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## **Eco-Economic Development Under Social Constraints: How to Re-Direct it toward Sustainability?**

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### **1.0 The Need to drop the Term Sustainable Development**

There is a need to measure, evaluate and compare the different development approaches that are taken place at the local/communal or global/regional levels in order to learn from actual experience and determine how successes can be repeated and how failures can be avoided. However, it is actually almost impossible to do that since chances are that all these approaches are bearing the name of "sustainable development". When the same concept allows for placing different, and sometimes contradictory paradigms within the same umbrella, then the compatibility principle related to theory-practice-efficient indicators is broken. This can be appreciated by looking at the implications of the compatibility principle shown in [Figure 1](#).

Column A in this figure indicates that when the practical experience block (practice) supports the theoretical block(theory), then it is possible to identify appropriate tools(indicators) to measure progress. This implies the unity of theory and practice. However, column B in this figure indicates with respect to sustainable development that the practical block(sustainable development practice) is not able to support the theoretical block(different sustainable

development theories at work), which raises questions about exactly what sustainable development indicators are measuring. The above implies a dis-unity between sustainable development theories and practice.

The concept "Sustainable Development" has had in my opinion a net negative effect on the growth of development theory as it has confused, not clarified the different possible alternative paths to Sustainability since it means everything and nothing at the same time. This sole characteristic should be enough to justify the abandonment of "Sustainable Development" as a central concept if we are serious with respect to the need to search for ways to optimize development processes. This way, every existing development paradigm can be objectively and subjectively identified, measure, evaluated, and compared to others in order to determine whether or not it is an appropriate path toward Sustainability. This will become clear in the next section when the focus is shifted to the most dominant of those "sustainable development theories" mentioned above, the eco-economic development model.

## 2.0 The Eco-Economic Development Model

As its name indicates, this model is concerned with the interactions between the ecology and the economy. It aims at making economic activity more environmentally friendly or at balancing ecological and economic goals. It assumes that there are ways in which the ecology and the economy can be better off by following win-win development plans. It also assumes that society can be governed and manipulated under rationality assumptions for the benefit of the economy and the environment.

This vision of win-win ecological and economic options is called by Faucheux et al(1998, P. 34) a vision of ecologically and economic sustainable development.

The collusion of economic and environmental concerns seems to be an un-avoidable partnership given the alternative options that were/are available. This can be appreciated by looking at [Figure 2](#) . Please, notice that in these figures capital letters mean that the component is in active form(dominant) and lower case letters mean that the component is in passive form(dominated). For example, b = economy in passive form and B = economy in active form.

[Figure 2A](#) indicates the existence of three possible types of conjunctural co-existence: 1) lose-lose co-existence(bc), where both the economy(b) and the ecology(c) agree to do nothing to further promote their goals and are in passive form; 2) win-lose co-existence(Bc and bC), where the economy dominates(Bc) in some instances and the environment dominates(bC) in some others. In this case, each one of these agents chooses to promote their extreme goals in order to grow, which may backfire or lead to persistent risk; and 3) win-win co-existence(BC), where both economic agents(B) and environmental agents(C) agree to search for mutually beneficial development options to minimize un-predictability and risk.

Out of these three types of conjunctural co-existence, win-win co-existence is the natural best choice. Win-win partnerships has been in practice the result of heavy advocacy lobbying by NGOs. Fox and Brown(1998, P. 67) call these types of partnerships "partnership advocacy".

Hence, these partnerships between environment and development reflect the dominant development paradigm today.

Notice that in all type of conjunctural co-existence in [Figure 2A](#), the social component is missing since society is assumed to be a passive and dominated component. This can be seen in [Figure 2B](#) where society concerns(a) in passive form have been added to the four types of conjunctural co-existence. Hence, passive components can be dropped to simplify the analysis of dominant components.

### **3.0 Limits to Eco-Economic Development**

Just as traditional economic growth had limits and discourse, eco-economic development is bound by limits and discourse too. Below is a short description of how the quantitative limits to growth have evolved through time, and how they can be linked to the sources of Eco-Economic discourse.

#### **3.1 Evolution of the Limits to Growth**

This evolution of limits to growth can be appreciated by looking at [Figure 3](#).

Human capital(A) was the first limiting factor to economic growth during the subsistence period ([Figure 3A](#)), which is defined here to cover from the neolithic period or around seventh millennium BC, when agriculture and the sedentary life were discovered (Ehrenberg 1989), to the pre-industrial period (1820). During this period, population or social numbers(A) were the scarce commodities, and the limits to agricultural growth. Levitan et al (1981, P. 3) points out that during the pre-industrial period production was based on rudimentary skills passed from parents to children, crude farming schools, and incremental improvements made by each generation on the original and indestructible power of soil. Faber and Proops (1998, P. 4) mention that the rate at which the natural environment was affected in the hunter-gatherer and agrarian period was relatively slow. They also indicate that agrarian societies were dependent almost entirely on renewable natural resources. As shown in [figure 3A](#) the economy(b) and the environment(c) were not limiting factors during the pre-industrial period as represented by their broken frontiers.

As population growth took place and the industrial period (1820-1970) consolidated, man-made capital (B) became the limiting factor to economic growth and the main recipient of investment. Levitan et al (1981, P. 3) indicates that with the industrial revolution, capital became the critical factors, and that the labour that operated the machines was relatively untrained and easily replaceable. Levy (1998, P. 4-5) mentions that the industrial revolution period was characterized by a tremendous acceleration of technical progress. Hence, the use of non-renewable resources accelerated as this acceleration of technical progress took place. As [Figure 3B](#) shows, society (a) and the environment (c) were not considered limits to growth during the industrial period as indicated by their broken frontiers.

As the social and environmental externalities associated with industrial growth became evident, professionals within the pre-sustainable development period (1970-1987) started to point out that the limits to growth now was not longer man-made capital (B), but natural capital (C). At this time formal calls for respecting the environmental limits to growth were made. Mishan (1970, P. 20) points out that indices of economic growth measuring the increase in a country's gross productive power contain not provision indicating the negative goods that are also being increased. Hence, since the 1970s the view has been widely expressed that industrial pollution and consumption patterns need to be guided and circumscribed so as to respect ecological limits to growth (Faucheux et al 1998, P. 1). As shown in [Figure 3C](#), during the pre-sustainable development period, man-made capital (b) and social capital( a) were not longer considered limiting factors as indicated by their broken frontiers.

It was until the sustainable development period (1987-1995) that the environmental and economic limits to growth were formally recognized. Calls were made in "our common future" to find ways to achieve economic growth within environmental limits with emphasis on reconciling economic and environmental concerns (WCED 1987). As shown in [Figure 3D](#), within the sustainable development period, only human capital (a) is not considered a limiting factor to growth.

The emphasis on finding common ground among economic agents and environmental agents has made the previous economic only based model evolved toward the globalization period (1996-present) that we are experiencing today, where the partnership of the economy and the environment allows for maximizing eco-economic growth within the carrying capacity of the environment: this is the currently dominant eco-economic development model. Here, economists recognize that there are environmental limits to economic growth and environmentalists recognize that environmental growth and economic growth can be achieved by selecting win-win alternatives that are both environmentally and economically attractive. The benefits from trade and investment liberalization associated with this eco-economic model are widely being promoted by industrialized countries (see OECD 1998). EC (1998A) is proposing a global strategy for the promotion of a sustainable economic and social development model that appears similar to the eco-economic development model presented above since the social component does not appear to have an active role within this strategy.

As it can be seen in [Figure 3E](#), within the eco-economic model there are not limits to eco-economic growth (BC) as long as growth takes place within the environmental limits since social factors (a) are still not considered limiting factors to eco-economic growth.

### **3.2 Sources of Eco-Economic Discourse**

There are three sources of eco-economic development discourse arising from the assumption of whether economic growth is below, at, or beyond the environmental limits (CKC) of planet earth. [Figure 4](#) shows this situation based on the linear evolution of quantitative limits to economic growth from social capital (KA) through man-made capital (KB) to natural capital (KC).

According to this figure, discourse position number 1 indicates that we have not yet reached critical natural capital (CKC) and therefore there is still room for an eco-economic development partnership where economic concerns are still dominant, which is the rationale behind the present globalization drive. This is the eco-economic model view, in which both economic and environmental values and concerns are taken into account. Within this view, economic growth is not only desirable in developed countries (UN 1998, P. 12), it is a right or primary policy objective in developing countries (Common 1995, P. 5). Technology, knowledge, and inventions take a dominant role within this view as a mean of achieving eco-economic growth and of eliminating poverty. Some mainstream economists take the view that the limits to knowledge are the only limits to growth (Meyer 1998, P. 34). As indicated by Faucheux et al (1998, Pp. 1,13) the reconciliation between free market economics and the protection of environmental quality is often presented as a prerequisite for sustainable economic activity and direct source of general welfare. OECD (1998, P. 15) indicates that the wealth creation to which liberalization contributes should also reduce poverty, which is often the underlying cause of environmental degradation in many developing countries. Hence, the eco-economic position is that eco-economic growth is the way to sustainability.

Discourse position number 2 states that economic growth is about to reach the critical natural capital (CKC), and therefore, an eco-economic partnership should adjust the scale of the economy and society to make them compatible with the carrying capacity of the environment. This is the ecological economics's point of view, which recognizes physical limits to growth. McLaren et al (1998, P. 6) indicates that both the earth's resources and the earth's absorbing capacity are limited. Professionals within this view, reject economics claims that human's ingenuities and intelligence can be used to push back the physical limits to growth (McLaren et al (1998, P. 8).

Within the ecological economic view, the size of the socio-economy must reflect the limits imposed by critical natural capital, and hence, environmental concerns are placed before socio-economic concerns. Ecological economists believe that the remaining natural capital constitute the limiting factor to growth (Meyer 1998, P. 34). Hence, ecological economics views socio-economic behaviour and governance as the means to keep levels of human consumption and production within environmental limits or to control the so called ecological footprints. The ecological footprint is defined as the productive land area required to sustain resource consumption and waste assimilation requirements for a defined human population or economy (INCA 1997, P. 49). The ecological footprint becomes an issue because trade make it possible for some countries to live beyond their own regenerating and absorbing capacities by importing from other countries (Gladwin 1998, P. 50). Within the ecological economic view balancing environmental and socio-economic issues for the benefit of the environment is desirable. Hence, this view called for the responsible management of socio-economic growth as the way to achieve sustainability.

Discourse position number 3 points out that current patterns of economic growth are already far beyond the capacity of critical natural capital (CKC). These is the deep ecology point of view. Deep ecologists demand drastic measures such as no more human and economic growth, no more consumption of non-renewable resources, and consumption only of the regenerative aspects of renewable resources. Within this view, only the health of the environment matters, and

society and the economy must be drastically changed to achieve that. Cramer (1998, Pp. 7-10) summarizes the tenets of deep ecology as 1) human harmony with nature; 2) intrinsic worth in all species; 3) vital needs; 4) limited supplies; 5) appropriate technology; 6) quality vis quantity; 7) societal change separated from the rest of nature; and 8) local autonomy and decentralization. He also states that deep ecologies aim at bio-species equality and an ecocentric look of life.

Notice, that all these three different discourse's positions assume that society's behaviour can be made pro eco-economic or pro ecological economic or pro deep ecology development by means of direct regulations and indirect incentives. However, there is an apparent agreement that this assumption may not be true as it is shown below, which could have serious economic and environmental consequences in the future.

## **4.0 Social Limits to the Eco-Economic Model**

### **4.1 Social Constraints**

Social constraints are binding constraints as it is well known that social factors have a primary role in the rate and quality of development processes. Yet, all the different types of development approaches described above, including the eco-economic partnerships assume that social constraints are non-binding and can be manipulated at will. In other words, society is in passive form in all those types of development alternatives described above, which implies that social behaviour can be predicted and regulated without direct incentives under the eco-economic model too. The binding nature of social constraints are acknowledged when recognizing environmental quality and social welfare issues are not socially or politically separable (Schnaiberg 1980, P. 5); or recognizing that social poverty is the main contributor to environmental degradation, and must be addressed and resolved (WCED 1987; OECD 1998, P. 15; Elliott 1998, P. 181); or recognizing that the population explosion expected in the future is a threat to environmental degradation and economic decline (Fisher and Black 1998, P. Xii).

### **4.2 Residual Social Investment**

As the quantitative limits to growth have evolved, investment levels in developing critical factors have also evolved in a parallel fashion following the critical factor principle to investment: Investing in increasing the productivity of the critical factor is profitable as productivity increases. [Figure 5](#) shows how quantitative and qualitative scarcity and investment in critical factors has evolved.

When the critical factor was human capital, investment was focused in projects related to developing human capital. Later, when the limiting factor became man-made capital, money was poured into developing man-made capital. Now, that the natural capital is the limiting factor, it is to be expected that investment will move into developing the natural capital.

The more money the eco-economic agents spend in eco-economic projects to increase the profitability of critical capital, the less important investing in the "abundant capital" becomes. Lack of investment in social capital is leading to a process of accumulated social neglect through



which the inequity of eco-economic growth and social growth is increasing. Increasing social pressures on the eco-economic system, increases the potential for future conflict, specially if attempts at redistribution on any significant scale are made (Common 1995, P. 5). In summary, human capital (KA) is subjected to less investment(point a); and it is qualitatively the most scarce type of capital(point b), as shown in [Figure 5](#). According to this figure, investment moves from the left to the right following the less abundant factor or critical capital of the day; and qualitative scarcity moves from the right to the left following the most abundant factor. For example, when human capital (A) was the critical factor, then qualitative scarcity of critical natural capital (CKC) was very low.

### **4.3 Social Neglect**

The observation made by Myrdal (1957) that the essence of the social problem is that it concerns a complex of interlocking, circular, and cumulative changes still remains true today. As social neglect worsens, pressures on, and controls from the eco-economic model also worsen, leading to a process of cumulative social neglect.

The process of social neglect has two components: a) a quantity component, in which human numbers have been allowed to multiply outside of any apparent natural or un-natural control; and b) a qualitative component, in which the quality aspects relevant to the social capital have been allowed to deteriorate to unacceptable levels. [Figure 5](#) shows that investment in the quantitative and qualitative aspects of the human capital has been residual or minimal, and they are still not a priority within the eco-economic development model. However, this issue may soon be addressed at least in developed countries as the transition to the knowledge based economies is requiring increased investment in human capital. The Organization for Economic Co-operation and Development (OECD 1998A, P. 7) indicates that investment on human capital is at the heart of the strategies of the OECD to promote economic prosperity, fuller employment, and social cohesion. As these goals seemed feasible within the OECD countries, once materialized will lead to wider inequalities between rich and poor countries and citizens.

One important point to mention here is that there is a misconceived belief that the quality and quantity of social capital can be managed efficiently under rationality assumptions and externally; and that social neglect has taken place because social concerns fell outside the previous economic development model and they also fall outside the present eco-economic development model. The circular aspects of causality within the previous dominant model(society passive;economy dominant; environment passive), and the current eco-economic model(society passive; economy dominant;environment dominant) appear to be ignored.

### **4.4 Socially Induced Eco-Economic Degradation**

Just as the previous economic development model aimed at maximizing economic growth, the actual Eco-Economic Development model is geared to maximize eco-economic growth. Parallel to the process of maximizing eco-economic growth, there is a process of increased social neglect. As mentioned above, just as the process of eco-economic growth has cumulative effects, the process of social neglect has cumulative effects too, and both are linked through a process of circular causality based on the dominant/dominated system view: the dominant party ensures that

the dominated party remains in a dominated position until the threat is real and unavoidable. Dominant/dominated systems are not stable systems. Myrdal (1957) indicates that such a static accommodation is, however, entirely fortuitous and by no means a stable equilibrium position.

As it can be seen in [Figure 3D](#), social factors look like a cancer cell or virus within the eco-economic system, which is slowly expanding as eco-economic growth increases with the potential of leading to full system unsustainability: social factors have the potential to expand within the eco-economic model and lead to total collapse of planet earth as their rational behaviour will be to overtake the economy and the environment as a short term measure to apparently gain social survival time. The cumulative effect of this process will be increased eco-economic degradation and social strife. In other words, as social neglect is being maximized, the foundations of eco-economic development are being undermined inside out as society is at the centre the economic and environmental system as shown in [Figure 3D](#).

## 5.0 Sustainability now

Hence, the question becomes how can we avoid a total system collapse in planet earth?. The answer is simple, we have to make room for social capital to become an equal partner in development before the eco-economic system becomes persistently unsustainable. There is an increasing recognition on the role of the civil society in development issues and donors are being encouraged to promote it (Bernard et al 1998, Pp. 133-141). Therefore, we have to invest in developing the social capital, specially now that local and global economies are moving toward the knowledge-based growth. Social capacity building should be a priority now as a long term move away from labour intensive activities is under way.

There is no way back to labour intensive manufacturing: that is a road to nowhere ( Rao 1998, P. 14). Hence, a move to social capacity building can not be avoided for ever without serious economic and environmental consequences. Udoh (1998, P. 7) points out that the basic characteristics needed to facilitate capacity building and, thus, sustainable development are community security and stability. Social inclusion leads to development cohesion at both the local and the global level and to stability. EC (1998) highlights the need to search for a more coherent global economic order, which reflect complex inter-dependencies.

The observation made by Wenz (1988, P.2) that the issues of social justice and environmental protection must be addressed together still remains valid today. Social, economic, and environmental concerns must be addressed together now to break this cycle of circular causality in which a dominant segment of the system prospers at the expense of the others. Otherwise, a generation will come that will have to pass a problem without solution to the next generation and a ticket to social suicide. Hesselbein et al (1998, P. 23-24) points out two things: a) if the negative effect of doing nothing today are very large, it will be too late to do anything to make the situation better later; and b) if future capitalist do nothing too, there will be one generation that can not survive.

While the answer to the question posted above is simple, the strategy to avoid the total system collapse is a complex one. This strategy must include a blue print based on the principles of



optimization, true partnerships, accountability, and concern for the future. In other words, the over all blue print to achieve that simple answer is to embrace sustainability now so that there is sustainability in the future. Sustainability means a blue print that balance the social, economic, and the environmental aspects of development.

### **5.1 The Need to Optimize**

The eco-economic model(ECM) can be expressed as follows:

ECM = aBC; where a = passive society

B = active economy

C = active environment

The above expression indicates that ideally the eco-economic model aims at a) finding economically feasible environmental strategies; b) finding environmentally compatible economic strategies; and c) using the social capital, in quantity and quality, to advance eco-economic goals. Since society is assumed as a passive subsystem, then it is possible to talk about maximization processes of quantitative and qualitative nature within the eco-economic development model. Optimization processes are not attractive within this model since there is room to gain economic and environmental benefits without bearing the full cost imposed on society. [Figure 3D](#) reflects the above situation.

The Sustainability model(S) can be expressed as follows:

S = ABC

The above expression indicates that sustainability internalizes all social (A), economic (B), and environmental concerns (C). Hence, Sustainability (S) implies the need to optimize, not maximize since all costs and benefits are accounted for, and therefore, there is no room for dominance or maximization. Both the quantitative and qualitative aspects of development must be optimized in order to find compatible ways in which all development agents, social, economic, and environmental can benefit from development processes. This can be seen in [Figure 6](#).

For example, [Figure 6A](#) indicates that sustainability implies reconciling social, economic, and environmental goals, and [Figure 6B](#) indicates that sustainability also requires the recognition of social, economic and environmental limits to growth as shown by the closed frontiers and capital letters.

### **5.2 The Three W's Partnership**

A direct implication of the sustainability option is that true partnerships reflecting social, economic, and environmental concerns must be developed in order to find win-win-win development alternatives/choices capable of producing present and future benefits. For example, the sustainability plans for two countries could be:

$$S1 = A1B1C1 \quad S2 = A2B2C2$$

The above indicates that country one and country two may have different sustainability plans. Then, over all sustainability would required to balance the sustainability concerns in country one (S1) and of country two (S2) to arrive at regional sustainability (S), and the result would be:

$$S = ABC$$

This implies that regional sustainability results from balancing the win-win-win plans of the two countries.

### **5.3 The Need for Accountability**

The sustainability option also implies internal and external responsibilities. All sectors (social, economic, and environmental) have the internal responsibility to balance the quality and quantity of their subsystems. On the other hand, all sectors (social, economic, and environmental) have the external responsibility to balance impacts on the quality and quantity of other subsystems within the over all system. The eco-economic model, for example, does not fulfil its external responsibilities as it does not address social externalities coming from eco-economic decisions as well as society does not fulfil its internal and external responsibilities within this model.

### **5.4 Our obligations with the Future**

Sustainability now implies sustainability in the future, while eco-development now implies unsustainability in the future. In other words, eco-economic development now means postponing the unsustainability issue as it is being passed on to future generations to resolve. Future generations will be facing more stringent social concerns and development choices as the result of the cumulative social neglect effect; it may be practically impossible for future generations to redirect development efforts toward sustainability under those circumstances. Hence the most proactive and responsible development option available today is to embrace sustainability now: this is an action consistent with the so called "precautionary principle". In other words, if we know that full unsustainability is in our very likely future horizon as the result of ongoing social exclusion, we should embrace sustainability now. It appears that research is being done in Europe in this direction (Geddes 1998), and recognizing the need for social cohesion.

## **6.0 Conclusions**

Some of the conclusions that can be drawn from the above discussion are the following:

a) there are social limits to eco-economic growth; b) as social neglect is being maximized, the chances an eco-economic collapse taken place are also maximized; c) a process of social inclusion would improved the qualitative and quantitative aspects of social capital affecting today's eco-economic model; d) sustainability is the end result of this process of social inclusion as all social, economic, and environmental agents are interacting in active form or status and

forming true partnerships.

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*Theomai: palabra de origen griego que significa ver, mirar, contemplar, observar, pasar revista, comprender, conocer*

*Theomai is a word of greek origin wich means: to see, to contemplate, to observe, to understand, to know*

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