy		7
Total Number of Interviews			34

The gender division reproduces our local reality, for higher positions and managerial functions are mostly occupied by men. The proportion of women (8) and men (24) was in the ratio of 1 to 3. The two union leaders interviewed are delegates to thousands of urban and rural workers from the state of Alagoas. As for the financial sector, chairpersons were heard of banks of national reach.

The interviews were conducted from May to October 2014 and sought to be informative and mobilizing in order to gather the views of the interviewees on: (1) their understanding of DS; (2) the degree of importance (valuation) they give to a previously selected set of non-material SD themes; and (3) their suggestions for adjustments to the proposed themes, as well as their suggestions for complementary themes.

The questionnaire used in the interviews had 24 questions. The answers were typed directly on the computer by the interviewer, and the recorded data were then proofread simultaneously by both interviewer and interviewee. The questionnaire consisted of 14 closed questions (justifications could be added to two particular questions) and 10 open questions allowing for brief written answers. The closed questions used the Likert scale (BREAKWELL *et al.*, 2010; GIL, 2012), with five gradations: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree. The interview guide was tested in two experimental interviews, and adjustments led to its final version.

A rating scale was used for the interviewees to express their opinion, presented on a scale of 0 to 10. Simple answers and those with the Likert scale were counted, and the open questions in which respondents produced short texts were subjected to content analysis (BARDIN, 2009). From the theoretical elements analyzed and the material ge-

nerated by the interviews, it was possible to design the conceptual model presented for non-material components, as well as to evaluate our proposed list of non-material themes.

Considering the importance of SDG (UN, 2015), which set out goals to be pursued in a global mobilization, a framework of relationship between SDG and selected non-material themes was developed to identify interactions and the possibility of contributing to the U.N. Goals.

5. Conceptual Model for Non-Material SD Components

5.1. Model Configuration

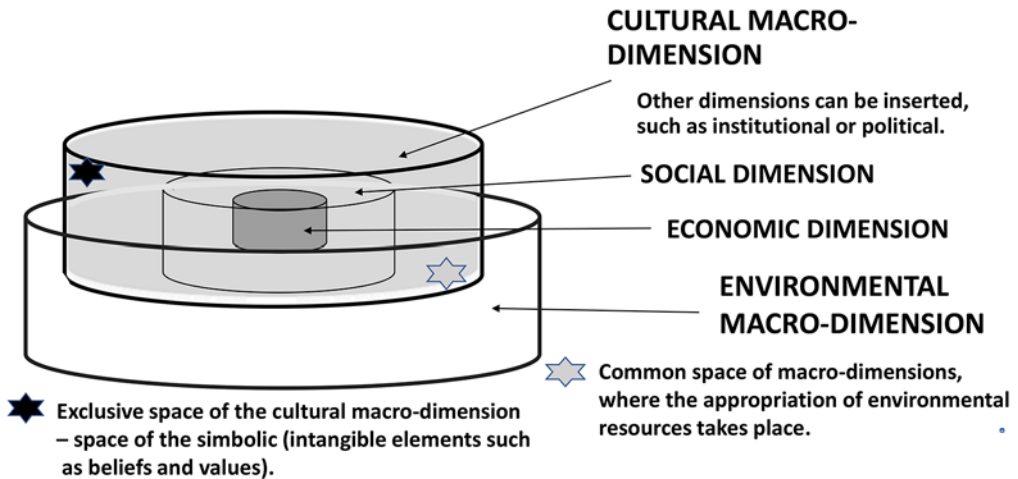
With the aim of adding the non-material components of sustainability, a reconfiguration of the dimensions of sustainability was developed, with the delimitation of two macro-dimensions: environmental and cultural (Figure 1). This reconfiguration takes into consideration the proposals of (i) including the cultural dimension in SD (SACHS, 1993; BOSSEL, 1999; BURFORD et al., 2013), and (ii) expanding, to a three-dimensional format, the plane figures of concentric circles in which the exterior represents the environmental dimension and the interior represents the economic and social dimensions, as presented by Macnaghten and Jacobs (1997).

Adopting the broad concept of culture (THROSBY, 1995; HORLINGS, 2015), this new configuration comprises the social, political-institutional and economic aspects, since all processes inherent to them are possible through the symbolic constructions which are characteristic of the human condition, including beliefs, values and attitudes. Thus, it is possible to have a glimpse at the role of the non-material components of sustainability, since the transition to SD will not take place spontaneously, but rather through an understanding of the importance of a sustainable future for the very survival of humanity. This understanding is given in the world of ideas at first, something which may promote the necessary mobilization and disposition for the action generated by the change of values and attitudes, giving rise to sustainable behaviors (LEISEROWITZ et al., 2006).

Considering this new configuration of SD dimensions and the theoretical elements discussed so far, it is possible to establish the following conceptual framework for non-material components:

- (1) constituents of the symbolic space of the cultural macro dimension;
- (2) intangible elements, such as beliefs, principles, values, knowledge, attitudes, and opinions;
- (3) evaluation depends, preferably, on the opinion expressed by the individuals;
- (4) indicators of non-material themes will be more adequately evaluated with underlying variablesⁱⁱ (GHIGLIONE and MATALON, 1993; CIW, 2012).

Figure 1. Reconfiguring the dimensions of sustainability.

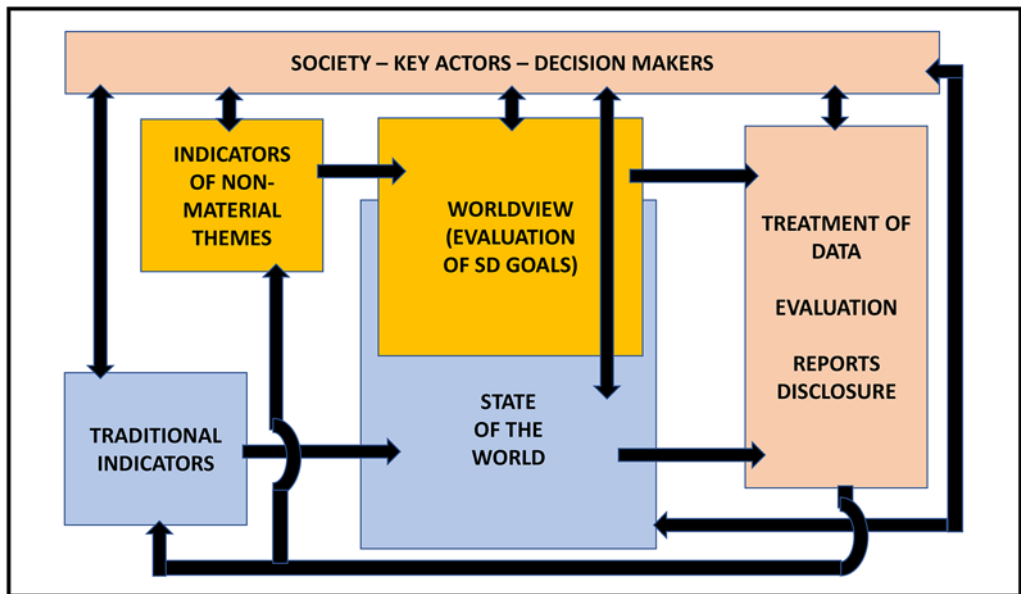


Thus, within the context of this methodological approach, we believe the indicators of non-material themes of sustainability will assess the worldview of individuals (HEDLUND-DE WITT, 2012; HORLINGS, 2015), configured as it is by values, beliefs, attitudes and opinions that are brought about by – and may well differ from – the cultural characteristics of their particular social group. These elements can and should be discussed with the aim of constructing SD (RESED, 2007; HEDLUND-DE WITT, 2012), and appropriately selected indicators could eventually assess how attuned individuals and groups are with SD values and objectives.

The graphical scheme presented in Figure 2 distinguishes the role of non-material indicators from those of traditional indicators, usually used in sustainability indicator systems. They are also related to the actors in the development process: society as a whole (considering the different dimensions: local, regional, national and global) and key actors, including decision makers. Traditional indicators and indicators of non-material themes assess the state of the world and the worldview, respectively, regarding sustainability, and these elements give the set of actors a feedback in the process.

These actors should reassess the objectives of the SD in the light of the information provided by the evaluation process, and the objectives, in turn, guide the process of promoting sustainable development.

Figure 2. Flowchart of the sustainable development assessment process, with a distinction between the functions of indicators of non-material themes and traditional indicators.



5.2. Preliminary Selection of Non-Material Issues

Table 2 presents 29 non-material themes, identified in the literature review, in line with the conceptual framework presented in the previous item. As an additional element of selection and adequacy of terms, a correlation was made with principles and values attuned with sustainability, related in international documents, as listed in the second column of Table 2. The third column presents the preliminary selection of themes after repetitions were deleted, as well as terms of very close meaning referring to the same topic. Our selection of terms aimed at being in accordance with the terms used in the international documents. This resulted in a preliminary selection of 15 topics – listed in the third column of Table 2, and submitted to the appreciation of the key actors.

Table 2. Preliminary selection of non-material themes, considering literature review and SD values identified in international documents

Non-material themes selected in literature review (sources in parentheses)	SD values identified in international documents (sources at the end of the table)	Preliminary selection of non-material themes - used in interviews with key actors
<ul style="list-style-type: none"> - Equity in Justice (SUSTAINABLE SEATTLE, 1998) - Political Participation; Gender; Discrimination (OLIVEIRA <i>et al.</i>, 2010) - Political Freedom (URA <i>et al.</i>, 2012) - Democratic Engagement (CIW, 2012) - Civic Engagement (OECD, 2013) - Freedom (HELLIWELL <i>et al.</i>, 2013) - Good Governance (URA <i>et al.</i>, 2012) - Trust in the Authorities (CIW, 2012) - Corruption (HELLIWELL <i>et al.</i>, 2013) 	<p><u>Our Creative Diversity</u>¹</p> <ul style="list-style-type: none"> - Democracy - Human Rights and Responsibilities - Intergenerational equity - Protection of Minorities <p><u>Millennium Declaration</u>²</p> <ul style="list-style-type: none"> - Freedom - Equality - Shared Responsibility - Tolerance <p><u>Earth Charter</u>³</p> <ul style="list-style-type: none"> - Human Rights - Democracy - Freedom - Justice - Discrimination - Gender Equity - Corruption <p><u>Global Values</u>⁴</p> <ul style="list-style-type: none"> - Justice - Freedom - Equality - Responsibility 	<ul style="list-style-type: none"> - HUMAN RIGHTS - JUSTICE - CITIZENSHIP - TRUST IN RULERS - CORRUPTION
<ul style="list-style-type: none"> - Safety - Fear of Crime or Perception of Safety (GUERNSEY, 2009) - Feeling of Safety (CIW, 2012) - Perceived Security (OECD, 2013) 	<p><u>Our Creative Diversity</u>¹</p> <ul style="list-style-type: none"> - Peaceful Conflict Resolution and Fair Negotiation <p><u>Earth Charter</u>³</p> <ul style="list-style-type: none"> - Nonviolence and peace <p><u>Global Values</u>⁴</p> <ul style="list-style-type: none"> - Safety; - Peace; - Protection 	<ul style="list-style-type: none"> - VIOLENCE
<ul style="list-style-type: none"> - Inequality (NEF, 2012) 	<p><u>Earth Charter</u>³</p> <ul style="list-style-type: none"> - Economic activities promote SD - Economic Justice 	<ul style="list-style-type: none"> - INEQUALITY - ENTREPRENEURSHIP - EMPLOYMENT OPPORTUNITIES
<ul style="list-style-type: none"> - Environmental awareness and attitudes (KELLY E MOLES, 2002) - Understanding and mobilization of individuals for the conservation action of nature (GUERNSEY, 2009) 	<p><u>Millennium Declaration</u>²</p> <ul style="list-style-type: none"> - Respect for Nature <p><u>Earth Charter</u>³</p> <ul style="list-style-type: none"> - Respect for the community of life - Ecological integrity - Sustainable production and consumption patterns <p><u>Global Values</u>⁴</p> <ul style="list-style-type: none"> - Responsibility - Protection - Diversity 	<ul style="list-style-type: none"> - RELATIONSHIP WITH NATURE - VALORIZATION OF ENVIRONMENTAL HERITAGE - ENGAGEMENT WITH ENVIRONMENTAL CAUSE - RESPONSIBLE CONSUMPTION

<ul style="list-style-type: none"> - Volunteering (SUSTAINABLE SEATTLE, 1998) - Connections network; Trusting relationships (ANDRADE, 2007) - Social participation (OLIVEIRA <i>et al.</i>, 2010) - Community vitality; Trust in others (CIW, 2012) - Vitality of the community; Sociocultural participation; Community relations (URA <i>et al.</i>, 2012) - Community: Support Network (OECD, 2013) - Social support; Generosity (HELLIWELL <i>et al.</i>, 2013) 	<ul style="list-style-type: none"> <u>Our Creative Diversity</u>¹ - Participation of civil society <u>Millennium Declaration</u>² - Solidarity <u>Earth Charter</u>³ - Participation - Solidarity - Dignity - Respect - Tolerance - Moral and spiritual education <u>Global Values</u>⁴ - Participation - Cooperation - Dignity - Respect - Dialogue - Integration - Tolerance - Solidarity 	<ul style="list-style-type: none"> - SOCIAL PARTICIPATION - SOLIDARITY
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Sources: ¹Our Creative Diversity (UNESCO, 1996); ²Declaração do Milênio (ONU, 2000); ³Carta da Terra (BOFF, 2012); ⁴ Global Values (BURFORD *et al.*, 2013).

6. Evaluation of SD and Non-Material Themes by Key Actors

6.1. SD Framework

The 34 interviewees stated that they had knowledge of SD and were willing to conceptualize it. Through the content analysis of the answers, it was possible to identify three aspects of their understanding of SD: (i) the persistence of the predominance of the economic dimension, taken as a synonym of development; (ii) the preferential linkage of the term sustainability with the environmental dimension; and (iii) the weak diffusion of the intergenerational commitment implicit in the SD concept. These findings are similar to those found by Bond and Morrison-Saunders (2011).

Among the media, through which the interviewees claimed to gather information about SD, the most cited were TV, the written press and lectures. The totality of the interviewees agreed with the application of the concept, but most understand that the Alagoan society is not mobilized for its implementation. On the other hand, everyone agreed on the importance of applying the concept in their organizations, although stating that institutional initiatives in this regard are still insufficient.

This first part of the questionnaire allowed for a first outline of the topics by the interviewees, followed by an evaluation of non-material themes.

6.2. Non-Material Themes

Respondents were asked to rate the non-material themes previously selected and the results obtained are presented in Table 3. It can be verified that all subjects valued

highly the non-material themes. However, they made complementary observations to the proposed non-material themes that, together with the elements of correlation with the SDG, allowed us to adjust the originally proposed listing. The adjustments were as follows: (i) the observation that environmental themes were intertwined and somewhat redundant led to the reducing of the three themes initially proposed to only one, “Respect for Nature;” (ii) the proximity of the themes “employment opportunity” and “entrepreneurship” was another point observed, leading to their aggregation into “opportunities for economic insertion;” (iii) regarding the themes “citizenship” and “human rights,” it was observed that those were very broad issues and an evaluation would be difficult. Therefore, it was proposed that we should rather use the themes “responsibility towards sustainability” and “freedom,” respectively; (iv) in the case of “inequality,” “corruption” and “violence,” the suggestions led us to adopt positive formulations: “equality,” “integrity” and “safety,” in order to highlight the characteristics of the society to be built. Five themes retained their original denominations – “social participation,” “justice,” “solidarity,” “responsible consumption,” and “trust in governors.” Four themes, which were not included in the preliminary list, were incorporated – based on suggestions put forward by the interviewees: “respect for gender,” “philosophy of life or religion,” “responsiveness to change,” and “happiness.”

Table 3. Final list of non-material themes, considering the suggestions of the key actors interviewed and correlation with the SDG (ONU, 2015)

Preliminarily proposed themes ^{N.B.}	Correlation with SD Goals	Final List of Non-Material Themes
Social participation (9)	SDG 16: Peace, Justice and Effective Institutions SDG 17: Partnerships for the Goals	Social participation
Valorization of Environmental Heritage (9) Engagement with environmental cause (8) Relation with nature (8)	SDG 2: Zero Hunger and Sustainable Agriculture SDG 13: Action against Global Climate Change SDG 14: Life below Water SDG 15: Life on Land	Respect for nature <i>Note: all three themes are composed of this unique essay; adopted by Rio+20 and by the Millennium Declaration</i>
Citizenship (9)	<i>Implicit in all goals, and can be highlighted</i> SDG 4: Quality Education	Responsibility with sustainability <i>Note: focus, due to the amplitude of the previous essay.</i>
Justice (9)	SDG 16: Peace, Justice and Effective Institutions	Justice
Human Rights (9)	SDG 1: No Poverty SDG 16: Peace, Justice and Effective Institutions	Freedom <i>Note: focus, due to the amplitude of the previous essay.</i>
Inequality (9)	SDG 10: Reduced Inequalities	Equality <i>Note: option by positive formulation.</i>
Employment Opportunities (8) Entrepreneurship	SDG 8: Decent work and Economic Growth	Opportunities for Economic Insertion <i>Note: entrepreneurship is contemplated in this denomination.</i>
Solidarity (8)	SDG 16: Peace, Justice and Effective Institutions	Solidarity
Corruption (8)	SDG 16: Peace, Justice and Effective Institutions	Integrity <i>Note: option by positive formulation.</i>

Violence (8)	SDG 11: Sustainable Cities and Communities SDG 16: Peace, Justice and Effective Institutions	Safety <i>Note: option by positive formulation.</i>
Responsible Consumption (8)	SDG 6: Clean Water and Sanitation SDG 7: Affordable and Sustainable Energy SDG 12: Responsible Consumption and Production	Responsible Consumption
Trust in Rulers (8)	SDG 16: Peace, Justice and Effective Institutions	Trust in Rulers
<i>There was no preliminary theme. The themes, listed in the last column, were suggested by the key actors interviewed</i>	SDG 5: Gender Equality	Respect for Gender
	SDG 3: Good Health and Well-being <i>Note: based on the assumption that the adoption of this or that philosophy of life or religion aims at well-being.</i>	Philosophy of Life or Religion
	<i>Implicit in all goals, and can be highlighted</i> SDG 9: Industry, Innovation and Infrastructure	Responsiveness to Change
	SDG 3: Good Health and Well-being	Happiness

N.B. – The numbers in parentheses indicate the valuation (average value from 0 to 10) given to the themes by the interviewees.

The final list with 16 themes (after deletion of three themes from the preliminary list and addition of four themes as suggested by the key actors) is presented in Table 3, which also shows a correlation between the themes and the SDG (UN, 2015), in order to highlight the importance of harmonizing themes with perspectives for the future, which should depict a more sustainable reality than the one we are living today.

Several of the non-material themes that make up the final listings in Table 3 have been the object of attention by the international academic community. Boff (2012), in defending a new course for development, spoke of the force of new values, such as generosity, cooperation, solidarity, and compassion. Tapia-Fonllem *et al.* (2013) found that although sustainable behavior explicitly incorporates the attention to human needs and to environmental preservation, evaluations have very seldom considered the need of protecting the social environment. Here the variables altruism (linked to solidarity, a constant in the listings presented in this study) and equality are essential elements. Moreover, Harder *et al.* (2014) wrote that care and respect for community life, strengthening, integrity, justice, trust and unity in diversity should be listed. Sen (2013), dealing with SD, suggests including the fundamental importance of human freedom, which would constitute not only a means for achieving sustainability, but one of its purposes.

As for the theme “philosophy of life or religion,” Diener and Seligman (2004) verified their importance for the well-being of people, while Notary (2005) advocates cultural diversity and values, as well as philosophical and religious diversity. All these themes refer to a necessary re-qualification of the notions of development, which ought to emphasize the importance of “responsiveness to change,” as well as emphasize the role of cultural aspects and the crucial role of worldview and human values in any one change of direction (HEDLUND -DE WITT, 2012).

The preliminary list of non-material themes also counted on the contribution of well-being indexes (CIW, 2012, NEF, 2012, OECD, 2013), reinforcing therefore the possibility of deepening the interfaces between sustainability assessments and well-being, as already proposed by other authors – in spite of both processes having different final goals.

With regard to SDG, Table 3 shows that the non-material themes selected are relevant to one or more goals. Thus, indicators that may be developed for these themes could be useful in monitoring the SDG.

7. Conclusions

Several authors have recorded the need to incorporate non-material components in the evaluation of sustainability, including subjective aspects, attitudes, and cultural and individual values, among others. The paucity of such themes, that should be characterized and used in sustainability assessments, was confirmed in the literature review, since few initiatives present non-material themes of sustainability, highlighting the relevance of this study as it was developed – through the presentation of a conceptual model for integrating non-material components in the assessment of sustainability.

Both the literature review on SD indicators and the discussion of the role of culture, together with the conceptual model as designed, have led to the proposition of a reconfiguration of the dimensions of sustainability, which were then composed of two macro dimensions: environmental *and* cultural. With this reconfiguration, it was possible to highlight the non-material components of sustainability as intangible elements, constituents of the symbolic space of the cultural macro dimension. The involvement of the key actors allowed us to infer the adequacy and general acceptance of the conceptual model and its non-material themes. The actors contributed with suggestions and adjustments that made it possible to reconsider and improve the final proposition, comprising sixteen priority non-material themes, in which context indicators can be identified and subsequently correlated.

In addition, the interviews carried out allowed for an outline of the perception of the key actors on the SD theme. The fragility of the understanding of the intergenerational commitment was verified, as well as their understanding of the term sustainability, strongly linked to the environmental dimension and the traditional and prevailing link between development and the economic dimension.

As a suggestion for future developments, the present study points to the possibility of developing a sustainability assessment system in which indicators of traditional themes and non-material themes are generated through a participatory process that actively involves local and regional communities. In addition, such sustainability assessment systems may allow for exploring the association between traditional indicators and the communities' views, desires and perceptions.

Translated from Brazilian Portuguese by Márlon Coí Rojas and Beatriz Viégas-Faria.

Notes

- i Any group or person that can influence, by their action, the process of construction of sustainability; adapted from the *stakeholder* concept (Freeman, 1984).
- ii The underlying variables contradict these observables, since they depend on the opinion expressed by the individuals. The proposed conceptual model makes it possible to work on indicators of non-material themes with the use of underlying variables.

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Original Article

A CONCEPTUAL MODEL FOR INTEGRATING NON-MATERIAL COMPONENTS IN SUSTAINABILITY ASSESSMENT

Abstract: Researchers have adopted a concept for sustainable development (SD) that has given rise to different systems of sustainability assessment, systems to which several authors have suggested non-material components should be incorporated. This work aims at developing a conceptual model to integrate these components into systems of sustainability assessment. A review of the literature made it possible to design a conceptual model for the non-material components of sustainability and to identify associated themes. This proposal was analyzed at both regional and local levels through semi-structured interviews addressed to stakeholders from Alagoas and Maceió, Brazil. The proposal was considered by the actors involved (interviewees) to be generally adequate, and suggestions for improvement and adjustment were put forward by them, to facilitate both the understanding and practical application of the model. The analysis of the respondents' perceptions allowed us to identify the preferred link between the term sustainability and the environmental dimension, as well as their restricted reference to intergenerational commitment.

Keywords: non-material components; sustainability; indicators; intangible elements; stakeholders.

Resumo: A adoção do conceito de desenvolvimento sustentável (DS) originou inúmeros sistemas de avaliação da sustentabilidade, para os quais diversos autores têm sugerido a incorporação de componentes não materiais. O presente trabalho teve como objetivo principal o desenvolvimento de um modelo conceitual para a futura integração desses componentes em sistemas de avaliação da sustentabilidade. A revisão da literatura possibilitou construir um modelo conceitual para os componentes não materiais da sustentabilidade e identificar temas associados. Essa proposta foi analisada em escala local-regional, através de entrevistas semiestruturadas dirigidas a atores-chave no estado de Alagoas e na cidade de Maceió, Brasil. A proposta foi considerada pelos atores envolvidos como genericamente adequada, e foram apresentadas propostas de melhoria e ajuste, para facilitar compreensão e aplicação prática. A análise da percepção dos entrevistados permitiu identificar o vínculo preferencial do termo sustentabilidade com a dimensão ambiental e a restrita referência ao compromisso intergeracional.

Palavras-chave: Componentes não materiais; Sustentabilidade; Indicadores; Elementos intangíveis; Atores-chave.

Resumen: La adopción del concepto de desarrollo sostenible (DS) originó numerosos sistemas de evaluación de la sostenibilidad, a los cuales diversos autores han sugerido la incorporación de componentes no materiales. El presente trabajo tuvo como objetivo principal el desarrollo de un modelo conceptual para la futura integración de estos componentes en sistemas de evaluación de la sostenibilidad. La revisión de la literatura posibilitó construir un modelo conceptual para los componentes no materiales de la sostenibilidad e identificar temas asociados. Esta propuesta fue analizada a escala local-regional, a través de entrevistas semiestructuradas dirigidas a actores clave de Alagoas y Maceió, Brasil. La propuesta fue considerada por los actores involucrados como genéricamente adecuada, habiendo sido presentadas propuestas de mejora, para facilitar la comprensión y aplicación práctica. El análisis de la percepción de los entrevistados, permitió identificar el vínculo preferencial del término sostenibilidad a la dimensión ambiental y la restringida referencia al compromiso intergeneracional.

Palabras clave: componentes no materiales; sostenibilidad; indicadores; elementos intangibles; actores clave.
