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## Sustainable development: An overview of economic proposals

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## Surveys

# Sustainable development: An overview of economic proposals

Franck-Dominique Vivien

This paper is a revised version of an article originally published in French by VertigO-*La revue électronique en sciences de l'environnement* (Vivien, 2004).

**Abstract** *The objective of sustainable development is open to many different interpretations. This article provides a comprehensive overview of the economic proposals related to sustainability through three bodies of work: the first, describing the point of view presented by the leading economic theory, puts forward the idea of sustainable growth as a necessary and sufficient condition to attain sustainable development; the second, inspired by the notion of limits, attempts to establish socio-environmental constraints within which economic development should take place; the third, addressing Third World conditions, focuses on social inequalities and questions the meaning of the development concept.*

**Keywords:** Economics, sustainable development, sustainable growth, degrowth

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## 1. INTRODUCTION

For more than thirty years now, issues arising from environmental considerations and the unequal distribution of wealth throughout the world have raised questions concerning the objective of continued growth. The concept of “sustainable development,” which was supposed to reconcile economic, social and ecological dynamics, was first introduced almost a quarter of a century ago (IUCN, 1980). Today, this concept is the source of strongly diverging interpretations in the field of economic analysis. To provide a clear understanding of sustainable development, we propose an overview of the diverging viewpoints, while aware of the difficulties inherent in making a success of this type of venture, for there is extensive literature on the subject; numerous definitions have been given and oppositions and aggregations may always be a subject of discussion. Many attempts have been made to carry out this type of exercise (Godard, 1994; Zaccà, 2002). Although certain elements from previous research will inevitably appear in this text, the overview proposed here will differ from those presented in other works. Particular focus will be placed on the idea that issues concerning sustainable development revolve around the concept of “sustainability” as much as they do around the concept of “development.” It is therefore not surprising to find authors who seriously challenge this notion in our analysis. To provide an overview of the subject, the discussions were grouped into three bodies of work; the first, describing the point of view presented by the prevailing economic theory, puts forward the idea of sustainable growth as a necessary and sufficient condition for sustainable development; the second, based on the ecologist notion of limits to growth, attempts to establish the socio-environmental constraints within which economic development must take place; the third, addressing the issues informed by the Third World experience, focuses on social inequalities and questions the meaning of the concept of development. For each of these world views, it is necessary to question the point of view taken with regard to the objectives and policies of sustainability, as well as aim to provide answers to these issues.

## 2. SUSTAINABLE GROWTH

The first group of work under consideration emerged from standard economics. Although the notion of sustainable development arose, in part, from the critique of growth—a central issue in the neoclassical corpus—economists holding this view nonetheless plan to propose growth models that address this issue. Solow’s model, slightly amended, still constitutes the dominant element in the neoclassical theory’s response to the issues concerning sustainable development. Other types of work complete this doctrinal system by emphasizing the idea that sustainable growth is in line with environmental development and environmental protection.

### 2.1. GROWTH: NECESSARY AND SUFFICIENT

According to neoclassical economists, the goal of sustainable development should reflect the need for societies to maintain the capacity to produce economic well-being over time and to ensure, at the very least, that future generations have access to the same level of well-being as present generations. In other words, sustainability is defined, in this context, as the “nondecline,” over time, of individual well-being, which can be measured, depending on the type of analysis, by the level of individual utility, income, and consumption.

Neoclassical authors believe that to attain this objective, it is important that savings rates are high enough to ensure that the capital stock available to society remains stable from one generation to the next, therefore allowing a constant flow of wealth over time. The production capacity of an economy is made up of its stock of amenities, knowledge, skills, general level of education and training as well as its stock of available natural resources. In accordance with the tradition started by Harold Hotelling (1931), nature is considered to be a particular form of capital. Although it was only hinted at<sup>1</sup> in texts in the 1970s, the concept of “natural capital” began to be more clearly defined from the late 1990s forward, so that it has now become part of neoclassical theorists’ line of thinking concerning economic growth.<sup>2</sup> However, the hypothesis adopted by these theorists concerns the substitutability between these different forms of capital: an increase in the amount of “capital generated by societies” should be able to make up for a decrease in the amount of “natural capital” to ensure that individual productive capacity and well-being is maintained over time. According to Robert Solow (1992:265), an exchange therefore takes place over time: the present generation consumes “natural capital” but, in exchange, passes on more output capacity in the form of amenities, knowledge and skills stock to future generations.

Several hypotheses are necessary to substantiate this scenario. The first concerns technical innovation, which must provide a combination of “contingency techniques”<sup>3</sup> that allow for the substitution between different forms of capital. The second refers to the definition of a particular investment regime: Hartwick (1977) stipulates that rents generated from the exploitation of non-renewable natural resources must be reinvested in technical capital, via a taxation system or specific investment fund. As to the third, although prices are not featured in Solow’s model—it presents a planned economy, only one agent deciding on the allocation of resources—the neoclassicals put forward another hypothesis that states that the allocation of resources should be made by the “market.”<sup>4</sup> The value of the different forms of capital must be determined by the price system, as should be the rate of substitution that will be established between them. Thus the need

1 W. Rostow (1978:116) wrote: “Never again will the environment be taken for granted as a free good. Air and water, places for recreation and of natural beauty, even species of birds, animals, and fish, have come to be regarded as forms of capital which we have either run down or which might be run down if strong precautionary measures are not taken.”

2 The concept of “natural capital” was also derived from sources other than traditional neoclassical economics. E.F. Schumacher (1973:14), for example, wrote: “Now we have indeed laboured to make some of the capital which today helps us to produce—a large fund of scientific, technological, and other knowledge; an elaborate physical infrastructure; innumerable types of sophisticated capital equipment, etc.—but all this is but a small part of the total capital we are using. Far larger is the capital provided by nature and not by man—and we do not even recognize it as such. [...] Let us take a closer look at this “natural capital.”

3 Following W. Nordhaus (1973), the neoclassicals put forward the hypothesis describing the existence of a “backstop technology,” that is, a technical solution to the depletion of a natural resource. As determined by the law of supply and demand, the price increase of this resource, as it becomes increasingly scarce, leads to the cost-effectiveness and marketing of this “contingency technique.”

4 The neoclassical theory’s “perfect competition” reference is also very similar to a planning model, in that an “auctioneer” displays the prices, aggregates the offers and requests, and moves the prices until a price equilibrium is established in every market.



to bring into the sphere of the market what was at first outside it, by giving a value to natural resources and pollutants. Economists label this approach the “internalization of externalities.” In this version of sustainability, which is described as “weak,” the constraints placed on the economic dynamic are not very restrictive: of note is the reaffirmation of the central importance of growth, confidence in technological progress and the pricing mechanism and intervention of public powers in some areas considered strategic (information on the availability of reserves of natural resources and technical innovation) for the transfer between different forms of capital. Other neoclassical analyses complete this model.

## 2.2. SUSTAINABLE DEVELOPMENT: THE SIXTH STAGE OF ECONOMIC GROWTH?

The argument put forward by neoclassical theorists, supporting the aforementioned considerations, is that the pursuit of growth is in line with environmental protection. In the early 1970s, in his trenchant critique of the Meadows report (1972), Wilfred Beckerman (1972:336) presented the most optimistic of viewpoints concerning the capacity of modern economies to adequately manage environmental problems. He referred specifically to the reduction in SO<sub>2</sub> pollution in many American states, which occurred even though the country was undergoing continued growth. Twenty years later, the proposition is generalized, and now, the message is addressed to developing countries: “[...] there is clear evidence, wrote Beckerman (1992:482), that, although economic growth usually leads to environmental deterioration in the early stages of the process, in the end, the best—and probably the only—way to attain a decent environment in most countries is to become rich.” However, the debate surrounding this type of argument took a new turn after the publication of the articles by Gene Grossman and Alan Krueger (1993, 1995), who wished to provide empirical evidence. These authors sought to establish a general correlation between economic growth and contemporary environmental changes by establishing a connection between per capita income (calculated by taking the GDP of the total population of the countries) and the measures concerning a variety of air and water pollutants. The results of this econometric study seem to indicate that pollutant emissions increase with income up to a certain limit, then decrease, therefore plotting an “inverted U-shaped curve” –known to some authors as the “Environmental Kuznets Curve.”<sup>5</sup> With respect to SO<sub>2</sub> pollution, the reversal point of this relationship takes place for per capita average incomes of about \$4,000 to \$5,000 US. It is often higher for other pollutants, but generally, it is approximately \$8,000 US per capita. The explanation provided by the authors is that there are initially few pollutant emissions because of low production activity. Poor control of the early stages of industrialization then

lead to excess pollution. However the financial resources generated by increased wealth, the growing impact of services (dematerialization thesis) and changing individual preferences (increasingly oriented towards a better quality of life as their individual incomes increase) contribute to the reduction of pollutant emissions. Therefore, not only would an increase in income brought on by growth allow—through a trickle-down effect, as it is generally known—inequalities to become less obvious, but it would also contribute to the modification of individual aspirations, which are more likely to put pressure on governments to implement environmental policies.<sup>6</sup>

G. Grossman’s and A. Krueger’s (1995) article also establishes a link between economic growth and economic development. Underscoring their work is the vision developed by Walt Rostow (1960), which claims that at a certain point, economic development plays a part in the history of human societies<sup>7</sup>. They then enjoy a self-sustaining growth, which becomes the “normal function of the economy.” The structure of the economy then changes according to technological progress and its diffusion in new sectors of activity; new industries take over from older industries and provide capital with new investment opportunities. The innovative character of Grossman’s and Krueger’s viewpoint resides in the fact that, contrary to Rostow, who had doubts concerning future prospects of the advanced societies of his time, these two authors present them as evolving in a manner that is more respectful of the environment. In other words, sustainable development could be seen as designating—to paraphrase Rostow—the “sixth stage” of growth. Of note on this subject is that Rostow did not limit his thoughts on the subject to the 1960s. In a book published at the end of the 1970s, Rostow indicated that he was well aware of the impact the depletion of natural resources and environmental problems was having on the supply capacity of modern economies.<sup>8</sup> However, for Rostow (1981:20), the emergence of these problems “does not presage industrial civilization’s downfall. These issues can be controlled if we put our minds to it,” he wrote, “and the solutions we come up with will provide the foundation for the rekindling of sustainable growth.” Therefore, by relying on the evolutionary trends for certain air pollutants (SO<sub>2</sub> and particulate matter) in the United States, which were decreasing between 1970 and 1974, Rostow (1978:123) concluded that: “Clearly, the national trend has been in a wholesome direction.” G. Grossman and A. Krueger (1995:353)<sup>9</sup> adopted the same perspective; in essence, it presents the point of view that as economic growth is achieved, numerous environmental issues resolve themselves.

Grossman and A. Krueger (1995:371), agree that the problem is that the relationship described by the “inverted U” cannot be generalized.<sup>10</sup> Kenneth Arrow *et al.* (1995:520) state that it is valid

<sup>5</sup> During the mid-1950s, Simon Kuznets attempted to establish a similar correlation between income growth and social inequalities.

<sup>6</sup> G. Grossman and A. Krueger (1993:17) wrote: “As a society becomes richer, its members may intensify their demand for a more healthy and sustainable environment, in which case the government may be called upon to impose more stringent environmental controls.”

<sup>7</sup> “It is possible to identify all societies, in their economic dimensions, wrote Rostow (1960:4), as lying within one of five categories: the traditional society, the preconditions for take-off, the take-off, the drive to maturity, and the age of high mass-consumption.”

<sup>8</sup> It was clear for the author that the time had come to reflect on the end of the era of hydrocarbon energy. “The human race,” wrote Rostow (1978:79), “faces in the generation ahead, therefore, the greatest challenge it has confronted since modern industrialization began in the late eighteenth century : the challenge of creating a new, hopefully infinite and nonpolluting source of energy.”

<sup>9</sup> By means of other econometric studies, G. Grossman and A. Krueger (1993) also intended to demonstrate that international trade was in keeping with environmental protection. The main argument is that the rapid development of international trade, through the interplay of comparative advantages, leads to an increase in revenue for countries who participate in international trade, thus allowing them to increase the amount of money spent on environmental protection. Moreover, international trade is expected to facilitate the transfer of “clean technologies” via direct investments abroad.

<sup>10</sup> “Since 1994-1995,” wrote M. Damian and J.-C. Graz (2001:27-28), “there is a body of publications that broadens the field of identified contaminants and data studied and that amends or rejects the hypothesis of such a curve. The most recent studies do not yet confirm its existence.” In their article, William Harbaugh *et al.* (2002) take on the work of Grossman and Krueger but arrive at different conclusions by using new data available for the given examples and by using other econometric specifications than those used by the previous authors.

only for certain pollutants that have a short-term and local impact. For example, the results are different for the release of CO<sub>2</sub> or the generation of household waste, the quantities produced increasing with per capita income. An “inverted-U” relationship was also not established for physical resources. Moreover, although a relationship might exist, it may not be systematic. It is because there are public policies that encouraging results have been achieved in the fight against pollution. It must also be remembered that these reductions in pollution have been offset by increases in other areas or that the most polluting industries have been transferred to other latitudes.

### 3. AN ECONOMY FOR THE ENVIRONMENT: WHAT LIMITATIONS AND WHAT CONSTRAINTS

The study of the history of economic thought reveals that on the fringe of the dominant discourse, there have always been critical analytical traditions emphasizing the ecological damage that results from a cumulative dynamic (Martinez-Alier, 1987; Vivien, 1994). It is also the willingness to factor in the specificity of environmental phenomena, which cannot be reduced to market logic that controls this research perspective, which—other than the different terms chosen to designate some of its trends (bioeconomics, ecological economics, etc.)—could be said to represent an economy for the environment.<sup>11</sup> This term represents the constantly repeated attempts, made since the 19<sup>th</sup> century, to open up the economy to natural sciences, that is, to the development of a discipline that specifically integrates environmental and economic knowledge. Over the last 20 years, this attempt has mainly developed into a trend which has been given the term “ecological economics” (Costanza *et al.*, 1997). As will be discussed in this paper, this general idea can, however, cater to very different political objectives, depending on the intended role and position given public or private players.

#### 3.1. CRITICAL NATURAL CAPITAL AND PRESCRIPTIVE CONSTRAINT MANAGEMENT

Because of the potential for resource depletion, sustainability has always been a central element of the renewable natural resources economy. The concept of sustainable development has, as one of its sources, the forestry industry models, which were developed at the beginning of the 18<sup>th</sup> century, and management of the fisheries industry, both having experienced rapid development since the 1960s. The biological resources of these industries are considered to be a type of “natural capital” for which it is important to optimize management over the long term. The objective to be attained in these bioeconomic models is a “maximum sustainable yield,” that is, the maximal consumption of resources, which can be achieved indefinitely from the available stock of resources. The problem is that economic rationality, which aims for maximum profit, may be contrary to environmental logic and may lead to the depletion of resources. This point was made long ago by Augustin

Cournot with regard to forest management<sup>12</sup> or, more recently, by Colin Clark (1973) regarding the fisheries economy, advocating government intervention and specific management regulations.

Over the last 20 years, the discussion on natural resources management has been taking a new turn as a result of greater awareness of global environmental issues. However, based on the knowledge acquired so far, operational content cannot yet be given to a “global bioeconomy.” At the most, can we decree agreed-upon principles within the framework of ecological economics, according to Herman Daly (1990), as basic precautionary regulations: 1) the rate of renewable natural resources development should be equal to their rate of regeneration; 2) the emission rates of waste should equal the assimilation capacity of the environment in which it is deposited; 3) non-renewable natural resources should be exploited at the same rate at which they are being replaced with renewable resources. Contrary to the position taken by the neoclassical economists, this perspective presents the notion of complementarity between “natural capital” and other production factors. From whence the “strong sustainability” model, which is based on the need to maintain, over time, a stock of “critical natural capital” (Faucheux, O’Connor, 1999) essential for future generations.

Although this principle is simple to understand, putting it into practice presents a challenge. The first difficulty is to identify and assess all the major heterogeneous elements. The second is to apply “prescriptive constraint management”—to use René Passet’s (1979) term—to these elements, that is, to determine the limitations to the exploitation of natural resources and then to define the conditions that will facilitate distribution of this constraint within the system in the fairest way possible. It will then be necessary to specify the institutions that will allow economic actors to make the best decisions according to the different constraints. From this point of view, that is, beyond the difficulties experienced in its implementation, the example of the international policy of struggle against the greenhouse effect should perhaps be pondered. The Kyoto Protocol decreed a new environmental standard by establishing maximum limits to the CO<sub>2</sub> emissions released worldwide. Furthermore, different ethical options are being considered in terms of the distribution of permits to pollute. Discussions concerning the implementation of an emissions permit trading method are making good progress. Although this may prove to be a challenge, defining a set of socio-environmental standards that would control a group of economic activities is not impossible.

#### 3.2. INDUSTRIAL ECOLOGY AND THE ECOLOGICAL MODERNIZATION OF CAPITALISM

There is another line of thinking—industrial ecology—that takes its inspiration from environmental science theories and concepts in order to rethink consumption and production processes. The

11 Therefore, a distinction must be made between “economics of the environment,” as it is understood by neoclassical economists (see, for example, Baumol & Oates, 1988), and “economics for the environment,” as defined by R. Passet (1989), “which, without giving up its traditional areas, chooses or not, to develop its own laws in accordance with those of nature.”

12 Cournot (1861:433) wrote: “For example, people knowledgeable in forest economy have firmly established that the management of a forest most likely to provide the highest annual yield in cubic metres of timber, and which is therefore the most useful to human society—the best in terms of the development of natural forces and land resources of greatest interest to humanity—is a secular form of development individuals could not do without [...]” For the history of this forest economy and the role played by A. Cournot, see F. Vatin, (1998:355-356) who wrote: “For Cournot, the capitalist economy, based on the quest for financial profit, is destructive for the natural environment. It not only consumes without being able to replenish fossil fuel resources, but also prevents—to which the logging industry can attest—the optimal regeneration of resources that are theoretically renewable. The time frame for political economy remains to be determined.”



novelty of this discourse does not reside so much in the content of its message—many of the principles explained have been known for a long time<sup>13</sup>—as it does in those who deliver it. Robert Frosch and Nicholas Gallopoulos (1989), authors of the reference article on industrial ecology, belong to the world of industry and, more precisely, to the world of engineering. Their article was published in a special edition of *Scientific American* entitled “Managing Planet Earth,” which was issued after the publication of the Brundtland Report (WCED, 1987) and before the United Nations Conference on Environment and Development in Rio de Janeiro (1992). There is nothing coincidental about this; the concept of industrial ecology also emerged in the context of the deliberations within international environmental organizations<sup>14</sup>, which have played an important role in the introduction and diffusion of the concept of sustainable development.

Industrial ecology is concerned with giving the concept of sustainable development (Bourg, Erkman, 2003) an operational content. Its methodology resides in the study of the “industrial metabolism” of socio-economic systems, first carried out through an assessment of material and energy flows in production systems. Industrial ecologists will also strive to optimize and diminish these energy and material flows by turning them in on themselves; that is, by implementing “dematerialization” processes of goods and services provided to consumers and by recycling by-products and waste associated with their production. In the end, the objective is to succeed in creating an “industrial ecosystem”—as has been done in Kalundborg<sup>15</sup>, Denmark. A series of technical and managerial standards (ISO standards or EMAS regulation) certifies these “eco-efficient practices” and send a signal of quality to the consumers and public authorities. This biophysical information should also be related to the information generally used in economic decision-making, such as prices and profits earned. Industrial ecology therefore holds a place in the liberal tradition of internalization of externalities, which refers to the work of Ronald Coase (1960), and favours market spontaneity over government authority, which is judged to be coercive by nature. By the same token, firms, which are increasingly present in negotiation fora, are attempting to regain control in the field of sustainable development by controlling the “ecological modernization” of capitalism.

## 4. DEVELOPMENT: BETWEEN ALTERNATIVES AND DECONSTRUCTION

A third body of economic work places added emphasis on the social issues raised by sustainable development. Breaking away from the leading perspective, which has to do with the advent of development as a normal unfolding of economic and social history, the authors of these analyses question the specificity of

non-development experienced by certain countries and the possibilities of “another development” than the one taking the route laid out by Western countries. While some wish to retain the development objective, others call for its rejection and for the establishment of other prospects of social progress. We are therefore urged to reflect on the dominant economic values of our affluent societies. Questioning the notion of need, which was the subject of numerous texts written in the 1930s—and a subject broached in Keynes’s (1930) texts—is making a comeback, as a result of the necessity to take environmental issues and the global distribution of wealth into account.

### 4.1. ECO-DEVELOPMENT

The term “eco-development” was introduced by the organizers of the Stockholm Conference (1972)—after it had been witness to a frontal opposition between countries of the North and countries of the South—so that the latter, would include the environment along with their development objectives as an area of concern. The eco-development doctrine prefigures, and at the same time, is concurrent with the term “sustainable development,” which appeared in the early 1980s.<sup>16</sup> Ignacy Sachs (1980) is the economist whose name is associated with this doctrine, which was developed, at first, to respond to the unique dynamics of the rural economies of the Third World, and which slowly broadened, to become a general development philosophy. Growth, as such, is not rejected by the author, but it must serve social progress and the reasonable management of resources and natural environments. Sachs (1993:14) intended in this way to find a “middle ground, equidistant from the extreme proposals made by the Malthusians<sup>17</sup> and those who eulogize nature’s unlimited abundance.” Adhering to the perspective established by the theories of endogenous development, Sachs believes that it is important for every community to define its own “development style,” particularly through the use of an “appropriate technology” compatible with its cultural, institutional and ecological context. The need for development is reaffirmed, but this objective must take on a plurality of trajectories and a variety of mixed economic models. As Sachs (2003:170-171) recently stated, it entails “resuming the debate of the 1950s-1960s, and returning, at least in part, to the foundation of the reformed capitalism experienced during the *Trente Glorieuses* (“The Glorious Thirty”). Arising shortly after World War II, this reformed capitalism was founded on three principles: full employment as a central objective, the gatekeeper State and planning [...] I believe that these three ideas still have a lot to offer [...] not by taking us back into the past, but by allowing us to connect to them, through the experiences and the profound transformations that have taken place in the world during this era.” It is necessary to implement a “participative planning process” to find the right balance between market, government and civil society.

13 To search for the deep foundations of industrial ecology, one may, for example, refer to the text by Patrick Geddes (1884). To read more on the author’s thoughts, see J. Martinez-Alier (1987). Other references may be found in the ecological literature of the 1970s, namely in the texts of B. Commoner (1971). See O’Rourke *et al.* (1996) and Deléage (2002) for more on this topic. For previous history and related essential work on industrial ecology, see M. Fischer-Kowalski (2003).

14 R. Frosch served as the first Assistant Executive Director of the United Nations Environment Programme from 1973 to 1975. According to Frosch, it is at that time that the notion of industrial ecology began to emerge. It is important to note that Maurice Strong, who came from the world of industry, was Director of UNEP at the time and Secretary-General of the Stockholm Conference in 1972 as well as of the Earth Summit conference in Rio de Janeiro in 1992. See the autobiography of M. Strong, entitled *Where on earth are we going?* and published in 2001.

15 R. Frosch (1995:149) describes the “Kalundborg symbiosis” as “...a model industrial ecosystem. An oil refinery (a) employs waste heat from a power plant (b) and sells sulfur removed from petroleum to a chemical company. The refinery will also provide sulfur (as calcium sulfate) to a wallboard producer (c) to replace the gypsum typically used. Excess steam from the power plant also heats water for aquaculture (d), while it warms greenhouses

16 According to I. Sachs (1994:261), a more politically correct version of the concept of “sustainable development” was proposed by Henry Kissinger in reaction to the Coyococ Declaration, “The most radical document ever drawn up for the United Nations.”

17 i.e. the diagnosis established by the Meadows report

#### 4.2. UNEQUAL EXCHANGE AND “ENVIRONMENTALISM OF THE POOR”

A longstanding tradition of development economics describes development and non-development as the two sides of the dynamics of capitalism, which prospers by establishing relationships of dependence between a “Centre” and a “Periphery.” The economies of countries of the South are extroverted, linked as they are to external outlets, to changes in world market prices, and to decisions made by multinationals and Northern governments. Indeed, many countries from the South grow poorer by exporting resources at low prices to Northern countries, without taking into account the social and environmental costs incurred by this type of production. This topic is broached by Joan Martinez-Alier (2002), who expands on the perspective of “unequal ecological exchange” introduced by A. Emmanuel (1969) and S. Amin (1976). To overcome this situation, Herman Daly (1992)—who recommends rereading Keynes’ work on the need for national self-reliance—proposes breaking away from the specialization of international trade, his idea thus tying in with the eco-development theory.

On a broader scale, the work of J. Martinez-Alier emphasizes the distributive conflicts linked to environmental problems. He places poverty, once again, at the heart of sustainability issues—a theme which made a remarkable comeback during the Johannesburg Summit (2002)—although in rather different circumstances. Using as examples the social movements of Third World countries, such as the movement led by Chico Mendès or the “environmental justice” movement in the United States, Martinez-Alier intends to demonstrate, on the one hand, that poverty is not to be considered solely as a threat to the environment—as implied by the Brundtland report<sup>18</sup>—and on the other, that environmental protection is not “a luxury of the rich,” as is too often assumed; in other words, that there exists an “environmentalism for the poor,” who fight for a greater recognition of their rights. This perspective is all the more important to take into account, considering that numerous environmental policies are creating tensions in North/South relationships, either through the implementation of a “market for pollution permits”—in the case of the campaign against climate change—or of an international trade in genetic material—in the case of the fight against the erosion of biodiversity. Powerful redistribution effects are expected from this; on the one hand, because these policies are based on the recognition of new environmental property rights—“pollution permits” in the first case and intellectual property rights in the second, and on the other hand, because the prices at which these rights to specified natural resources will be purchased will largely depend on the initial distribution of wealth and income of the players involved. Under these circumstances, regretfully notes Joan Martinez-Alier (2002), it is not surprising that the poor often sell at low prices. It is therefore necessary for social movements to put pressure on environmental negotiations if we do not want them to lead to new exclusions and social inequalities.

#### 4.3. DEGROWTH FOR THE FUTURE?

To further intensify the discussion, some economists are considering rejecting the idea of development altogether, as it is accused of being the mask behind which the westernization of the world and the commodification of social relations is taking place. Instead, they are considering reinventing a new model for social change. For this purpose, it will be necessary, to use Serge Latouche’s (2003) expression, to establish an objective of “convivial degrowth.”

The concept of “degrowth” is linked to the work of Nicholas Georgescu-Roegen (1971, 1995) and to its reading and distribution by philosopher Jacques Grinevald (1974). The material and energy limits imposed by the law of thermodynamics led N. Georgescu-Roegen to propose a “minimal bioeconomic program” intended to make energy and material stocks last as long as possible for humanity. It is based on the notion that it is advisable to act on the demand of goods and services rather than on the supply, while remaining conscious of the need for poor populations to see their material conditions improve.

These proposals are closely related to the ideas held by certain political ecology thinkers in terms of self-limitation of needs and the development of a “sufficiency” standard. The concept of “convivial austerity,” formulated by Ivan Illich (1973), can be used as an example of a model society where needs are reduced but social life is richer as a result of its being more convivial. The need for autonomy sought by individuals—which opposes the heteronomous mode of bureaucratic and market control—forces one to give critical consideration, as did André Gorz (1975, 1991), to the economic and psychosociological links that unite productivism, consumerism and work organization. To do away with the simple existential compensation provided by the consumption of a great number of goods and services, it is important to distribute productivity gains differently and to reduce work time (Harribey, 1997). In other words, it is necessary to redefine the boundaries of economic rationality and market relations and work towards “post capitalism.”

### 5. CONCLUSION

We have reviewed three bodies of economic work in the field of sustainable development. The brief overview covered in this text, which evidently deserved to be completed and refined, presented an extensive range of set social proposals and objectives and falls within the framework of a long history of controversies surrounding the dynamics of capitalism (Vivien, 2003). This text covered points ranging from the support to the pursuit of growth and the accumulation of capital to the radical questioning of prevailing social categories, values and objectives, by way of proposals for policy development and the ecological modernization of capitalism. Over and above this debate on the desired orientation of social change, there is also a discussion on the social forces showing promise and on the means of action at their disposal or given them. While some economists display a determined



confidence in the game of economic rationality and the price to regulate social and environmental constraints, others consider it important, above all, to establish standards for this purpose. The debate is therefore centered on the players who are in a position to implement and enforce these standards. The question is to decide whether it is the public authorities, private stakeholders or the increasingly diverse and numerous firms and partnerships with NGOs who will take on this role. Economists taking a more explicitly political stance place the emphasis on the action to be taken and the power relationships that must be established concerning environmental policies and trade negotiations. To reiterate the point that is at the heart of economic reflection, one may say that economists question needs, or more specifically the need for personal enrichment. Through these different discussions, it becomes clear that it is also the manner in which the economic discourse is shaped and the importance granted to economic logic that are debated.

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