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# **ECONOMICS, ECOLOGY AND THE ENVIRONMENT**

**Working Paper No. 39**

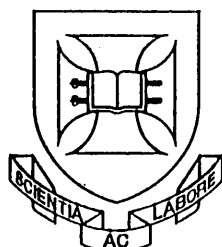
**Free Trade, Globalisation, the Environment  
and Sustainability: Major Issues and the Position  
of WTO**

by

**Clem Tisdell**

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The research for ACIAR project 40 has led in part, to the research being carried out in this current series.

For more information write to Professor Clem Tisdell, Department of Economics, University of Queensland, Brisbane 4071, Australia.

# **FREE TRADE, GLOBALISATION, THE ENVIRONMENT AND SUSTAINABILITY: MAJOR ISSUES AND THE POSITION OF WTO**

## **Abstract**

Economic globalisation is seen by many as a driving force for global economic growth. This it may well be. However, opinion is divided about the benefits of this process as highlighted by the WTO meeting in Seattle in late 1999. Proponents of economic globalisation see it as a positive force for environmental improvement and, as a major factor increasing the likelihood of sustainable development through its likely boost to global investment. These proponents mostly appeal to analysis based on the Kuznets environmental curves to support their views about environmental improvement. This analysis however has significant deficiencies. In relation to their optimism that the process of economic globalisation supports sustainable development, this only holds if weak conditions need to be satisfied. Some economists argue that strong conditions may need to be satisfied to achieve sustainable development. It is highly likely that these will be violated by the economic globalisation process. Therefore, the economic growth stimulated by economic globalisation may result in or promote unsustainable development. Global political action may be needed to avert a deterioration in the global environment and to prevent unsustainability of development.

This exposition outlines the Kuznets environmental curve style of analysis, demonstrates its limitations, identifies possible positive and negative effects of economic globalisation on pollution levels and highlights connections between globalisation and the debate about whether strong or weak conditions are required for sustainable development. The types of analysis which might be used by China to estimate the environmental impacts of its entry to WTO are briefly outlined. The article concludes with a short discussion of the position of WTO in relation to trade and the environment and the *de facto* endorsement of WTO of weak conditions for sustainable development.

# **FREE TRADE, GLOBALISATION, THE ENVIRONMENT AND SUSTAINABILITY: MAJOR ISSUES AND THE POSITION OF WTO**

## **1. INTRODUCTION**

Controversy exists about the likely impacts of processes of economic globalisation in the environment and sustainable development and there is also some dissatisfaction about WTO's policies regarding these matters. Some believe that economic globalisation is likely to be positive force for sustainable development whereas others believe that it will have negative consequences for the environment and sustainable development (Anderson, 1998; Tisdell, 1999, Ch.6). The purpose of this paper is to outline the basis of these differing views and briefly outline the position of WTO in relation to these matters.

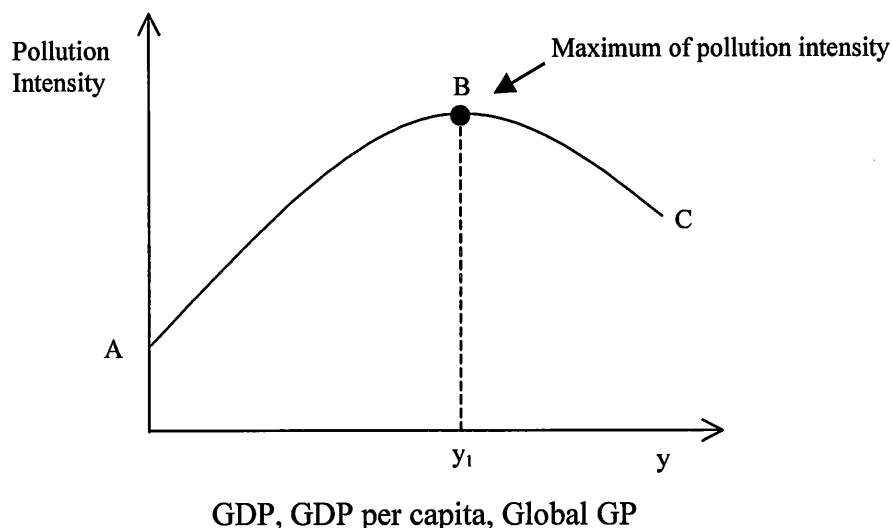
The environmental/sustainability consequences of the economic globalisation process may be assessed from the point of view of an individual nation, such as China, or from a global perspective. Global environmental change may or may not be in the same direction for all nations. Some countries may have an improving local environment as a result of the globalisation process whereas others influence a deteriorating one, and the global environment may deteriorate. Of course, the result which most would want is one in which the global environment improves and the local environments of all nations also improves.

It should be noted that what is and what is not an improved environment is not always straightforward. The problem of evaluation is difficult when the environment improves in some aspects and worsens in other respects.

## **2. PRELIMINARY ANALYSIS USING KUZNET'S ENVIRONMENTAL CURVES**

In recent years, Kuznet's environmental curves have been used in the economic literature to consider macro-changes in environmental quality as a result of economic growth (e.g. Cole, 1999; Cole et al., 1997), and to consider the environmental consequences of transition from a centrally planned economy to a market economy (Zylicz, 1994; Tisdell, 1997b). The method is, however, crude, can lead to faulty conclusions and ignores some factors relevant to sustainable development. Nevertheless, it is worthwhile noting the basic theory and relating it to the environment/globalisation debate.

Based mainly on observations from cross-sectional country analysis, the Kuznet's curve suggests this pollution intensities as indicated by pollution emissions per unit of GP decline with GP or GP per capita, after first rising (World Bank, 1992). This suggests that at low levels of GP/per capita pollution intensities at first increase with economic growth and then decrease with further growth as income per head becomes high enough. To many, this suggests that economic growth is the key to solving environmental problems. This suggests that if economic globalisation provides a stimulus to economic growth, it will have a positive impact on the environment provided the economic growth is large enough. The simplest type of Kuznet's environmental curve is shown in Figure 1 by the curve ABC. The unimodal nature of this curve is taken by many to imply that raising income above the level at which the curve peaks will reduce pollution levels.

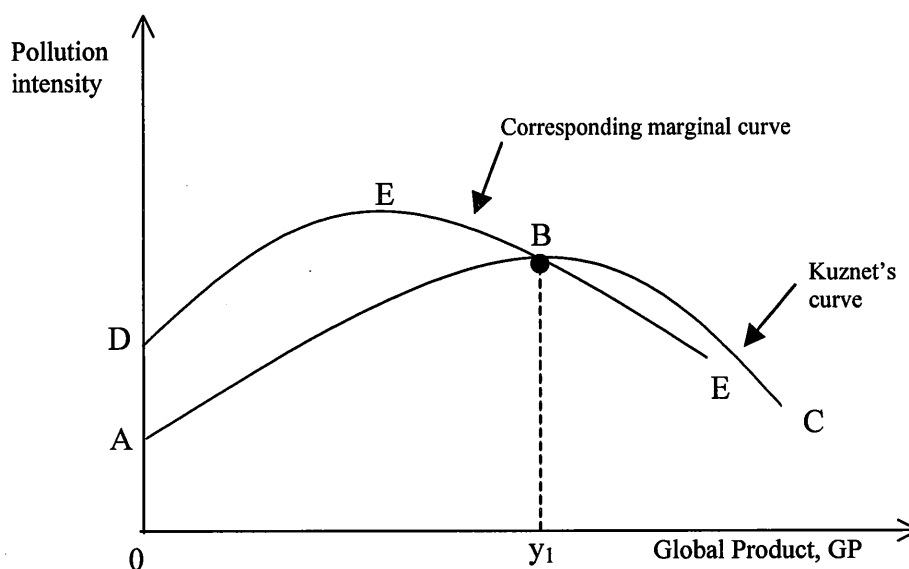


**Figure 1:** Normal type of Kuznet's environmental curve

For instance, in the case illustrated this curve may be taken to imply that provided world (national) GP or GP per capita or global gross produce (depending on interpretation) is raised above  $y_1$ , economic growth will become favourable to the environment. But this is based upon the view that pollution is not cumulative or its impacts are reversible. Some pollution is cumulative or virtually so because of the long life of the pollutants. Note also that the Kuznets curve fails to take account of biodiversity loss which is for all intents and purposes irreversible. (Cf. Tisdell, 1993). In addition, even after pollution intensity has reached its maximum level, total global pollution it will continue to rise for at least a time. In this

respect, the marginal net average curve needs to be taken into account. The pollution intensity curve is really an average curve not a marginal one (Tisdell, 1997b).

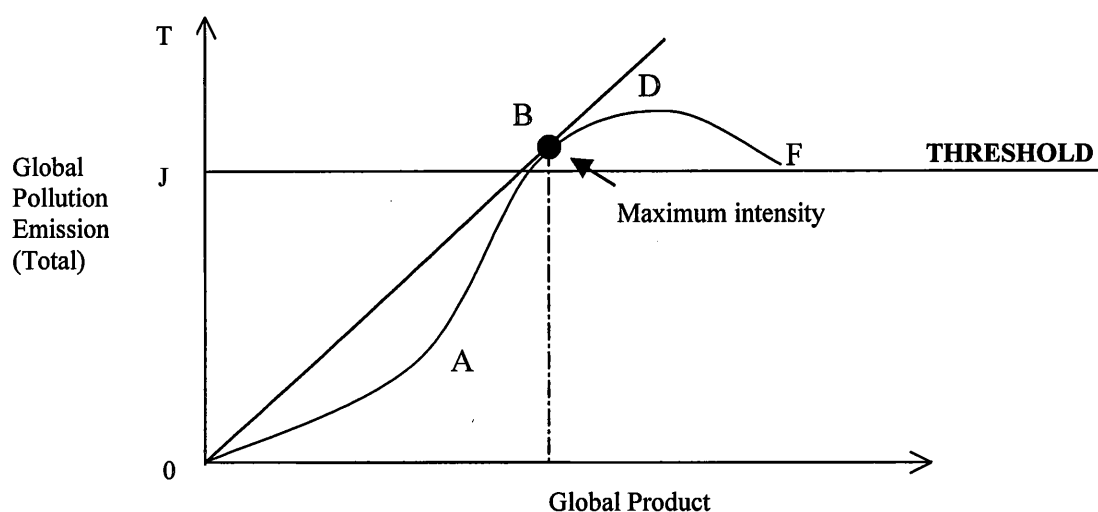
Figure 2 illustrates the latter point. ABC represents the Kuznet's curve in relation to global gross product (GP) and curve DCBF its corresponding marginal curve. Beyond  $y_1$  pollution intensity is falling but total levels of pollution continue to rise in the case shown because marginal pollution levels remain positive.



**Figure 2:** The Kuznet's environmental curve is an average not a marginal curve

Those who see economic growth as the eventual key to reduction of pollution have also to address another significant issue. Pollution intensities or levels may not decline as economic growth proceeds before a critical pollution threshold is exceeded globally, or even nationally. Once this critical threshold is exceeded the environmental change (such as might occur with rising greenhouse gas emissions) depresses incomes sharply and stymies economic growth. Such a threshold could be exceeded for flow pollutants but may be more probable for stock (cumulative) pollutants. The basic tenet, however, is the same even though optimal management of the different types of pollutants would differ. In addition, it might be noted that some flow pollutants become stock pollutants if environmental absorption capacities are exceeded, and various stock pollutants may have varying lengths of life. But these complications do not alter the substance of the matter.

In Figure 3, the threshold is shown as OJ for flow pollutants, the only type allowed for in the Kuznet's curve approach. It may be that once pollution exceeds the threshold OJ, gross global product (GGP) collapses substantially. This has analogies with the greenhouse gas case and the possibility of rising sea levels due to increases in greenhouse gas levels. In Figure 3, curve OABDF is the aggregate level of pollution as a function of GP in the absence of the critical constraints. Point B corresponds to the maximum of the Kuznet's pollution intensity curve in this case. The threshold OJ is breached before point B is reached.



**Figure 3:** A case in which the Kuznet's curve would not decline before causing a pollution catastrophe.

### 3. IMPACT OF ECONOMIC GLOBALISATION ON ECONOMIC GROWTH, RESOURCE USE AND CONSEQUENCES FOR POLLUTION LEVELS

Economic globalisation might be expected to have positive impact on economic efficiency because the increased competition created by it is likely

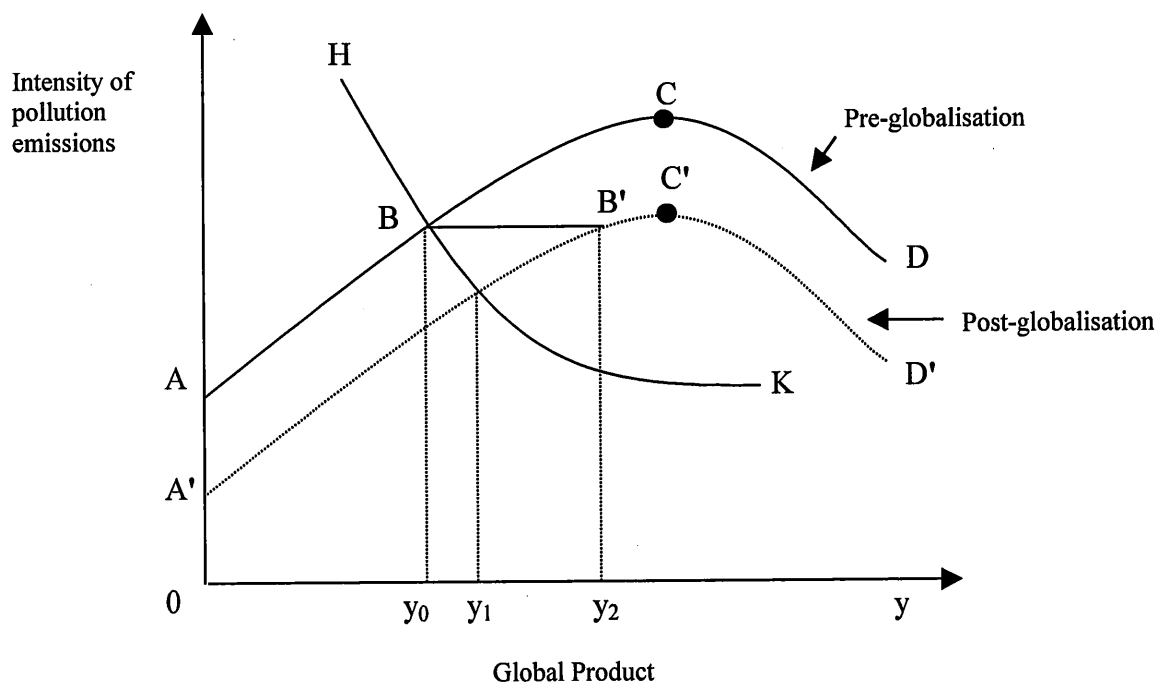
- (1) to improve allocative efficiency, and
- (2) reduce X – inefficiency.

This ought to reduce input of materials per unit of output and lower wastage thereby reducing pollution emissions in relation to output. In effect this means a reduction in the Kuznet's environmental curve of globalisation. Thus a favourable environmental effect is present from this aspect.



This is, however, not the whole story. The input saving and reduced pollution intensities resulting from these two efficiency factors may be offset or more than offset by the increased scale or growth consequences of globalisation.

Environmental pessimists believe that the growth impact on resource-use will more than offset efficiency gains in resource-use (Tisdell, 1999a, Ch.6). Consequently total resource-use and pollution levels rise. Optimists suggest otherwise. The matter can be illustrated by reference to Figure 4. In a global system subject to limited competition, the Kuznet's environmental curve might be as shown by ABCD. But in an economically globalized competitive world might drop from ABCD to A'B'C'D due to increased efficiency in resource-use. If this say occurs when global production is  $y_0$  total pollution emissions will fall if global GP is constant. If sufficient growth in GP occurs, this may more than offset pollution benefits from increased resource efficiency. In the case shown in Figure 4, a rise in global GP from  $y_0$  to  $y_2$  as a consequence of globalisation results in unchanged pollution intensities. However, total pollution levels rise. So even with less growth in GP, total pollution levels would rise. In this case we can find the GP value above which total pollution levels rise. To do so we construct a rectangular hyperbole represented by curve HBK in Figure 4. Any increase in GP above  $y_1$  raises total pollution levels.



**Figure 4:** While the Kuznets pollution curve may decline because of increased efficiency as a result of globalisation, pollution levels may rise due to economic growth.

Optimists may point out other considerations as well. These are:

- (1) economic growth may stimulate the development of new resource-saving technologies;
- (2) rising income may increase demand for a better environment, so environmental control improves (environmental income effect);
- (3) with economic growth, existing equipment may be replaced more quickly and in general new equipment is likely to be more efficient in resource use and to be more environmental friendly (replacement effect) and
- (4) with rising incomes, the nature of demand changes towards less resource-using industries such as service industries (the composition effect).

While all of the above effects should be taken into account, the empirical results indicate that material throughput has continued to rise even in countries which have had falling pollution intensities (Research by the Wuppertal Institute and World Resources Institute, see World Resources Institute et al. 1997). Even if pollution intensities were to fall (or for that matter the level of total global pollution), economic growth might still be of concern to those who believe that strong conditions need to be imposed on conversion of natural resources to man-made goods, in order to achieve sustainable economic development. Their argument is not based purely on pollution effects. Let us consider it.

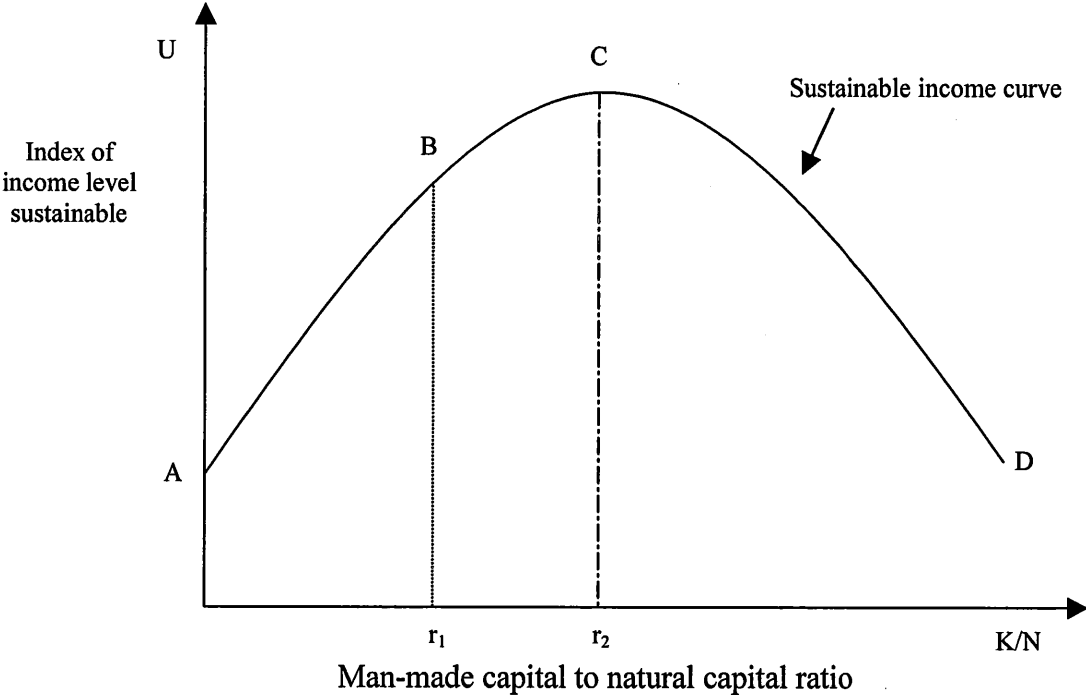
#### **4. WEAK AND STRONG CONDITIONS FOR SUSTAINABILITY AND THE PROCESS OF ECONOMIC GLOBALISATION**

Regarding sustainable development, one needs to know in what sense the term is being used and how sustainable development is to be achieved. One view of sustainable development is that it is development that ensures that the income of future generations is no less than that of current generations (Tietenberg, 1988).

Views differ about how that goal can be achieved. Some economists suggest that weak restrictions on the use of natural resources will suffice whereas others believe strong conditions must be imposed (Tisdell, 1999b). Traditionally economists have adopted weak conditions as a requirement for sustainable development. These imply that the appropriate way to achieve sustainable development is by accumulating man-made capital. Capital accumulation according to this approach is the key to taking care of future generations. This

approach assumes that man-made capital can continue to be substituted for natural capital (natural resource stock) without any adverse consequences for economic production.

In contrast, those who favour strong conditions for sustainable development argue that the continued conversion of natural resources to man-made capital will eventually reduce production. This group argues that man-made capital is not a substitute or a perfect substitute for natural resource capital. They argue that natural resources or environmental stock has an essential and irreplaceable role to play (Daly, 1997; Tisdell, 1997a, 1999a). Once natural capital is reduced beyond some point in relation to man-made capital, future production may fall. Where K represents man-made capital and N represents natural capital, the situation might be illustrated crudely by Figure 5. In this figure, the curve ABCD represents the level of income which can be sustained or more generally is an index of the level of income sustainable.



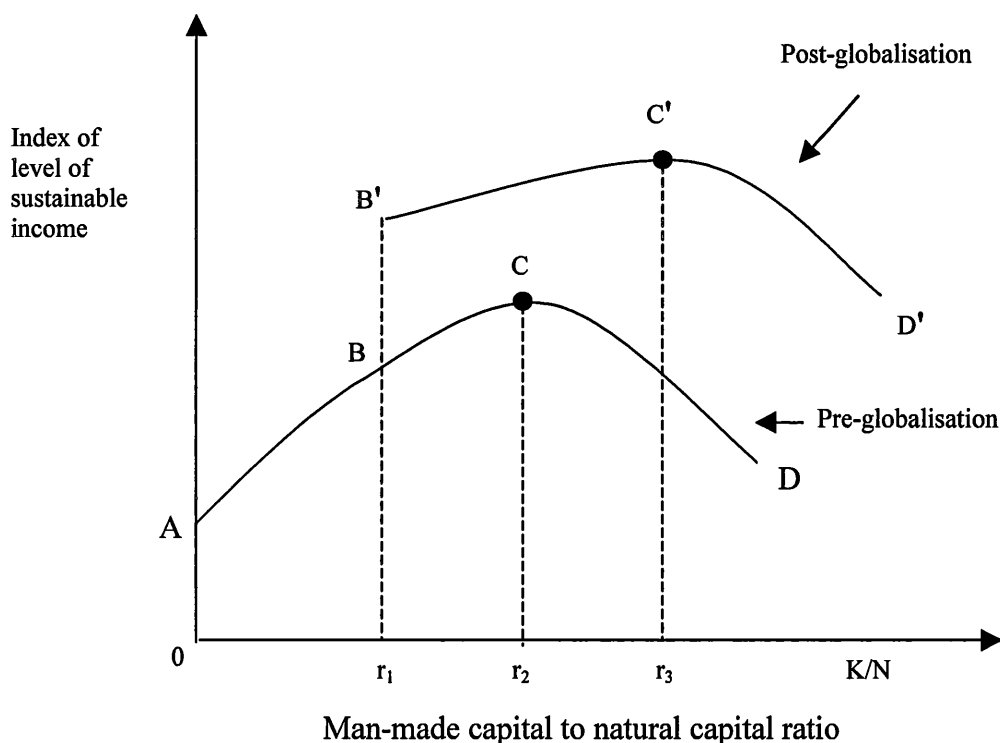
**Figure 5:** Likely relationship between the level of sustainable income and the ratio of man-made capital to natural capital.

From Figure 5, it can be deduced that if the world economy has a K/N ratio of  $r_1$ , further conversion of natural resources to man-made capital will raise the level of sustainable income. But if the world economy is at or gets into a situation corresponding to  $r_2$ , the level of sustainable income declines if further conversion of natural resources to man-made capital occurs.

If economic globalisation accelerates investment, as is likely, then it can be expected to push  $K/N$  upwards. Thus it could accelerate the onset of a decline in the level of sustainable income, or if a decline is underway in the level of sustainable income add to it. One of the reasons why economic globalisation may accelerate an increase in  $K/N$  is that foreign direct investment is facilitated, and multinational companies have increased scope for expansion. WTO rules are also designed to facilitate international investment.

There is also a more optimistic possibility that globalisation could raise the level of  $K/N$  at which income can be sustained. It might do this, for example, by stimulating technical progress which saves on the use of natural resources in the investment process or raises productivity for at least some  $K/N$  combinations.

The situation can be illustrated by Figure 6. Let curve ABCD represent the sustainable income (SI) curve prior to globalisation. Suppose the world economy is then at B. The curve may shift as a result of globalisation up to  $B'C'D'$ . Sustainable income is now higher and loss of sustainability does not occur until the  $K/N$  ratio reaches  $r_3$ .



**Figure 6:** Increased technological progress following globalisation may raise the level of sustainable income and shift the sustainability curve.

The above possible scenarios have been considered from the global point of view but they might be adjusted as to apply just to China in principle.

Nevertheless, from the point of view of practical prediction, the above analysis is probably too general as far as China is concerned. Possibly in case of China, one could have some success in estimating pollution and sustainability impacts of China's entry to WTO by predicting the following and their effects:

- (1) variations in the structure or composition of its economy;
- (2) the acceleration in capital accumulation in China and its anticipated impact on natural resource stock;
- (3) probable changes in technologies, and
- (4) scale or growth impacts.

Pollution estimates for different industry sectors can be utilised in relation to (1) to predict changes in total pollution levels but may have to be adjusted in the light of (3) and scaled up to take account of factor (4). Ideally a general equilibrium framework should be used to make the calculations. Input-output analysis including pollution emissions as a component provides the simplest inter-industry approach. However, consideration of factor (2) falls outside this framework.

In a more globalised economic world with China as part of WTO, China's natural resources are likely to come under increasing pressure. Natural resources to which there is open access will be under particular pressure and also those for which access is subject to weak governance. If Chinese controls on pollution are less severe than in higher income countries, investment in polluting economic activities will gravitate towards China. Multinational companies, for example, may take advantage of this laxity and the host community may find it difficult to control their polluting activities.

## **5. WTO AND THE ENVIRONMENT: BRIEF COMMENTS**

While WTO is not a successor to GATT, it arose out of it. WTO was formed as a result of the Uruguay Round of GATT, 1986-94. Countries prepared to agree to and conforming to all the rules adopted during this round were or could be admitted to WTO. GATT, however, still

continued for those members not able or willing to accede to WTO. Consequently GATT continues in a 'frozen state' (see Cole, 2000, Ch.2).

GATT was founded in 1948. It makes no specific provisions for environmental matters. In fact, GATT has been unprepared to support trade restrictions on the basis of environmental or ecological damage caused by techniques used by an exporter. This is underlined by the decision in the dolphin-tuna case involving the USA and Mexico.

The stated objective of the GATT/WTO is to "provide a secure and predictable international trading environment for the business community and a continuing process of trade liberalisation in which investments, job creation and trade can thrive."

Neither GATT nor WTO have approved trade restrictions which limit trade on the basis of adverse environmental effects when these occur externally to the country imposing sanctions. The only allowable basis for environmental trade discrimination is when environmental practices leave adverse identifiable signs on products. The technique adopted to produce the products cannot in itself provide a basis for trade discrimination, even if use of the technique seriously damages the environment.

The policies of the WTO favour weak conditions for economic development. Its policies are not specifically intended to ensure the realization of sustainable development. They basically favour economic growth and the achievement of full employment globally which is not surprising given WTO's evolution from GATT which, like most of the international bodies established as a result of the Bretton Woods Conference, was a reaction to the economic depression prior to World War II. While, the policies of WTO may be compatible with weak conditions for the achievement of sustainable development, or nearly so, its policies are not designed to satisfy strong conditions for sustainable development.

WTO has adopted the position that policies on international trade and investment, especially national policies, should not be used to achieve environmental objectives. WTO prefers that such matters be solved by international multilateral agreements. Concerning the conversion of natural resources into man-made commodities, the WTO appears not to have elaborated its position. It has formed an Environment and Trade Committee but this committee appears to have made little progress with policy (Cole, 2000). Practically no reconciliation has occurred

between the views of many environmentalists and the WTO as indicated by demonstrations at the WTO meeting in Seattle in late 1999.

While one can understand the reluctance of the WTO to allow international trade and investment policies to be used for enforcing environmental preferences or goals, it seems unreasonable to adopt a blanket position in this regard. Trade sanctions e.g. against Iraq, have been used for international political ends. Violation of environmental global agreements may require penalties. Trade and investment sanctions should not be ruled out completely although they ought to be a last resort.

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