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Sustainable Development and Intergenerational Equity: Issues Relevant to India and Globally

by

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Clement A Tisdell[†]

December 2010

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Sustainable Development and Intergenerational Equity: Issues Relevant to India and Globally

ABSTRACT

As outlined, recurring concerns have surfaced since the 1700s that economic growth may prove to be unsustainable. These concerns have been expressed again and have intensified in recent decades but their foundation differs from that of Malthus. The rapid economic growth of China and India have added to these worries. Recent discussions by economists of the desirability of achieving sustainable economic development have mainly focused on measures to attain intergenerational equity in resource use and the dominant view is that each succeeding generation should be at least as well-off as its predecessor. While this is said to be an implication of Rawls' principle of justice, this dominant rule does not fully reflect Rawls' principle and it also can violate the Paretian improvement criterion. However, the full application of Rawls' principle leads to questionable results. For example, it assumes a greater degree of risk-aversion than seems likely in practice and it ignores the importance of intergenerational altruism, for example, the sacrifices that parents willingly make for their children. Rawls' principle also displays cosmological bias which results in it being at odds with the teachings of Hinduism and Buddhism. The mainstream stance on sustainable economic development does not appose economic growth. However, another neo-Malthusian point of view, expressed for example by Daly and Georgescu-Roegen, does. It is opposed to an increase in levels of global material production, that is, increased throughput of natural resources for economic production. These views are given some attention. Even if there is agreement about what constitutes a desirable path for economic development, uncertainty limits the scope for identifying measures that will achieve it. That raises the question of how far into the future should existing generations attempt to sustain economic development. This is discussed. In conclusion, it is pointed out that the nature of market systems and international relations make it very difficult to implement policies that can significantly reduce global economic growth and foster sustainable economic development. These problems are global problems and no country, India and China included, can afford to ignore them.

Keywords: China, economic growth, India, intergenerational equity, Rawls' principle of justice, sustainable economic development.

JEL Classifications: O13, O44, Q01.

1. Introduction: The Problem and its Changing Nature

The question of how sustainable economic development is has a history of recurrence in economic thought. In the late 1700s, when the Industrial Revolution was under way and into the early 1800s when Britain was experiencing a 'take-off' in its economic growth, doubts were being raised about how sustainable this economic growth would be. Malthus (1798) argued that rising levels of per capita income associated with economic growth might fail to be maintained because, in the long run, there was a tendency for human population to increase in response to higher levels of incomes and eventually wipe out the benefits of economic growth. He envisaged that in the long-term, income levels above the subsistence level would not be sustained because of population growth and the operation of the law of diminishing returns in food production (Tisdell, 2005, pp.12-14). In the absence of measures to counter population growth, Malthus believed that the welfare benefits of economic growth would prove to be transitory and in the long-run, as a result of population pressures, economic systems would tend to a stationary state with the population living at a subsistence level.

Ricardo (1817) modified this theory by pointing out that continuing technological progress could stave off a return to the stationary state following the occurrence of economic growth. Marxists, such as Engels (1959), flatly rejected the Malthusian theory arguing that advances in science and technology would enable growth to proceed at a much faster rate than population growth. For these technological optimists, there are no limits to economic growth. This view seems to have been widely accepted by both Marxists and non-Marxists in the latter part of the 19th century and during most of the 20th century. However, in the last part of the 20th century, renewed doubts emerged about the sustainability of economic growth and debates occurred about the desirability of such growth.

Concerns were expressed about the following:

(1) The depletion of non-renewable natural resources, such as fossil fuels (consider the views expressed by the Club of Rome as outlined by Meadows et al. (1972);

(2) the loss of renewable but extinguishable resources such as occurs with biodiversity loss;
(3) the increasing scarcity of recirculating resources, such as water;
(4) the pollution of natural resources such as air and water, thereby reducing their utility and;
(5) alterations in the composition of some natural resources, such as air, due to human activity, for example, the elevation of the levels of greenhouse gases in the atmosphere with consequential impacts on global warming (a subject reviewed in Tisdell, 2009a, Ch. 11).

All of these developments have rekindled the view that unlimited economic growth is impossible and that continuing economic growth based on the principle of business as usual is unachievable.

The modern neo-Malthusian view is based on wider considerations than those of Malthus and rejects the view that scientific and technological developments will be able to more than adequately overcome any limits to economic growth. Proponents of neo-Malthusian limits to economic growth accept that scientific and technological advances can help to sustain economic growth but that these advances have limited ability to do so.

Neo-Malthusian concerns are succinctly summarised in a formula suggested by Ehrlich (1989). He argues that the adverse environmental impact of human activity (which threatens sustainable economic development) depends on three factors *P*, the level of human population; *A*, consumption (or GDP) per head; and *T*, the extent to which environmentally damaging technology is used. He believes that these factors interact in a multiplicative way and suggests that adverse environmental impacts of human activity, *I*, can roughly be typified by the equation:

$$I = P.A.T \qquad (1)$$

While this is not a precise formula, most neo-Malthusians accept the view that major influences on the sustainability of economic development are the level of human population; its per capita level of economic production, and the state of technology and its application. Other things remaining equal, the threat to sustainable economic development is believed to be greater the higher is the level of human population and the greater is its economic production per capita because this adds to strains on the natural resource base of the Earth.

A consequence of this view is that economic growth in Asia, particularly in India and China will add substantially to the drain on the globe's natural resources and hasten deterioration of natural environments. Higher income countries have already contributed to those changes and continue to do so. Consequently, some limits to economic growth are likely to be approached at an increasing pace globally as economic growth in Asia continues at a high rate.

Increasing consumption (economic production) per capita has become a more significant sustainability problem than population growth because demographic transition has eased the population expansion problem in many countries, and China has continued to maintain its one child policy in recent times. Therefore, the issues of the sustainability of economic growth is becoming a major policy consideration, namely (but not exclusively) because of the desire for ever increasing levels of per capita economic production.

In order to address this matter, it is necessary to consider to what extent sustainable economic development is desirable and how it can be achieved, if it can be achieved at all. However, the desirability of sustainable economic development hinges on ethical and normative views about the desirability of sustaining particular attributes. Although there is a dominant view in the contemporary economic literature about the desirable characteristics of sustainable development, more than one view exists. In this article, the dominant view is outlined first, its ethical foundations are outlined and assessed. An alternative approach to sustainable economic development as outlined by Daly (1980) is then considered. Then before concluding, some of the practical difficulties involved in formulating and implementing policies for sustainable development are outlined. These difficulties include a great deal of uncertainty about the conditions that will face generations in the distant future.

2. The Desirable Path for Sustainable Economic Development (SED): The Dominant Viewpoint

According to Pearce (1998, p. 70), most economists addressing issues involving sustainable economic development (SED) define SED as 'non-declining consumption per capita, or GNP, or whatever the indicator of development is'. He also states that most economists would prefer to define it in terms of a non-declining level per capita "utility' or wellbeing (Pearce, 1998, p. 70). He refers to himself and co-authors as adopting this point of view (Pearce *et al.*, 1990) as well as to Maler (1990) as a proponent of it. It is also the definition that is adopted in many textbooks (for example, Tietenberg, 2003, p. 94).

Note that when real consumption per capita or GDP per head, or similar indicators are used, as the dependent variable in determining the occurrence of SED, it is usually assumed that human well-being per head increases with the magnitude of these variables. This, as discussed later, is a contentious assumption.

Given the mainstream definition of SED, it can be seen that economic development path (ACE) in Figure 1 is compatible with SED but path ABCD is not. Path ACE results in every succeeding generation being better off than its predecessor but path ABCD results in some generations being worse off than their preceding generation. In this figure, U represents utility or well-being per capita, t indicates time and t_n is the horizon for this problem. As time passes, and new generations emerge.

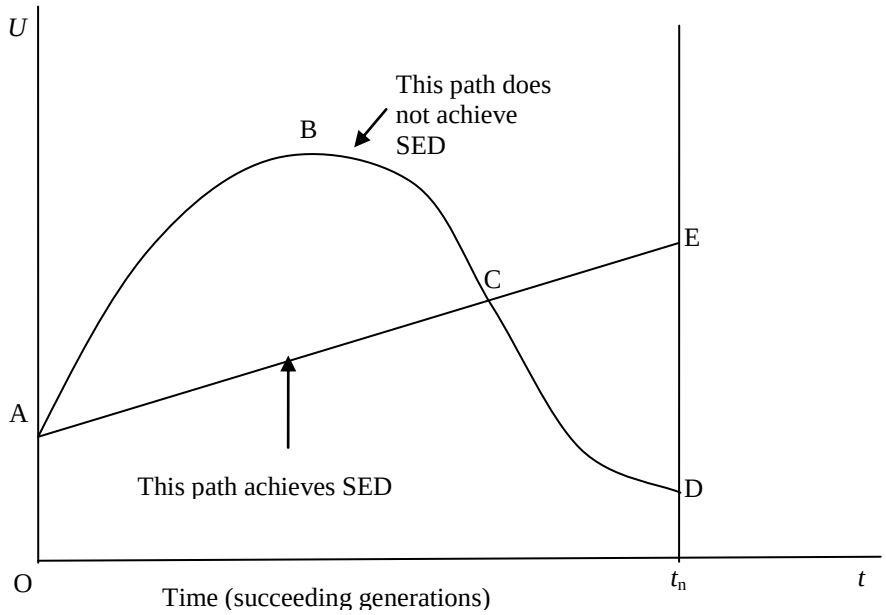

Figure 1: An example of a development path meeting the mainstream criterion for SED and one that does not.

Rawls' principle of justice as the ethical basis for the mainstream criterion for SED

Frequently, Rawls' principle of justice is seen as providing the ethical basis for the above SED rule (see Tietenberg, 2003, pp. 93-94). Rawls (1971) espouses the principle that the income of everyone should be equal unless inequality is to the advantage of all. It is claimed that if all could confer before being born, they would opt for this SED rule given that they do not know in advance when they will be born.

However, Rawls' principle does not always support the rule that the per capita income, *y*, of each successive generation should not be less than that of its predecessor. This is illustrated for the alternative economic development paths down in Figure 2. There the growth path ABC satisfies the mainstream SED rule but ADE does not. Yet path ADE is clearly Paretian superior to path ABC because every generation, except initially, is better off if it is followed (see Tisdell, 1999a).

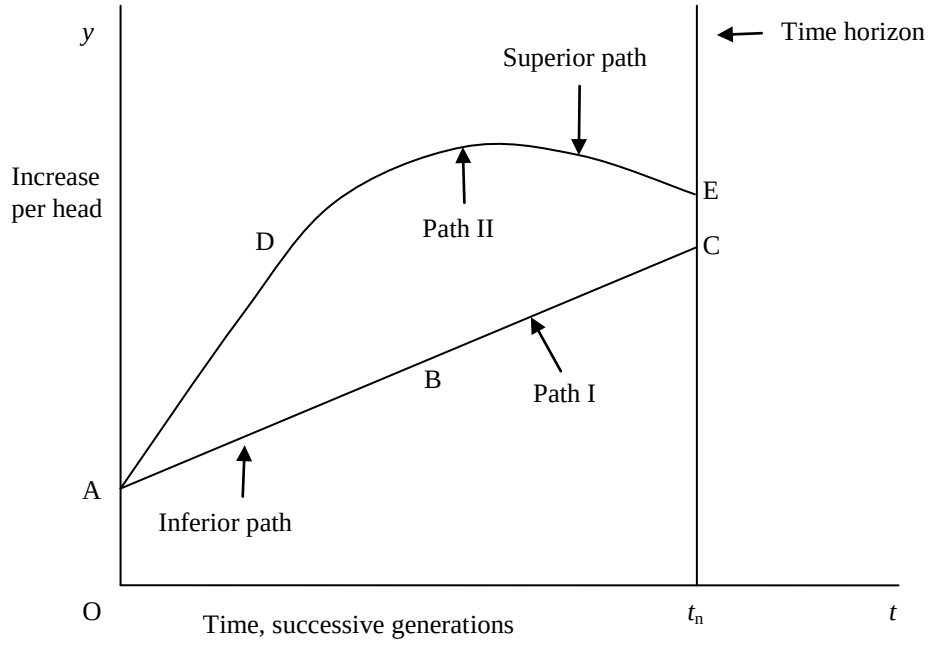

Figure 2: The mainstream SED criterion would reject path ADE in favour of path ABC even though the former is clearly superior from a Paretian economic point of view.

Although the mainstream SED criterion would reject path ABC, the application of Rawls' principle (considered in its entirety) does not. This is because path ADE is advantageous to all. The problem arises because economists claiming support for the mainstream SED criterion only make use of part of his principle. Nevertheless, Rawls' principle does not seem to be realistic. It assumes an extreme form of risk-aversion by individuals. I have argued elsewhere that subject to some safety constraints being met, individuals are likely to be prepared to take greater risk. They might, for example, opt for maximizing their expected level of well-being subject to being assured of its not falling below a minimum acceptable level (Tisdell, 1999a, 2011)

An alternative to Rawls' principle as a foundation for the SED criterion

Observation indicates that most parents want their offspring to be at least as well-off as they are and they may have similar feelings in relation to their grandchildren. If each successive generation has this attitude, it provides a strong social basis for the view that each successive generation should not be worse off than its predecessor.

Of course, parents differ in their attitude towards the future of their children. Most strive to make their children at least as well off as they are. It is only in dysfunctional families that this is not an objective. One might also expect it on biological grounds. Human beings that take good care of their children have a higher probability of passing on their genes than those that do not. Given the views expressed by Dawkins (1976), this may contribute dominance of the attitude that parents should take good care of their children and if possible, ensure that they are better off than their parents. However, this motive is likely to result in parents forgoing consumption in order to assist their children. This is not adequately addressed by the mainstream SED principle and by Rawls.

Explicit attention to altruism is lacking in the mainstream SED criterion and Rawls' principle

Whether or not the sacrifices parents make for their children constitute altruism or not can be debated. Dawkins (1976) might argue that it does not constitute altruism but rather shows the self-interest of parents in ensuring the continuation of their genes. However, the above discussion highlights the possibility that altruism could be displayed by existing generations.

Existing generations have no uncertainty about when they exist (unlike in Rawls' model) and they are in a position to influence the welfare of future generations but not to do so precisely. For simplicity, however, let us suppose that the level of the current generation's per capita income does determine exactly the level of the per capita income of the next generation, that only two generations are relevant and that the problem of overlapping generations can be ignored. Then the trade-off function between the level of income per capita of the current generation, y_1, and that of the next generation, y_2, might be as shown in Figure 3 by the relationship ABCD. Given this relationship, Rawls' principle implies that point C is optimal because at this point, the income per capita of each generation is exactly equal. The income per capita of the future generation could be higher (have a value, for instance corresponding to point B) but this would require the current generation to forgo some income and have a lower per capita income than the next generation. Rawls would not consider this sacrifice to

be fair. On the other hand, it would be unfair for this generation to bring about a situation corresponding to point D given Rawls' criterion.

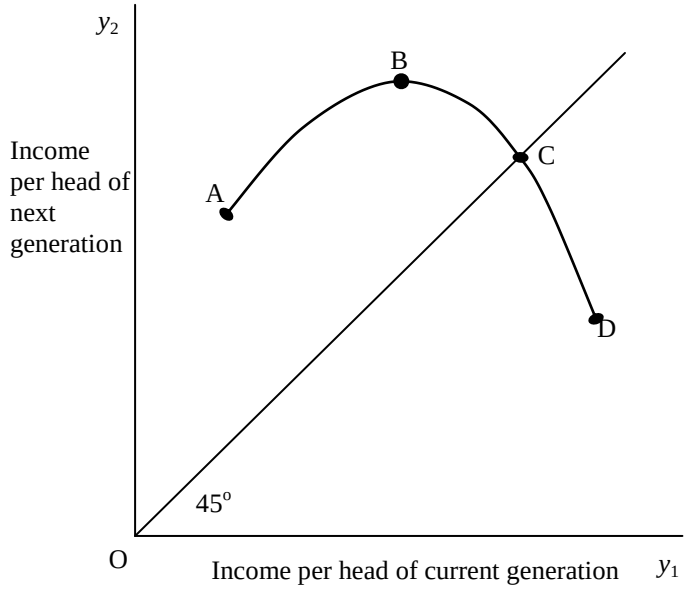

Figure 3: Rawls' principle does not imply that the current generation should forgo income per head to ensure that the next generation (or future generations) will have levels of income higher than theirs. It ignores altruism.

However, apart from parental indulgence towards their children, the current generation may show some altruism towards succeeding generations. For example, if in Figure 3, the trade-off curve were to decline very sharply after reaching point B, this would mean that for little sacrifice of income by the current generation, the next generation could be made much better off. It would seem appealing to make this small sacrifice although it would not accord with Rawls' principle.

Again, this can be illustrated in a slightly different way. For example, suppose that a nation has the two alternative development paths shown in Figure 4. Path I, ABC, is available or Path II, DBE. Those who live in the time interval $0 < t < t_1$ will be best off if Path I is followed but those living in the time interval $t_1 < t < t_2$ will be best off if Path II is followed. Neither path is advantageous to all. The following question arises: Because the gains to those who live after t_1 are very large and the losses to those who live before t_1 are very small, it is not reasonable that the earlier generations should sacrifice some income for the benefit of future generations? Might not this choice be sometimes made? Did not some earlier generations of Indians and Chinese make sacrifices in their level of consumption to ensure

rising per capita incomes for current generations? Was this justified? Such issues do not seem to be adequately addressed by Rawls' principle of justice nor by the dominant criterion for determining the occurrence of SED.

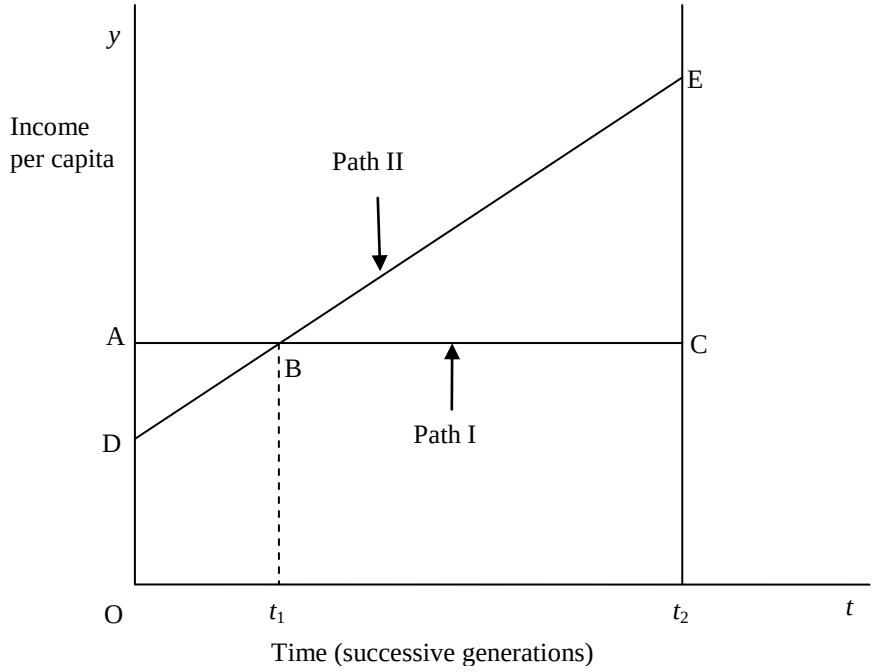

Figure 4: Given the two alternative development paths shown, Rawls' principle would reject Path II as socially optimal. However, from some point of view, it is socially preferable to Path I. It is altruistically preferable to Path I.

Ethical and cosmological limitations of Rawls' principle of justice

Rawls' principle of justice and the mainstream SED criterion are entirely anthropocentric. It is only what humans want that counts. There is no mention of the duty of mankind to conserve nature nor show reverence towards it, for example, as highlighted by Hinduism and Buddhism. Rawls' principle presumes an outlook that predominates in Christian, Judaic and Islamic thought.

In addition, it supposes that individuals will live only once. Therefore, it does not allow for rebirth of individuals (unlike the situation in Hinduism and Buddhism) nor does it (admit) of the possibility that individuals might be reborn in another form, for example, as an animal. Thus, it is heavily influenced by Western cosmological views. This is not to say that these differing Oriental views are correct, but to highlight the cultural influences on Rawls and on the mainstream economic approach to SED.

3. Another Point of View about SED – Daly's Perspective

The exact perspective of Herman Daly on sustainable development is a little difficult to pin down exactly. Basically however, he espouses the view that a steady state economy in which there is zero population growth (ZPG) and in which aggregate physical flows of production and consumption do not increase is desirable. He expects that this will enable the human race to survive for as long as is otherwise possible. However, Georgescu-Roegen (1971) thought it possible that current levels of production would need to be reduced to achieve this goal.

Daly (1980, pp. 8-9) adopts the view that economic activity should be so organized that it serves an ultimate end. This is a deontological approach and the ultimate end is something that is intrinsically good according to Daly. This might be, for example, the goal of enabling members of the human race to enjoy a satisfying life for as long as possible (as long as God wills) while at the same time limiting the adverse impacts of human activity on other creatures. Daly does not state precisely what he believes to be the Ultimate End but he clearly believes that this end is incompatible with continuing rapid economic growth involving perpetual rises in the level of physical production. He sates: "the physical flows of production and consumption must be **minimized not maximized** subject to some desirable population [level] and standard of living" (Daly, 1980, p.21). Thus, in Figure 2, Path I would be preferred to Path II providing it gave every generation a desirable minimum standard of living. One reason why Path I might be more desirable than Path II is that it could give greater scope for the continuing existence of other species.

It seems clear that human welfare does not depend solely on per capita levels of physical consumption. While increases in physical consumption can increase welfare up to a point, very little increase in welfare may be obtained beyond that point, and the marginal environmental costs of consumption beyond that point may be high. Moderation in material consumption seems necessary in order to ensure social harmony and harmony of humankind with nature. At least in principle, Daly's approach to development opened the way to adopting a less anthropocentric stance than that taken by Rawls (1971) and is espoused in most economic growth theories, including the mainstream theory of sustainable economic development. A message that might be drawn from the writings of neo-Malthusians, such as Daly and Boulding (1980), is that those who could live an indulgent life involving high levels of material consumption should not do so. If they do, economic growth is likely to be unsustainable, serious environmental and ecological deterioration will occur and social strife

will follow. Furthermore, it is unlikely that such an indulgent life will bring them happiness or contentment. This approach seems consistent with teachings that can be found in many religious works, especially in Buddhistic writings.

4. Uncertainty and SED

Theories of sustainable development focus on the long term. As a rule, we become more uncertain about future possibilities the further off they are. Although we may be able to predict the state of the world with reasonable accuracy 20 years hence, predictions for 1000 years hence, border on being fantasies. This raises the legitimate question of how far into the future should current generations endeavour to influence the sustainability of economic development.

There are actually two matters involved here. The first has to do with uncertainty about current human actions and their consequences many centuries hence. High levels of uncertainty make it difficult (impossible) to allow adequately for the well-being of individuals who might live several centuries hence when devising current economic policies. Secondly, existing generations are unlikely to show any practical concern about generations that could be alive far into the future. In this respect, Pearce (1998, pp. 70-71) observes: "The context of sustainable development has always been that of intergenerational equity. Then the time horizon must be a few generations at least but it will not be infinity. We might appeal to some 'coefficient of concern' to set some pragmatic limit on how far into the future we should look. Casual observation indicates that people care for at least their children and grandchildren. Few probably look ahead much further than that."

The concerns of politicians about sustaining the per capita issues (consumption) are likely to be a decreasing function of the amount of time into the future that this income is to be received. Note, that this is not purely an intergenerational issue because most individuals want to have a non-declining source of income during their life-time. The politicians' concerns are merely a reflection of the electorate. Thus concern for achieving development that ensures a non-declining level of income or consumption might be of the form shown in Figure 5 by curve ABC. The greatest concern is for the near future and this concern tapers off for the more distant future, and may even fall to zero for the very distant future. In the case illustrated, there is no practical concern now about income levels from t_n onwards.

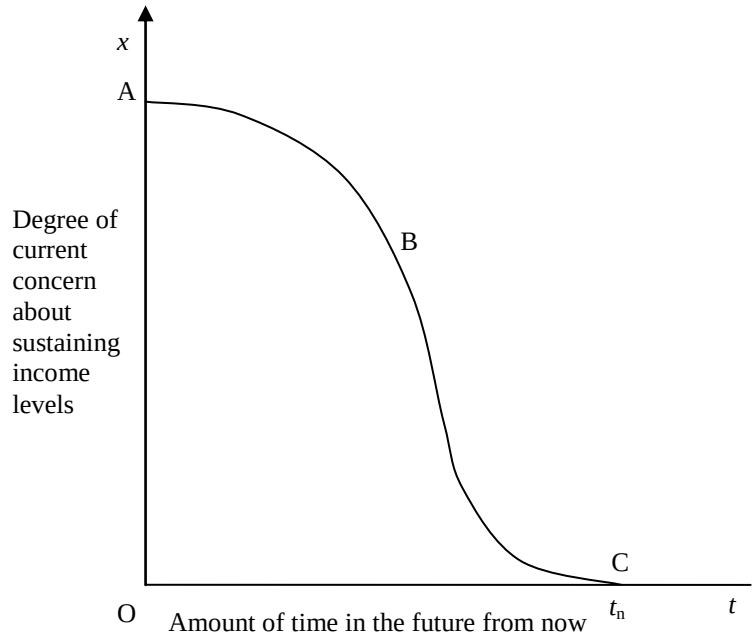

Figure 5: Current social and political concerns for maintaining income levels are likely to be truncated in the way illustrated. Various reasons for this are outlined in the text.

5. Concluding Comments

The question of whether continued economic growth and development is sustainable given the already high level of global economic production and population has received considerable attention in the last few decades. The mainstream economic view is that SED is achieved if the well-being of each future successive generation is not less than that of its predecessor. Furthermore, most mainstream economists assume that well-being is positively associated with high levels of real consumption or income per head. Therefore, their goal is to search for the strategy that ensures the highest level of non-declining real consumption per head. But some neo-Malthusians believe that this is an inappropriate goal. They are in favour of a social system in which those on higher incomes (the wealthy), whether in high income or low income countries, live frugally. They believe that humankind should endeavour to minimize its ecological and environmental footprint. However, even if the desirability of this is agreed to in principle, it is difficult to put into practice.

This is so for the following reasons. The market system relies on continuing economic growth to maintain employment. Individuals are socially trapped in this system (Tisdell, 1999b). In the absence of institutional change, they depend on employment in the market

system and this requires its continuing growth. Furthermore, material wealth is a sign of social status and a source of social power. Therefore, in most societies, it is difficult to control the display of wealth. Again, if only a few follow the path of frugality, it will make little difference to the rate of natural resource extraction and depletion. Therefore, a free-rider and a type of prisoners' dilemma problem exists. Furthermore, the international economic and political power of nations appears to be related to their material wealth. For example, China's international influence has grown along with its economic growth (Tisdell, 2009b). Many nations like to obtain and retain global international influence. For example, to some extent, the United States feels challenged by the rising international influence of China. Nations still spend heavily on armaments and military hardware to maintain their international influence and this adds to levels of physical throughput of natural resources.

Despite these difficulties and the complexity of theoretical issues involved in analysing SED, we still need to confront the issues involved. It is still worthwhile for us to strive to give future generations scope to earn an adequate and secure level of income and bequeath to them conditions that will help them to live a satisfying life in harmony with nature and one another. We should ourselves try to avoid excessive levels of physical consumption and should encourage our successors to do likewise. It is not only desirable to do away with poverty but as well, excessive waste and consumption (which can accompany wealth) are worthwhile avoiding. This is desirable for environmental and ecological reasons and can result in a more satisfying life, as many religious teachings indicate.

In conclusion, it is worth noting an observation made by Daly (1999, p.52). He states:

> "The welfare of future generations is beyond our control and fundamentally none of our business. As any parent knows, you cannot bequeath welfare. You can only pass on physical requirements for welfare. Nowadays natural capital is the critical requirement. A bequest of a fishing fleet with no fish left is worthless. But even the bequest of a world full of both fish and fishing boats does not guarantee welfare. Future generations are always free to make themselves miserable with whatever we leave to them. Our obligation therefore is not to guarantee their welfare, but their capacity to produce in the form of a minimum level of natural capital, the limiting factor."

Nevertheless, it is not only natural capital that provides future generations with economic opportunities. For example, useful knowledge passed on to future generations is also of value to them as is to some extent, man-made physical capital. Getting the balance right between different types of resources to be left for future generations is the real issue (Tisdell, 2005, pp. 248-251). Clearly, neoclassical economic growth theorists, such as Solow (1956), were wanting in that regard because natural resources play no role in their growth models, a deficiency severely criticized by Daly (1999, Chs. 8 and 9).

In conclusion, one may ask why current debates about SED are relevant to most Indians. Reasons could include the ones that follow:

(1) SED in every country depends on global economic growth and today, natural systems and economic systems are interdependent.
(2) The rapid economic growth of India in recent times is adding to strains on the Earth's natural resources and environments thereby accelerating the speed at which global limits to economic growth are being approached. Those living in Western countries may increasingly view Asia's economic growth as an escalating threat to the maintenance of their well-being because of its consequences for the environment and the availability of natural resources.
(3) The dominant Western perspective or the desirability of SED is anthropocentric and based on Western cosmological beliefs, as is especially evident when it is grounded on Rawls' principle of justice. These views are inconsistent with the teachings of Hinduism and Buddhism because they do not consider, for example, the possibility of rebirth of individuals, including the possibility of rebirth in non-human form.
(4) There is also a major social problem that cannot be ignored. Equity in the distribution of resources between generations and their distribution within generations should be simultaneously considered. Justice may require redistributing income and resources from the rich to the poor within generations. This would require not only a redistribution of income internationally but a redistribution within India of income from those who are well-off to those in poverty. Politically, such a redistribution is difficult to achieve even if it is felt to be justified. Therefore, the easy way out politically is to promote material economic growth on the basis that all, including the poor in society will be better off as a result. This, together with other institutional

mechanisms locks modern economic societies into striving for continual economic growth despite its potentially fateful consequences.

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