# Sustainable Development: Elements for its interpretation.

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*SUSTAINABLE DEVELOPMENT: ELEMENTS FOR ITS INTERPRETATION*

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**Summary:** The contents and scope of Sustainable Development, as a model for the development towards which the international community wants to move forward, is the object of multiple interpretations. That way both, diagnosis of sustainability and the design, execution and assessment of actions aimed to the reorientation of the current model towards a sustainable model, requires a previous exercise of conceptualization and the delimitation of the concept of sustainability itself. We want to introduce in this abstract, some elements that might contribute to the necessary discussion, required for the concept of sustainable development to become operative.

We will start from the events that gave origin to the discussion about the dominant development model and the first diagnosis that recognized the exhaustion of the same, focusing our attention on the evolution of the interpretation of the relationship between environment and development. We will describe that way, the process followed, till a world wide consensus was reached, regarding the definition of Sustainable Development, upon which the current international strategy for Sustainable Development is be based on.

We will consider afterwards, the main elements that will contribute to the different interpretations of sustainable development; from the limitations upon which it has been built. On one side, the transformation that the adjective sustainable operates on the own concept of development (internal limit). It is therefore a question of, what are the needs to be satisfied. And on the other hand, the physical limit (external limit) related to the way the system is organized, seeking the satisfaction of the needs.

Finally, we will apply these elements of analysis to the discussion of the proposal contained in the Tokyo Declaration (Brundtlan Report), upon which the international strategy towards sustainability of the Rio conference was articulated.

**Key words**: Sustainable Development.

The contents and the scope of Sustainable Development, as a model of the development towards which the international community wants to move forward, is the object of multiple interpretations. That way, both the diagnosis of sustainability and the design, execution and assessment of actions aimed to the reorientation of the current model towards a sustainable model, requires a previous exercise of conceptualization and the delimitation of the concept of sustainability itself. We want to introduce in this abstract, some elements that might contribute to the necessary discussion required for the concept of sustainable development to become operative.

Two are the main questions we propose, to orientate this reflection:

In the first place, the process followed, till an international consensus was reached regarding the definition of Sustainable Development, that serves as the basis for the international strategy of Sustainable Development. The Analysis of the origin and evolution of the debate on the Environment - Development relationship, might help us, as a guide for a first interpretation, besides providing the necessary context, for later reflections.

We will then, propose, the analysis of the limits that the adjective *Sustainable,* adds to the noun *Development.* The different ways of conceiving the contents and the scope of these limits, constitute to our understanding, the central elements that will contribute later on, to the interpretations of Sustainable Development.

After the application of this criteria to the analysis of the content of the Budland's Report, we will enumerate the operative criteria, that normally shows the way towards sustainability to finally make an exercise of synthesis with the aim of getting global conclusions.

## 1. THE DEBATE ON THE RELATIONSHIP BETWEEN ENVIRONMENT AND DEVELOPMENT[1]

In this first section, we shall overview the most important milestones of the history of the formulation of the concept of Sustainable Development. We will consider a period of 20 years, from the first conference of the United Nations on the Environment and Development, held in Stockholm in 1972, that opened the way to the integration of Environment–Development, till the Summit of the Earth, Rio-92, at which, an institutional strategy for Sustainable Development, was formulated world wide.

The international context, in which the debate that gives origin to the formulation of Sustainable Development, is developed from, is marked by a series of international events that during the 70's, contributed to significantly modify the conceptualization of the relationship between Environment and Development.

On one hand, the limited yield of the different developments, backed by the UNCTAD. This failure leads, in the theoretical scope, to the reformulation and the search of alternative development models.

In the political scope, there is an intensification of the demanding activity of southern world countries, that materializes in the declaration and the action programme of the NOEI, within the General Assembly of the United Nations in 1974.

Third, the increase in the price of raw materials in international markets, and the World economic crisis associated to this circumstance, showed for the first time, worldwide, the possibility of a collapse of the international economy as a consequence of a limit in the resources.

All that, together with the signs of global effects of the economic activity on the environment. the greenhouse effect, the ozone's layer loss, and in short, the confirmation that the ecological crisis is a fact, that does not understand of international frontiers.

So, the international economy, faces two main issues: underdevelopment and the deterioration of the environment, that we will have to face without delay, and whose relationship, seems to be that of confrontation, what complicates matters even more.

### Decade of the 70's: confrontation

The way the described situation, is confronted during this decade, is strongly conditioned by the diagnosis, carried out by the MIT[2] and promoted

[1] In 1987, the World Commission for the Environment and Development (CMMAD), also called the Brundtland Commission, introduced the concept of sustainability, associated with economic development. In one of its reports, it was stated that development is sustainable, if it satisfies the needs of the current generations, without affecting the capacity of future generations to satisfy their own needs. Later on in, 1991, in an attempt to characterize parametrically sustainable development, Nijkamp introduced the variables of economic production, social fairness and environmental sustainability.

[2] Technological Institute of de Masashusett.

the Club of Rome, published in 1972 under the title of "The limits for growth".

The Club of Rome was founded in 1968 as a "non-governmental organization", in spite later on, it adopted the form of a organization, by a group of 35 personalities (academicians, scientists, politicians) of 30 different countries, with the aim of "contributing to peace making and social and economic welfare, through thinking and prospective investigation".

It was the Club of Rome itself, that ordered the preparation of surveys, that were published later on, under the names of Model Word-2 and Word-3, of Forrester and Meadows respectively. The results of the first survey, were published in 1971 under the title of "Worldwide Dynamics", using the methodology of system's dynamics. The survey, tries to forecast, the evolution of the worldwide system from a series of variables related, with six groups: population, capital investment, geographical zone, natural resources, pollution and food production. In 1972, Meadows published, in *The limits for growth*, the results and conclusions, obtained from the application of model Word-3 using Forrester's methodology.

The results presented by Meadows, forecasted the collapse derived from the exhaustion of resources in the term of less than a century. The recommendations of the report, regarding this situation, focus on the reduction of production and demographical control. In short, it is recommended to slow down growth, as the only way of stopping the evolution of the system towards its own destruction.

In June 1972 it was held the first conference of the United Nations on Human Means at Stockholm. This conference was marked by the problematic of underdeveloped countries.

In the declaration of Stockholm, a declaration that contains 24 principles, in spite of the ambiguities and even contradictions it contains, some issues were clarified.

First of all, it was understood, that the main cause for the deterioration of the environment is different in Northern and Southern countries. In the case of developed countries, the cause is development; specially industrial development.

In the case of underdeveloped countries, the main cause of environment's deterioration is the result of demographical pressure and the nature of the underdevelopment phenomenon itself. Therefore, we could summarize the concern that marked the Summit of Stockholm and also marked the whole decade, with three elements:

- There exists first of all, an important concern, that the problem of the environment might hinder the development.

- Second, it is feared, that the implementation of environmental policies, might put a brake to the development.

- And, third, that underdevelopment itself and the demographical growth in underdeveloped countries, might increase the problem of the environment.

These would be in short, the three major concerns that became clear in the conference of Stockholm, from which the PNUMA[3] sprang forth from.

The proposals of Stockholom to slow down the effects derived from the relation of confrontation between the economic development, and the natural environment, focused mainly in:

- The need of a technological change. That given the circumstances, must come from the developed countries.

- Northern – Southern cooperation, mainly in what refers to the transference of technologies and financial cooperation.

- Development's planning.

- Accelerated growth of the South.

Among these 24 principles, there appear many references to the ecological difficulty to spread the current model of development across all the territories, for its perpetuation in the time. What it never appears, is the reference to the need of a change of the model.

**Worldwide Preservation Strategy: *conciliation***

The decade of the 80's, was characterized by the attempts to conciliate Environment and Development, so as a shift in the focus of concern from the effects of growth on the environment to the effects of environmental deterioration, upon the economical perspectives. Concern that had already appeared at Stocklhom and become now a main issue.

The Worldwide Preservation Strategy (EMC)[4] is the first major international document on the problematic of the environment.

The PRESERVATION of the nature is defined in this document as the "management of the human

[3] United Nations Programme for the Environment.

[4] Promoted by the International Union for the Preservation of Nature, the Programme of the United Nations for the Environment and the Worldwide Fund for Wild Life (WWF)

use of the biosphere, so the highest benefits are obtained for the current generations but maintaining its potential to satisfy the needs of future generations". Preservation, involves both living creatures and unanimated elements of the environment of which, the former are dependant.

In this way of defining Preservation it may be appreciated that:

- Preservation is defined as a "way of management" to ensure the maintenance of the benefits. Preservation is not an end in itself, but an aspect of the good use of resources. The main objective is not the preservation of life, but the maintenance of the benefits that life provides us with.

- The limit would be marked by the maintenance of the productive potential of Nature. It is therefore about managing, always granting the maintenance of the capital.

- And, finally there is an explicit reference to the future generations.

The EMC is a long-range plan, aimed to the preservation of the world biological resources, to ensure the good use of the resources. This long-range plan is considering the change in the model of management, towards a model of sustainable management.

In the EMC, the concept of Sustainable Development, is introduced and later, it will be used again, to be outlined with more general aspects of the development, focusing not only on the exploitation of resources, by the Brundtland Report.

According to the EMC, the Sustainable Development, must be informed by the principles of fairness, solidarity, justice and rationality.

But, what is it rationality? The current model, is not irrational. It is about a change of rationality, that will make it possible the reconciliation between environment and development, from the proposal of this document. The conciliation, goes hand in hand with a change of rationality. Rationality oriented to make it possible:

- fairness, solidarity and justice. That is to say, we are talking of rationality, internal to the process of worldwide socioeconomic organization (internal limit).

- in all the territories and in the long term. That is to say, taking into account the limitations imposed by Nature (external limit).

This new rationality, is based on Preservation.

In 1984 the Commission for the Environment and Development was created (Brundtland Commission), to prepare the Conference of Tokyo, that was going to be held in 1986. The CMD was constituted by a group of independent people with the aim of:

- Analyse the situation of the Environment and Development, worldwide and in conjunction, and

- Set up strategies to attain the DS defined in the EMC.

It was institutionalized that way, the commitment to match two terms that had walked separated and even antagonistically.

In 1987 the document that contained the declaration of Tokyo, was published under the title of "Our Common future" (Brundtland Report).

To end, we will make only a reference to the Río-92 summit. Regarding the conceptualization of Sustainable Development, there are no major contributions, but there are, in regard to actions towards sustainability.

The Summit of the Earth, Rio-92, defined as its main objective, the design of a worldwide strategy based on Sustainable Development, starting with the recognition of the exhaustion of "a" model of development "ecologically predatory, socially depraved and politically unjust".

The outcome of the conference, is summarized in three large documents containing, non binding political commitments, that make up the frame of reference for the application of the principles of Sustainable Development, The Charter of the Earth, the Declaration of Forests and the Agenda 21. The later is an action plan, where detailed actions to be carried out by the governments and organizations are included, to integrate the Environment and Development in the horizon of the XXI $^{st}$. century.

## 2. INTERPRETATION FROM THE DEFINITION OF THE LIMITS.

In this section we will introduce, two elements that we consider key, for the conceptualization of Sustainable Development, the different interpretations of which, turn around at a large extent. Both are related with the limitations that the adjective "Sustainable" introduces in the term Development: an internal limitation and an external limitation.

The starting point, would be the following statement: Sustainable Development is a model of development, based on the satisfaction of human needs.

At first, this means:

a) That it is a model of Antropocentric Development. Preservation, will be in any case therefore, subordinated to the human welfare.

b) A model, based on Inter-territorial Solidarity.- Must contribute to the satisfaction of the needs in all the territories. With this, we would be answering to the first of the main questions, raised during the decade of the 70's. Sustainable Development is a kind of Development, that makes it possible its extension to all the territories.

c) Solidarity between generations. - It must allow, the satisfaction of the needs of future generations. And with this, we would be giving an answer to the second main question. The model of Sustainable Development, gives an answer to the need to guarantee the Development in the Long-Term.

All that, subordinated to an ecological limitation. We would have to answer a series of questions, after 20 years, some better solved than others. We will focus on those that refer to: the needs that will contribute to satisfy the model and the ecological limitation.

### 2.1. Internal Limit

The first question in relation with the needs, is linked to the distribution of the resources in time. There exists an evident difficulty to determine the needs of future generations. Difficulties, derived from:

- The need of a temporary projection: ¿How many generations?

- Demographic projection: ¿How much population?

- Identification of the needs: what in neoclassical terms we would ask as: how do we detect the preferences and the choices of future generations?

There is a second question in relation to the needs, that must be satisfied:

The territorial distribution of the resources.- In this case, it is about identifying, the needs to be covered in the territories. What we are talking about now, is of the second element that has raised concern, about the limits of the model: the ecological impossibility to extend the model of satisfaction of developed countries needs to the whole world's population.

The answers offered by the economic literature to these concerns, are in many cases questions themselves. There nevertheless exist, clear differences depending on the starting point.

**a) Relativistic vision:**

On one hand, what we might call "relativistic" vision, would derive from a statement of this kind: "the needs to be satisfied are established by the cultural evolution, they are determined historically. And the knowledge that we have of our needs, changes in time, with our ability to satisfy them".

Facing the determination of the needs to be satisfied, it means:

- That at present, not all of us have the same needs. They will depend on: culture, history, territory, climate, living standards, and even age, social group, family structure... etc. Even on the capacity to satisfy them.

- In what refers, future generations, the process of needs creation, will follow its historical evolution, also linked to the ability to satisfy them, and to the historical and cultural changes, etc.

- And, finally, provided we recognize the existence of limits, this approach leads us to try to satisfy unlimited needs with limited resources.

Facing Sustainability, it means:

Since we start from the impossibility to guarantee the satisfaction of the current needs (of all the individuals) and the future needs with the model of Developed Countries.

- A hierarchy of needs is established and the objective of Sustainable Development will be fixed in granting the basic needs (linked to the survival): food, health, education (social sustainability).

- Under this approach, we focus on the modes of production of goods and services; so that technology and organization of production, plays a central role in the model of Sustainable Development, with the objective of optimizing the use of the resources.

- All that, is accompanied with recommendations regarding a demographical control.

- And finally, under this approach, the economic growth is specially required, at an accelerated pace in Southern countries.

b) Universalist vision.

On the other hand, the vision we might call "universalist", would derive from a statement like: "the needs are not linked with history, what changes with time and culture is the way those needs are satisfied".

As we did before, let us see first, what would this mean, facing the determination of the needs to be satisfied and what would this mean, facing Sustainability.

Facing the determination of the needs to be satisfied under this approach, it is considered:

- That the principal human needs are finite, not many and can be classified.

- But, besides that, these needs are the same for all the cultures and historical periods. The Sustainable Model, is aimed to satisfy the same needs of all peoples.

- What changes throughout the time and the cultures in this case, is not the kind of needs, but the way or the means used for the satisfaction of same (satisfactors).

Facing Sustainability, this means:

- First of all, the development we are talking about, is referred to the people and not to the objects. Therefore, the objective is to satisfy ALL human needs. Here, there is no hierarchy regarding the needs.

- Sustainability in this case refers, not to the needs to be satisfied (the internal limit is not linked with the needs to be satisfied, that are all) but is linked with the satisfactors.

- It is highlighted therefore the importance of the creation and the mediation between needs – satisfactors – and economic goods.

- The development of growth is unlinked by means of desmaterialization of the satisfactors.

- All, is accompanied with recommendations regarding redistribution.

In any case, the borders between both approaches are not sharp. Starting from the relativistic consideration, we could come closer to the other approach, by declaring that, even considering that the needs are historical and evolve with time and that the process of needs generation is continuous in time, "the study of the processes through which the needs are socially built, is at least as necessary, as that of those through which they are satisfied, with the goods and services produced by the economy".

Although it is evident, that both approaches, lead to models radically different, anyway, in both cases the internal limit that marks the sustainability makes it necessary to reformulate the process of needs creation.

### 2.2. External limit

The second element, would be a restriction of ecological character.

The first question related to the ecological limit, once accepted the existence of the same, refers to its determination. What determines that limit? In which terms, is it established?

The answer generally accepted for this question, is based on a term, originating from ecology: the Capacity of Sustainability. So that it is accepted, that the ecological restriction comes imposed by the need to preserve the capacity of sustenance of the planet.

The capacity of sustenance of a particular territory, is defined from the ground of ecology, for a given species, as the maximum population of that species that can be maintained indefinitely, without a degradation in the foundation of the resources, that might cause a reduction of the population in the future.

The application of this term, originating from ecology, to the human species (which is the objective) is to be done taking into account, at least three considerations. These three considerations, would be the following:

a) In the first place, the ecological degradation, may happen not only as a consequence of demographic pressure on the resources, but also because of because of pressure on production.

This is so, for two reasons:

- The pressure that a particular group puts on a particular ecosystem, is the pressure required to satisfy its needs but also to satisfy the needs of other groups (commerce). This becomes evident with those economies oriented to the exportation of goods.

- Then, the pressure does not depend only in the number of needs and the number of population; but also in the kind of productive process. This leads us, to the second consideration.

b) The Capacity of Sustenance depends on technology and social organization of human societies.

And finally: the third consideration we wish to do, regarding the application of the ecological concept of capacity of sustenance of human species refers to inequalities.

c) The pressure that unequal humans put on the base of Natural Resources is extremely unequal; we ought say …extremely unequal humans is extremely unequal. There does not exist a species with so many differences, similar to human species. Territorial disparities, between groups, together with the transference of resources, makes it impossible to apply this concept to the human species, if it is not at a planetary scale.

We could conclude therefore, that the notion of C.S. is only meaningful in relation with the whole planet, and besides that, it depends on the technological level and social organization in a given historical stage.

That way, we could reformulate the concept of Sustainable Development in terms of C.S. saying:

"Sustainable Development is about improving human life's quality, without exceeding the loading capacity of the ecosystems upon which it is based".

"A society is sustainable from the ecological point of view when:

- It preserves the ecological systems that are the base of life and biodiversity.

- It guarantees the sustainability of renewable resources and reduces to a minimum the exhaustion of non renewable resources and..

- It remains inside the loading capacity of the supporting ecosystems.

Worldwide Strategy for Preservation – 1991 (p.25).

The second question related with the ecological limit, refers to the determination of the criteria of sustainability.

As a general rule, it has been accepted the definition of an economy as sustainable, if it is capable of maintaining its capital stock at a constant level in the time. After all, it is a criteria, linked to the capacity of production.

The condition of mantaining capital stock at a constant level, might be interpreted in different ways, what will give rise to different meanings for the concept of sustainability, that are usually grouped into two positions: strong sustainability and weak sustainability. Each of them is based on different assumptions.

a) Weak sustainability.

- Is based on the assumption of sustainability between natural capital and manufactured capital.

- This assumption is based on an optimistic attitude, towards the technological possibilities to replace the functions that nature plays in the production of goods and services.

- The possibility to measure the monetary value of the environmental goods and their deterioration.

Under all this considerations, weak Sustainability, would remain conditioned by "the maintenance of the monetary value of total capital stock".

b) Strong Sustainability:

- On the other hand, strong sustainability lays on the assumption of complementation between natural capital and manufactured capital. What it is rather done, it is to refuse the possibility of a perfect substitution, and add, that the relation between natural goods and goods manufactured by man, is a relation of complementation. Some of them, will be useless for humans, without the others.

- From this point of view, technological progress, will never remove the need of the natural capital for the elaboration of manufactured capital.

- On the other hand, it is considered the necessity to use physical indicators for the measurement of the capital, non monetary.

Under all these considerations, strong Sustainability would remain conditioned by the manintenance "of the natural capital stock and manufactured capital, separatedly and in physical terms".

## 3. INTERPRETATION FROM THE DEFINITION OF BRUNDTLAND'S [5] REPORT

Let us focus our attention now, in the interpretation of the concept of Sustainable Development derived from the contents of Brundtland's Report.

Brundtland's report, defines the Sustainable Development as:

The Development that satisfies the needs of the current population without jeopardizing its capacity to satisfy the needs of future generations.

First of all, the objective, is the satisfaction of human needs.

It contemplates the existence of ecological and moral restrictions.

Then, Sustainable Development, would imply the need of growth of Southern countries.

It requires besides, a demographical control.

Sustainable Development would be additionally a model of development, that considers the existence of final limits.

Under the Sustainable Model, preservation is subordinated to human welfare.

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[5] It was in 1987 that the concept of sustainable developement was genuinely formalised. Under Mrs. Gro Harlem BRUNTLAND's impulse, the World Environment and Development Commission published a report that defined sustainable development as follows :

« It is a development that answers the present needs without compromising the future generations' ability to answers their ones. Two concepts are inherents to this one: the concept of « need », and particularly of essential needs of the most destitute people, to which it is indispensable to give the priority , and the idea of the « limitations » that our techiques state and social organisation impose to the ability of environment to answer the present and future needs ».

And, finally, Sustainable Development, requires the rational use of non renewable resources.

This is the scheme that we are going to follow: for each of the seven elements that we have described, we will start from a textual statement of done in the Brundtland's Report, we will make a comment on this statement that will contribute to its interpretation within the frame of the report, to establish afterwards, the relation with the limits we talked about, in the previous section.

1. Objective: the satisfaction of human needs.

"The principal objective of development is the satisfaction of human needs and aspirations".

The Brundtland's Report makes a special emphasis in the fact that sustainability requires, in particular, the satisfaction of the essential needs of poor people, to which a prevailing priority would always be given.

The concept of Sustainable Development at Brundtland's Report is linked to the idea that poverty is one of the principal causes of over-exploitation of the natural resources.

We must not forget, that the formulation of Sustainable Development as a model of alternative development, gives answer to the need of proposing a worldwide consensus for the protection of the environment under the pressure of underdeveloped countries. Taking into account besides, that without its collaboration, it will be impossible to slow down the auto-destructive tendencies of the system.

In relation to the internal limit of which we talked about previously, development must guarantee the satisfaction of the basic needs of the whole population, therefore, the relativistic vision of the process of construction of needs.

2. Restrictions: ecological and moral

In relation with the second element, Brundtland's Report textually states "The way human needs and aspirations are satisfied by means of development is subordinated, between other things, to two kind of restrictions: ecological restrictions and moral restrictions".

There is an explicit recognition that some of us live, above ecologically acceptable means. Therefore, Sustainable Development, requires the promotion of values encouraging behaviours to which any one may reasonably aspire.

It refers therefore to the "mode" in which they are satisfied, and not to the type of needs, neither the formulation of the same.

The concept of Sustainable Development is linked to the idea that: the way productive processes are carried out, mainly in the case of industry, is the cause the deterioration of the environment. Likewise, it is attributed to the habits of consumption of northern countries.

Therefore, in what refers to the internal limit, the establishment of the new model of development, requires the transmission of new values that might orientate a change of behaviour.

3. Economic growth of the Southern Countries

And finally, it is stated that "for the satisfaction of the essential needs, economic growth is required on those places where these essential needs are not satisfied". That is to say, it is required, the growth of the Southern countries.

To promote the growth of the Southern countries, international cooperation is proposed specially, in what refers to the financing of the development and technological transferences.

Growth is understood as a requirement of sustainability.

The ecological limit does not hinder the possibility of increasing production. This is so, because of the confidence, in the possibilities of the technological change.

4. Demographical Control

"Sustainability of the model, requires, besides a conscious form of demographical control". It advocates the search of harmony between the demographical evolution and the productive potential of the ecosystem.

It refers mainly to the need of controlling the phenomenon of the demographic explosion of underdeveloped countries. The binomial of poverty plus demographic growth is considered as an ecological danger.

Regarding the limits, this statement would be linked, to the capacity of sustenance understood in ecological terms, that is to say, linked to the number of individuals, that the ecosystem might maintain in a sustainable way.

The four elements that we have previously described are strongly linked to the question of underdevelopment. The following three next elements, will focus more on the natural resources and the ecological limitations.

5. There exist end limits

Brundtland's Report, states that: "From the point of view of the population or of the use of resources, there are no fixed limits. Nevertheless, development cannot put at risk the natural systems that sustain life on the Earth: atmosphere, waters, soils and living creatures".

There are no fixed limits regarding the population. At the beginning that seems to be a contradiction in respect of what we had previously stated, in relation

to the need of a demographical control. Somehow this is not like that, because the concern regarding the demographical growth is referred to the Southern countries.

The possibility of displacement of the limit, both in what refers to the population and the use of resources is based on the confidance on the technological progress as a element contributing to the expansion of these limits.

On the other hand, when the Brundtland's Report talks about end limits, it is considering Nature, as a source and habitat for life. Regarding other functions, like warehouse of materials and energies or recipient of wastes, here technology enters into the stage, to move the limits.

6. Preservation subordinated to the human welfare.

"Economic growth and development imply changes in the physical ecosystems. Not every ecosystem can remain intact in any place".

That way, preservation is not an absolutely mandatory imperative for sustainability.

Here Brundtland's is heir of the Worldwide Strategy for Preservation which main objective, is to guarantee the best use of resources in the long term.

It is possible, a sustainable exploitation of resources, that removes the limitation on the process of needs generation.

7. Rational use of non renewable resources.

"The use of non renewable resources must be as slow as possible". Sustainability, passes by the adoption of paces of exploitation of this kind of resources in a way, that it is guaranteed they are not exhausted before a convenient substitute is found.

The exploitation of non renewable resources, does not contradict sustainability in spite these are exhausted, provided their exhaustion is preceded, of some kind of innovation that allows their substitution.

Therefore, we are in front of what we have previously denominated weak sustainability. Sustainability is not linked to the maintenance of natural capital, but to the possibility of replacing the exhausted elements by any other resources, either natural of manufactured by man.

## 4. OPERATIVE CRITERIA

Logically, the efforts aimed at clarifying the contents and the scope of the model of Sustainable Development, have as objective, to show the way that the economic system must go across towards that model. It is therefore interesting now to try to make the reflections that we have raised here, operative, in a way they allow us to translate the definition of the model into objectives and instruments of public policies.

The Worldwide Strategy for the Preservation of Nature in the 90's, has proposed seven principles of Sustainable Development, that were not formulated with much accuracy. We will take the principles that we are going to enumerate next, collected by J. Riechman in the collective work "About economy and ecology" published in 1995 in Trotta. Principles inspired in the article of E. Daly of 1991 under the same title. A similar approach is followed by M. Jacobs in "Green Economy", 1991.

These principles are established under the light of the consideration of the following elements:

A) Functions carried out by the biosphere in its interaction with the economy:

- Essential source of life and habitat for living creatures.
- Warehouse of energy and raw materials.
- Rubbish tip of wastes.

B) Type of natural resources.

- Permanent at a human scale. Like the sun, light, wind, rain.
- Renewable.
- Exhaustibles. Both those recyclables, and those that are exhausted irreversively.

C) Technology. In the measure, it plays a essential role in the interrelation between man and the nature.

1.- Principle of Zero Irreversibility:

Considering biosphere, as a essential source of life, it is considered a principle of unrenounciable sustainability, the principle of Zero Irreversibility. This means, to reduce to zero the cumulative interventions and irreversible damages.

2.- Principle of sustainable collection:

Aplicable to the way of exploitation of the renewable resources. The sustainability of the said exploration would be guaranteed, provided the rates of collection, would match and equal the rates of regeneration. The reduction of the rate of regeneration of the resource, is considered as a capital loss, as it means a loss in the capacity of production. Therefore it is considered as non sustainable.

3.- Sustainable Emptying Principle:

Due to the fact that the recycling is never perfect and that it requires the use of energy, the exploitation on non renewable resources, both whether they are recyclable or not, will be governed

by the same principle of sustainable emptying. It would be necessary to clarify, in any case, that the exploitation of these kind of resources, from the strict point of view of sustainability is not sustainable. Therefore the principle of sustainable emptying would say: is almost sustainable the exploitation of non renewable natural resources, when their emptying rate match and equals the rate of creation of substituting renewables.

4.- Principle of Sustainable Emission:

It is a principle referred to wastes and residues. The rate of wastes emission must be lower than the capacity of assimilation of the ecosystems to which wastes are emptied to. This would imply the emission of zero non biodegradable residues.

5.- Principle of Sustainable Selection of Technologies.

Regarding technology, according to this principle, technologies honouring the above mentioned principles and the selection of technologies that would increase the performances in front of all the other, directed to the growth of production, would have priority.

6.- Principle of Caution:

Finally, this principle is inspired in the acceptance of the existence of uncertainty linked to the complexity of the phenomena and the limitation of our knowledge on the effects of our activity on Nature. Given the magnitude of the risks, it is a recommendation that would lead us to rule out, actions that might give rise to serious effects even when the probability they might happen might seem to be small.

The four first principles, are really operative in way, their observance is susceptible of measurement, through the set up of indicators that might orientate the attainment of the objectives.

## 6. CONCLUSIONS

The path towards the integration of the strategies related with the Environment and the Development, that culminate in the concept of Sustainable, described in the document "Our common future" known as the Brundtland Report. This opens a new stage in the debate of Environment – Development seeking the compatibility between both.

Sustainable Development, implies an integral approach of Development: the recognition of its social, environmental and cultural dimensions. It implies the harmonization of the productive structures with a sense of distributive fairness, ecological responsibility and endogamous cultural identity.

Is is a model of Development based on the satisfaction of the needs.

It is a Worldwide Strategy for the Development based on common goals and values: local diversity – regional in the institutional scope Instrumental and international cooperation.

It is the result of the symbiosis between Human Development and a Strategy for Preservation. Thus, it was reflected in the report of PNUMD – 92.

The goal is to "Attain a current development that allows that future generations might cover their needs, putting the person in the focus of attention".

There exist though, important operative difficulties:
- We still lack consensuated indicators.

- There are still too many countries and peoples whose only concern is to survive, what relegates it to a secondary role, any consideration relating other generations.

Regarding the basic discussion about the contents and the scope of the concept of Sustainable Development, we might propose as a global synthesis, the existence of two different visions that will correspond to different ways of doing:

| **Limits: two visions, two ways of doing** | |
|---|---|
| Development focused on production. It is linked to growth. | Development focused on persons. It is unlinked of growth. |
| Main element sustainability: technological change. | Main element of sustainability: assumption of control. |
| Preservation: maintenance of total capital in monetary terms. | Preservation: maintenance of natural capital in physical terms. |
| Hierarchy of needs. Objective, satisfy basic needs. | Development refers to the people and not to the objects. The objective of the model is to satisfy ALL the needs. |
| Incision is made into the processes of production. Technology and organization of production key elements in optimizing the use of resources. We need to confirm the technological progress. | Sustainability refers to the satisfactors. The internal limit is not linked to a limitation of the needs. |
| Recommendations demographic control and the need of growth (Sourhtern countries). | Incision is made into the processes of creation and mediation between satisfactor and economical goods. |
| | Confidance in our capacity to seize these processes to lead them. |
| | Recommendations on redistribution. |

So that the debate, remains open:

1. The discussion about the means required for the attainment of sustainability should not divert our attention from the obectives: natural environment and distribution.

2. Two common criteria (capital maintenance and needs satisfaction) – multiple interpretations.

3. Sustainable Development implies a CHANGE OF RATIONALITY.

- Changes in the internal relations of the socioeconomic system: the way the process of needs satisfaction is organized.

- Changes in the relations with the physical environment: the way the process of needs satisfaction is organized.

4. The study of the processes through which the needs are built socially is, at least as necessary as that of those through which those needs are satisfied with produced goods and services.

5. Sustainability is related with the scale (external limit) and the mode of social construction (internal limit).

6. Implications on territorial actions and the own definition of territory: space of social construction of needs with the capacity to assume the control in the way these are built and satisfied.