

Using Qualitative Indicators of Sustainability in Iberoamerican Environmental Research¹

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Abstract: In this article we include a revision of alternative approaches developed throughout the two last decades in Iberoamerican environmental research and possible implications for the evaluation of sustainable development with qualitative indicators. The standardized use in diplomatic reports and international studies reveals their value and acceptance in communities of experts in different contexts. It is stated that international alliances between countries have brought about important changes, although the new discourses on sustainability leave the responsibility, the control and the design of indicators in a state of confusion.

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"Friend, we had the time
so our thirst could be satisfied,
the ancestral longing
to enumerate things
and total them,
reducing them
until rendering them dust,
dunes of numbers.
We are papering
the world
with figures and ciphers,
but
the things existed
nonetheless, fleeing
all tallies,
becoming dehydrated
by such quantities, leaving
their fragrance and memories,
and the empty numbers remained."

"Ode to the Numbers" by Pablo NERUDA

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1. Introduction

In the field of economics, the 1990s were witness to a debate on the models of integration to be used for externalities such as the planet's water, air, land, forests and natural resources. This discussion has spread beyond the boundaries of Economics, bringing up underlying doubts about the methods employed to quantify production costs (SPANGENBERG, 2004; YEW-KWANG, 2004). This situation, in turn, reveals the need to revise current sustainability models and has placed much greater emphasis on qualitative indicators that redirect the attention of economists, politicians, geographers, educators, sociologists, psychologists and environmentalists toward non-quantifiable qualities of the environment. [1]

The most memorable slogan belonging to this stage is an aporia that has gone down in the annals of environmentalism through the question, what is a tree's shade worth? The influence exerted by Latin America in this new conceptual debate has been a key factor in the use of alternative indicators such as the "human development index," the "dignity line" or the "well-being index." It is also generating a highly dynamic conceptual field in the designing of more understanding and contextualized sustainability models that supply integrative responses to the complexity of the demands regarding environmental questions (MOURA-CARVALHO, 2002; LARRAIN, 2002; ÅKERMAN, 2005; GOUGH, 2005; MARTÍNEZ-ALIER, 2006). [2]

KLINSBERG (2005, p.412) suggests that we should re-examine, redesign and enlarge all the conceptual basics and methodological instruments that refer to the economy of development and which are commonly accepted as standards for international comparison, in order to plan the next series of reforms. The conventional criteria most commonly used—based on annual growth rates, per capita gross product, inflation rates, etc.—seemed ideal for measuring progress, as well as for modeling changes and evaluating differences. However, they have proved to be weak and inefficient in terms of laying the foundations for an economy that is truly equitable with regard to the less-favored sectors of the population; an economy that is understanding toward the excluded territories and, at the same time, is integrating and respectful of the natural resources and the new ethics of sustainability. According to the Nobel Prize-winner for Economics, STIGLITZ (2002), Latin America appears in the new train of thought as a paradigmatic example of an area of the planet that has been ignored by the conventional hegemonic forms of approaching development and measuring it. The fact that the region's results contradict this standpoint only goes to underline the models' inability to reflect realities other than those of the dominant standards. The discourse that revolves around sustainability and the integration of natural resources and territorial values has played an important role in re-conceptualizing the field (FERNÁNDEZ, 2003; SINGER, 2003). [3]

The many songs penned 50 years ago by Pablo NERUDA on the natural elements illustrate, with literary precision, the conceptual debate in economics referring to his odes to air, energy, light, sea, ... "No, air/ don't sell yourself,/ don't let them put you in pipes,/ or in cases,/ don't let them put you in boxes,/ don't let

them constrict you,/ let them not make you into tablets,/or bottle you up,/ be careful!" [4]

2. Environmental Crisis, Sustainability and Diplomatic Speeches

Concern for the environment and societies' move toward a *sustainable development* is, nowadays, a priority on all international political agendas. It has gradually gained support with differing degrees of commitment on an international level. The establishing of specific worldwide agreements on matters such as biodiversity, climate change, forests, water, land, environmental education, sustainable development ... and the passing of regulatory norms and environmental laws are a large step forward in the search for models of interaction with, and respectful use of, the resources around us. These initiatives are contributing toward greater world convergence in socio-environmental planning instruments. [5]

The basis of the organization, production and consumption of the First World nations bears a never-ending list of contradictions and has given rise to the concept of environmental crisis. This covers not only questions concerning the exhausting of resources, greenhouse gases, sea pollution and general imbalance in ecosystems, but also others regarding economic differences, poverty, unequal distribution of resources, armed conflict, equity and social justice. In spite of this, the initiative implemented by the UNESCO in the Millennium Objectives Declaration (MOD) and the Decade of Education for Sustainable Development (DESD) both form new instruments of international convergence. [6]

This paper makes a critical evaluation of these concerns within the frame of the objectives, fundamentals, challenges and opportunities established in these initiatives through analyzing the principles, goals and indicators included in the texts. We also defend the need to evaluate the challenges and opportunities, as well as to take a critical look at the expectations posed by these initiatives in different institutional scenarios and social contexts. Particular attention is given to the implications and consequences that are expected—depending on the type of indicators and latent models—with regard to the viability of achieving tangible short-, mid- and long-term results in the search for shared solutions for our environmental problems. [7]

Evaluating the scope of these initiatives using adequate control instruments is one of the concerns most often voiced in international forums and among communities of both government and non-government experts on environment and sustainable development (BROWN, FLAVIN & POSTEL, 2002; SATO, GAUTHIER & PARIGIPE, 2005; TILBURY & COOKE, 2005; SAUVÉ, 2005). [8]

Sustainable development, considered by the UN as one of eight great challenges for humanity, is included in its Report on The Millennium Objectives, where the organization itself warns that the good intentions reflected in the principle of sustainable development are insufficient to ensure the protection of the environment (RAMONET, 1997; RENNER, 2005; RIECHMANN, 2000; UNDP, 2005):

- The loss of species and the destruction of habitats continues;
- in the past decade, an area of land the size of Venezuela has been destroyed;
- 19 million square meters (13%) of the Earth's surface are protected, but how it is managed does not always comply with the objectives of conservation;
- plant and animal species continue to disappear at an alarming unprecedented rate due to the action of man;
- to this we must add the effect of climate change, in which the majority of greenhouse gases are produced by the industrialized nations;
- recovering the ozone layer is one of the best examples to prove that political will stands for a great deal when it comes to promoting environmental questions;
- the urban world also suffers from population pressures, caused by a massive exodus from rural regions amounting to over 100 million people a year;
- over 1 billion people worldwide live in shacks and almost three times that number have no access to the most basic levels of salubrity;
- the effects of globalization are a threat to the survival of local communities, above all minorities and indigenous peoples, as well as to the forests and habitats these communities depend on. The new models of world trade and production are giving rise to new problems of migration, settlement, infrastructure and exhausting of resources. [9]

Although there is reason to show certain optimism when observing certain trends in the evolution of common indicators, the report gives a rather pessimistic view when evaluating the great responsibility political leaders have in reaching joint decisions to co-operate in these matters. The arguments presented by the UN Secretary General, Kofi ANNAN (2006), point out the risk we are running that the poorest nations will be unable to comply with many of the objectives proposed, and he goes on to state that:

"If we let this opportunity go by, millions of human lives that could have been saved will be lost, many freedoms that could have been achieved will be denied and we will live in a much more dangerous and unstable world ... This present generation is the first to have the resources and the technology to realize for all of us the right to development and to shelter the whole human race from need" (p.32). [10]

Alongside the more optimistic texts, the reports that the UN itself regularly publishes on the evolution of generic indicators of Human Development are quite critical toward all the universal declarations and the accomplishment of the objectives included therein:

"Achieving sustainable poverty reduction requires dynamic processes through which poor countries and poor people can produce their way out of extreme deprivation. But in our highly unequal world greater equity would provide a powerful catalyst for poverty reduction and progress towards the MDGs ... The picture is not encouraging. If current trends continue, there will be large gaps between MDG goals and

outcomes. Those gaps can be expressed in statistics, but behind the statistics are the lives and hopes of ordinary people. Human costs can never be captured by numbers alone ... Human development gaps within countries are as stark as the gaps between countries. These gaps reflect unequal opportunity—people held back because of their gender, group identity, wealth or location. Such inequalities are unjust. They are also economically wasteful and socially destabilizing" (UNDP, 2005, pp.2-3). [11]

Much of the diplomatic discourse attempts to explain the difference between the progress made in human development and the ambitions set down in the Millennium Declaration. However, it would be wrong to distort a very simple truth: the promises made to the poorer nations of the planet are not being kept. If, today, the necessary investments were made, and policies implemented, to reach the MDO, we would still be in time to honor the Millennium Declaration promise. But there is little time left ... This generation of world leaders may, quite well, go down in History as having stood by while the MDO failed. Instead of "taking the bull by the horns," the UN summit could just turn into another round of high-flown declarations by the richer nations, whose offer would consist of yet more words and very little action. Such a result would have very clear consequences for the poorer nations, but, alongside that, in a world of increasingly interlinked threats and opportunities, it would also place world security, peace and prosperity at risk. [12]

3. Opportunities for the Construction and Development of Comprehensive Integrative Indicator Systems

The UN Conference for Environment and Development (1992), held in Rio de Janeiro, Brazil, did much to make the term Sustainable Development more widely known, reaffirming its interest as a concept and its need as a strategic planning instrument to solve present-day environmental problems. In spite of being somewhat ambiguous, the term has been accepted by the international community as a motor both for reflection and for change toward models that lend more respect to the planet's natural resources. The BRUNDTLAND Report (1987, p.3) understands sustainable development to be: "a development that satisfies the needs of the present generation without compromising the capacity of future generations to satisfy their own needs." [13]

The role education has to play in this process of change is a major element of the UNESCO's outline for the Decade of Education for Sustainable Development (2005-2014), a historical period during which to promote and take further steps in this area:

"The UN Decade for education toward sustainable development aims to promote learning as the basis for a society that is more viable for Humanity and to integrate sustainable development within the education system at all levels. The Decade will, likewise, intensify international co-operation in favour of designing and sharing innovative educational practices, policies and programmes for sustainable development" (UNESCO, 2005, p.30). [14]

The following objectives are outlined (UNESCO, 2005, p.30):

- "1. give an enhanced profile to the central role of education and learning in the common pursuit of sustainable development;
2. facilitate links and networking, exchange and interaction among stakeholders in ESD;
3. provide a space and opportunity for refining and promoting the vision of, and transition to sustainable development—through all forms of learning and public awareness;
4. foster increased quality of teaching and learning in education for sustainable development;
5. develop strategies at every level to strengthen capacity in ESD." [15]

The change in models requires different actions and instruments that will transform our attitudes, our lifestyles, our models of social participation and our concepts on social instruments and ways of making policy (BERGER & LUCKMANN, 1998). The challenge contemporary research has when tackling these questions is to take on broad diagnoses that will allow the short-, medium- and long-term progress of the actions to be pinpointed, along with the evaluation of their results, using the appropriate instruments. Environmental literacy actions do not have to be strictly individual, nor limited to intervention in schools. Sustainability's frameworks of reference require intervention from the coordinates of the society of knowledge and in the multiplicity of professional, socio-political, business, associative and non-government contexts of each territory. [16]

These reports represent another of the many examples of the challenge facing the governments of the wealthy nations in this decade and those to come, within the frame of the multiple global alliances for a balanced development based on convincing evidence and proof. No form of international co-operation can compensate for those actions that governments fail to implement by not prioritizing development on a human scale, through not respecting human rights, through not taking charge of inequalities and through not putting an end to corruption. The international alliances established in this scope have managed to set up the scenarios for change, but, alongside this, the new discourse on sustainability has placed the responsibility in no-man's-land. For this reason, some authors are particularly belligerent and skeptical with regard to these questions, stating that the concept of sustainable development is both ambiguous and hard to put into practice:

"Whoever expresses happiness at economic growth is a hypocrite, both privately and publicly, since nobody with any sense can ignore the fact that the economic growth indicators are also those of a collective self-destruction ... The new invented term of sustainable development...contains, in words, the very contradiction that has to be solved; that is, development (economic growth) and sustainability (saving Nature)...While this contradiction remains unsolvable, in the public arena we are up against forms of language referring to a contaminated common asset" (BECK & BECKGERSHEIM, 2003, p.337). [17]

This situation has led certain groups to strongly criticize the vagueness and inoperativeness of the term sustainable development. There is a risk that the discourse of Sustainable Development be the perfect excuse for watering down the models of unbridled growth and hiding inequalities behind generic promises of unreal change. The term sustainability first came to light in the institutional debates of the *Rio Summit* and legitimated its status in *Johannesburg* as an internal strategy for institutionalizing ambiguity and calming social protest movements. According to CALVO and GUTIÉRREZ (2006, p.67), the discourse of sustainable development is one that has quite successfully helped to dilute and stump all the work of sensitization, consciousness-raising and denouncement that the social, ecology and pro-environment movements—joined more recently by the environmental experts—had been silently building up over the past decades. If the right measures are not adopted, all effort will have been in vain, the result of the uselessness inherent in the constantly-changing rhetoric of the concepts:

"Those two words 'sustainable development' are a contradiction in terms, a manipulation by the 'developmentalists', of those in favour of economic growth, who aim to make us believe that it is compatible with ecological sustainability, who subordinate the demands of the economy to those of the natural ecosystems and generalized human development" (NAREDO, 1996, p.132). [18]

Just one year into the UNESCO's Decade for Sustainability, criticism has begun and the alarm bells are ringing. The string of failures revealed in the Johannesburg Summit with regard to the fulfillment of the objectives established in Rio-92 ten years earlier can only serve to generate legitimate doubts about the effectiveness of such a mammoth task. Particular emphasis has been placed on the confusion and uncertainty raised by this event, in contrast to the sustained efforts of the expert environmental bodies (GUTIÉRREZ & POZO, 2005, p.297):

"The Decade is a long and complex initiative. From the outset, it should have sufficient means to ensure its follow-up and evaluation. Without these, it will be impossible to know whether positive results have been generated and what they are. One of the main follow-up and evaluation tasks will be to determine appropriate, pertinent and operative indicators on all levels: local, regional, national and international...The follow-up and evaluation results will be used to modify the focus of the programmes and activities " (UNESCO, 2005, p.51). [19]

Faced with such a docile appearance of semantic neutrality, we can see how the polysemic use of the term sustainable development allows diametrically opposed meanings. There are those who use it as *per capita economic growth* in terms of GDP (Gross Domestic Product), with no concern for the fact that economic growth exploits social and natural capital to produce more monetary capital. And then there are others who identify development as a synonym of more rights and resources for the poor and recommend prioritizing the search for the common good based on the social and natural patrimony (SACHS, 2002, p.14). By linking the idea of development with that of sustainability, the limits and restrictions of the exploitation of resources are pushed back and markets are opened to free use in favor of economic growth. This has been one of the main criticisms voiced

against the Rio texts, in which pressure from the economic sectors forces us to accept that economic growth be assumed as a natural imperative, which, from the outset, is seen as a solution and not as part of the problem. In this way, the idea that all efforts linked to development need to use the instruments of growth is legitimated (SATO et al., 2005; NAREDO, 2006; MARTÍNEZ-ALIER, 2006). [20]

Besides these conceptual aspects, which doubtlessly influence decisions regarding the type of indicators to be used, of unquestionable urgency is the construction and introduction of different indicator systems that would help to clarify and pinpoint any social and environmental progress or steps forward made. Designing both generic and specific indicator systems is an important challenge for research in the field of Social Sciences: "Just as a student's grades report reflects his or her performance in each subject throughout the school year, governments and citizens need indicators to show their progress in reaching the objectives they have established as a society" (BROWN, 2002, p.117). [21]

Latin America, in particular, stands as a prototype of region ill-served by the conventional approaches used to explain development linked to a type of hermetic indicators whose use has, time and time again, been questioned (KLIKSBURG 2005, p.412). [22]

4. Strengthening the Use of a New Generation of Sustainability Indicator Systems: A Contemporary Challenge for Social Sciences Research in Latin America

Formulating proposals to evaluate the economic assets of the so-called "externalities," or of the natural assets, such as a tree's shade, a river's water, the aesthetic quality of a landscape or progress towards conditions allows us to live with dignity. From a moral standpoint, this is a dilemma similar to the question posed by the playwright and man of letters, Harold PINTER (2005, p.2), in his acceptance speech as winner of the Nobel Prize for Literature. He remarked on how stupid it was, statistically speaking, to attempt to legally establish how much a life is worth: "How many people do you have to kill in order to be considered a mass murderer or a war criminal?" [23]

There are questions in which quality invalidates the slightest option of quantification in the reply and rational argumentation. The previous question, according to Günter GRASS (2006, p.1), cannot be brushed aside as mere rhetoric, since it refers to the accredited and hypocritical Western numerical behavior that always tends to count up the victims, *What do the statistics not show?, Can a war be narrated?* [24]

BECK (1998) argues in the same line of thought in favor of quality as a characteristic that cannot be replaced by quantity when he discusses the topic of risk assessment and compensation for damage to the affected people. He explains the cultural dilemmas and social conventions of when we become victims after an environmental, natural or artificial disaster. Or, in such case, when trying to set up bureaucratic and administrative procedures to make

decisions on compensation and indemnity for damage caused by accidents or exposure to risks of all kind:

"Model-based experiments and calculations cannot demonstrate what human beings should be satisfied with, and neither can risk calculations be established under the sole dominion of technical bureaucracies. Because they pre-suppose what they should generate: cultural acceptance. Dangers are submitted to historical and cultural perceptions and evaluations that fluctuate according to the country, the group or the moment in time. Risks are social constructions that feed off technical norms and representations. An acceptable risk is, when you come down to it, an accepted risk. And it may be that what, today, is unacceptable, tomorrow will be daily routine, while what now seems everyday will fill us with fear and concern when new information comes to light ... nobody now has privileged access to the sole correct calculation, since all risks are laden with interests and multiply like rabbits as far as methods of calculation are concerned. The rationale of the aims lacks over-extension, insecurity and value-dependency; the staging of this rationale becomes a comic opera, because all the players, with ever more meticulous methods, produce increasingly contradictory results" (BECK, 1998, pp.156-162). [25]

The, so far, internationally-used first-generation indicators ignore the quality factor from the outset. GDP, one of the most commonly-used benchmarks, links development with economic growth, and this, in turn, with an increase in the goods and services produced, turning social development into a consequence of economic development (COSTA, 2000; LARRAIN, 2002; KLIKSBURG, 2005). This index measures the total value of an economy's goods and services overall, and is the basis for classifying nations from richest to poorest. It is almost universally recognized that a rising GDP indicates a healthier nation in which, as a consequence, the economy of its inhabitants is also improving. [26]

A qualitative look at the accounting system and the algorithms used to calculate GDP reveals considerable errors and intrinsic weaknesses in the very concept of the index as regards its ability to evaluate long-term social, cultural and environmental progress. The current weakness of this index is that it does not take into account natural assets when calculating the algorithm. It is based on a concept in which the consumption of natural assets and resources, and the exploitation of nature's wealth, are unlimited; their consumption is never-ending and their use does not lead to deterioration or erosion. [27]

For this reason, they are not deducted from capital as is usually done with an industry's aging machinery or premises in a company's annual report:

"A closer look at the accounting system used to determine GDP reveals important drawbacks in its ability to evaluate long-term progress. The book-keeping of a nation's economy is done via its income account, which, once registered, give the GDP figure, and by its capital account, which registers changes in assets. When the timber factories, the textile mills, the office buildings and other such installations age and deteriorate, the corresponding sums are deducted from the capital accounts, to reflect the depreciation in their value. However, no such deduction is made for the

deterioration of forests, land, air purity or other natural assets. Natural wealth, of whichever kind, is gradually lost and is never recorded in national accounting books" (PEARCE et al., 1989). [28]

But the criticism launched against the GDP has even surpassed the limits of a politically-correct economy, since, on an extreme level, it often conjures up catastrophic situations with unending affective, psychological, social and economic consequences for individuals, families and towns or cities that fall victim to an accident, disaster or catastrophe caused by nuclear or petrochemical activity, climate, war or industry. Paradoxically, the economic compensations earmarked for such situations can even have a positive effect on this wonderful index, given that much of the funds budgeted for work required to clean up, rebuild, compensate...are registered as income, generating a false effect of bonanza, at the expense of biased accounts, which sometimes have perverse outcomes: "this indicator is an indiscriminate set that assigns a positive value to any economic activity, be it productive, unproductive or destructive" (BRACHO, 1989, p.35). [29]

This leads us to think, with a certain feeling of perplexity, that such dramatic events as the *New Orleans* disaster, the *Exxon Valdes* oil-tanker catastrophe or, more recently, the sinking of the *Prestige* in the Atlantic depths may have been beneficial from an economic point of view. Hidden among the national accounts of the countries involved, such events will have been recorded for economic posterity as a source of income in the annual results. The same can be said of the devastating forest fires that, year after year, affect Spain's woodlands and their ecosystems, or of the structural funds that will, in the near future, be marked down in the credit column of any of the new EU Member States. After all, such funds will, of course, be earmarked for fighting against climate change, greenhouse gases or air pollution. Not to mention the healthcare funds received to deal with injuries, respiratory problems, allergies and skin disorders caused by being exposed to situations of risk. [30]

This very same optimistic analysis could be made by Russia, Indonesia, Honduras or Nicaragua with regard to the international donations received as humanitarian funds to attend to the needy following the recent catastrophes they have had to bear:

"The battle to impose viewpoints, calculation methods and results, in which legal, cultural and economic standards clash ever-more openly, starts with an unwanted, but effective, secondary consequence, which makes the calculation formulae worthless and means that, all, secretly, have to revert to common-sense in order to act efficiently. This insecurity drinks from numerous sources in the calculation of risk. For this very reason, hypotheses regarding the consequences can be formulated in a whole range of directions and, then, once back at base, cause a cacophony of contradictory advice. How can an estimated calculation of consequences for health (without specifying the type of complaint: kidneys, lungs, allergy, etc., even though it must later be decided and pondered upon) be coupled with the economic consequences (without entering into the principles of economic calculation, which are

worlds apart)? Do they have to be multiplied, squared, or just the opposite? On the one hand, statistics; on the other, acceptance. Each side is independent of the other, attempting to swiftly follow the paths marked out, guided by an idiosyncratic logic. But both sides need each other. Without cultural standards, all calculation will be hollow; without science or experimental results, the cultural standpoint will get nowhere. The valid circles of actors may instrumentalize, ignore or exclude each other under the accusation of irrationality. That is precisely what shows their mutual dependence" (BECK, 1998, pp.156-162). [31]

Over the years, there have been many examples to prove that a nation can progressively increase its GDP while, at the same time, being ecologically bankrupt: Bolivia, Colombia, Ethiopia, Ghana, Indonesia, Kenya and Nigeria are all proof of this economic farce, whose structural survival grows thanks to an over-exploitation of primary resources such as timber, minerals, oil and farming produce. GOYTISOLO (1989) describes magnificently the phantom of this disproportionate abuse of natural resources in the absurdity of a real village, its innards sucked dry and devastated by the spoliation of its gold mines. At the same time, we should make a mid- and long-term analysis of the construction boom linked to the phenomenon of "sun, sand and sex" tourism, which flourishes all along the coastlines of the Caribbean, Africa and Indonesia. All of these examples could be a perfect reflection of this false mirage hidden within the GDP figures and their comparison as a universally-accepted standard measure:

"The faster the environment is destroyed, the greater the discrepancy between rising GNP rates and the actual wellbeing of the human population. Truly, the GNP has become an obsolete measure of progress for a society that strives to satisfy people's needs as efficiently as possible, while causing the least possible damage to their natural surroundings. What matters is not increased production, but, rather, the quality of the services provided. The bicycle and the light railway, for example, use far less resources than petrol-powered vehicles, though they contribute less to GNP. However, if public transport and bicycles were used for most journeys, city life would become more dynamic, since there would be no traffic jams, there would be less smog and our cities would be safer for pedestrians" (BROWN, 2002, p.120). [32]

From this viewpoint, an indicator is an empirical observation that synthesizes relevant aspects of a phenomenon that are significant for one, or more, analytical and practical aims. Although the term indicator can refer to any observable characteristic of a phenomenon, by inertia and tradition it is usually applied to those characteristics that can be expressed numerically. Depending on how the qualities of a variety of phenomena combine in more aggregate abstract concepts, synthetic indicators are obtained, which, in turn, are aggregate to the economic, educational, social, environmental or cultural activity of a country, region or territory. The indicators can be expressed in the absolute terms in which the observations and evaluations are made, or in derived terms, by means of a calculation process that relates that measurement to other magnitudes (variation rates, participations, relations). The expression, in relative terms, of these indicators admits comparison and is usually associated with the specificity of the uses. Taking it from another perspective, more analytical, local, autochthonous

and contextualized indicators would perhaps be needed and, maybe, be more adequate. Thus, the way to be studied could be more precisely established and defined, pinpointing the specific aims of each indicator. However, indicators reflecting overall figures can be used for a multitude of objectives and, subsequently, be employed to construct specific indicators to be applied to different areas of interest, be they subject-based or territory-based. [33]

This standpoint has given rise to a new generation of indicators that gradually took form during the 1990s, providing an alternative that reaches even further than the previous conceptual presuppositions. They are founded on the theories of sustainable development and sustainability, coupled with the most recent applications in qualitative methodologies. New conceptual proposals arise, which combine both objective and subjective criteria in development evaluation procedures, bearing in common a stance that radically criticizes the concept of development as a model of economic growth. This new generation attempts to systematize integrative proposals that admit externalities such as democracy, equity, freedom and the right to participate. One of the most significant contributions concerns the ground-breaking proposals included in the *Brundtland Commission Report* entitled *Our Common Future* (1987) on the right of future generations to have use of natural resources under the same conditions as the present ones; MAX-NEEF (1998), on the concept of development on a human scale, known as the "human development index" (UNDP, 2005); the "wellbeing index of nations" (PRESCOTT-ALLEN, 2001); or the concept of the "human dignity line" (MOURA-CARVALHO, 2002). [34]

This new generation of indicators, which attempts to overcome the limitations of its predecessors, includes such conceptualizations as the "poverty line" or the "begging line," aspects that considerably expand the notion of satisfying human needs. They advocate a conceptual and political shift from the idea of a minimum life to that of a decent life (MOURA-CARVALHO, 2002, pp.77-88), looking for ways of integration. The most outstanding feature of these new indicators is that they internalize qualitative dimensions, in an attempt to assign an economic value to those classified within the list of subsistence needs. For example, one of the qualitative dimensions contemplated is freedom of civil rights (LARRAIN, 2002, p.22).

"Hopes to correct macroeconomic book-keeping, so as to achieve a measurement of economic performance that takes environmental damage into account, are being pushed aside...Various countries have published that the Sustainable Economic Well-being Index corrects macroeconomic book-keeping, thus also giving a figure in monetary terms. Criticism of these attempts to provide an ecologically-sound macroeconomic accounting report are based on the fact that the results depend on a set of assumptions that are not at all clear" (NAREDO, 2006, n.p.). [35]

MARGALEF (1996) has subtly pointed to the fact that this social convention called money allows inequality among human societies to reach much greater levels than any struggles for territory or leadership in the animal kingdom. According to NAREDO (2006), the main challenge for the new models of indicator systems is to link the ecological (un)sustainability indicators of the economy,

referencing them geographically—not only by countries but also by smaller regions—to the socio-environmental conflicts perpetrated by various actors. The contributions presented by the *UN Commission on Sustainable Development* over the past decade follow this same line of thought. [36]

Document "Indicators of Sustainable Development: Guidelines and Methodologies" includes a set of 58 indicators, divided into four large categories of aggregation: social, environmental, economic and institutional aspects. Some of the indicators proposed attempt to solve this dilemma and fit in with the new conceptual and methodological requirements. These include a differentiation between pressure indicators (conditioned by conflicts and contextual aspects), state indicators (based on objective and subjective or quantitative and qualitative aspects) and response indicators (in terms of the effort of policies and institutions to improve the state conditions). However, there are still many more quantitative elements:

"Within this new generation of indicators, the Dignity Line potentially has the conditions for establishing progress on a political level, taking the democratic, equitable and redistributive qualities to higher levels, vindicated by the framework of social sustainability. In this sense, it has the conditions to claim a much greater role for itself on the stage of the negotiations on sustainability policies and models, both nationally and internationally" (CARVALHO, 2002 p.79). [37]

PRESCOTT (2001) also proposes a wider range of indicators than those traditionally used to construct the UN Development Programme's Human Development Index (HDI), along with other measurements of quality of life that are not based solely on economic data such as GDP. The HDI already took into account indicators such as health and education, but the Well-being Index adds others that measure quality of government, freedom of the press, corruption, crime and income distribution, along with environmental indicators related to air quality, use of natural resources and loss of biodiversity. They combine 39 indicators of health, population, wealth, education, communication, freedom, peace, delinquency and equity in a Human Well-being Index, along with another 39 indicators reflecting land health, protected areas, water quality, water supply, global atmosphere, air quality, species diversity, use of energy and pressures on resources, which are grouped together into an Ecosystem Well-being Index. These two indices are, in turn, combined to form a Well-being/Pressure Index, which values how much human well-being a nation obtains in exchange for the amount of pressure it places on the environment. The author presents color-coded maps showing the position of the 180 nations included in his study. [38]

This stage represents a transition towards integrating government models stemming from local environmental management. It is also a further source of paradoxes and contradictions for the development of sustainability models linked to local policy decision making. We speak of what is involved in having different social groups sharing responsibilities in the defining of environmental policies and directly including their proposals in the decision-making process. This stance represents a new model of democratic participation in local management bodies. The move from centralist, monopolized vertical government towards new forms of

government through consensus among minorities and co-ordinated with other sectors of society and the business world is an important step in the search for new forms of environmental management that are both more dynamic and democratic. Some of these options can be summarized using the proposals presented by FONT and SUBIRATS (2000, p.18), as follows:

1. "To accept that local communities have homogeneous environmental interests to defend; that is, that the political groups represented in local administration, the economic groups, the social associations and the citizens all share nuclei of common interests that are more or less compact. The paradox lies in that, as is well known, interests are usually fragmented within any nucleus of co-habitation and that actors with differing interests come up against one another more often than they should.
2. The questions concerning environmental protection, and sustainability in general, often present the paradox that those policies that benefit local communities in the short term can have negative mid-term effects on a supra-local level.
3. The principle of subsidiarity, interpreted as the transfer of responsibilities to lower levels of government may be an optimum condition for sustainability. However, some empirical studies reveal the opposite, since nothing can guarantee that the dominant local interests will spontaneously include criteria regarding sustainable development. All those questions dealing with urban-planning and speculation involving land and green areas are a clear example, as is the case of the defending the interests of local communities in protected nature areas. Perhaps the horizon opened by inter-level government spaces will be an operative control instrument for decision making in this sense." [39]

Looking at the problem from a more global dimension, environmental democratization at macro-regional levels requires a far-reaching revision of the development co-operation structures, of the models of financing, international trade and philanthropic aid designed so far. A much firmer stance should also be taken in security and defense matters that are closely linked to the discourse on sustainability as a transformation process, geared towards reaching an equitable macro-regional development, both locally and globally.

"The nature of conflict has changed, and new threats to collective security have emerged. In an increasingly interconnected world the threats posed by a failure to prevent conflict, or to seize opportunities for peace, inevitably cross national borders. More effective international cooperation could help to remove the barrier to MDG progress created by violent conflict, creating the conditions for accelerated human development and real security ... Violent conflict blights the lives of hundreds of millions of people. It is a source of systematic violations of human rights and a barrier to progress ..." (UNDP, 2005, p.3). [40]

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