RISING TO THE CHALLENGE OF SUSTAINABLE DEVELOPMENT IN THE CARIBBEAN: Feature Address to SEDU's 10th Anniversary Conference

DENNIS PANTIN

Introduction

This paper begins with a reflection on the life and work of John Cropper, a founding member of the Sustainable Economic Development Unit (SEDU) of the Department of Economics at The University of the West Indies, St Augustine Campus, in the context of the initiation of the Inaugural John Cropper Lecture by SEDU in his memory[1]. The paper then analyses the Sustainable Development Challenge from a global perspective. The third section undertakes a similar task, but this time from the perspective of small and island economies, particularly those in the Caribbean. The final section turns specifically to a sustainable livelihoods approach to sustainable development, drawing on John Cropper's legacy and also sharing the results of a multi-year study undertaken by SEDU with support from the United Kingdom's Department for International Development (DFID).

1.0 A Reflection on the Life and Work of John Cropper[2]

John Cropper was born in 1943 to a family that had been farming for generations in Lancashire, England. Though an only child, he decided to train for agricultural development in Africa rather than continue with family tradition. He obtained a first in Agricultural Economics and then

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1 Professor David Edwards agreed to give this Inaugural lecture but unfortunately was unable eventually to attend for personal, medical reasons. His lecture is to be published as a stand-alone together with other tributes to John Cropper.

2 This section draws on Professor Edwards' inaugural lecture.

came to The University of the West Indies (UWI) to pursue a postgraduate Diploma in Tropical Agriculture in 1965. In the following year he was granted a one year appointment in the UWI Department of Agricultural Economics. Shortly thereafter, one Miss Angela Persad came to work in the department. In 1970 John and Angela were married.

In the 1960s he did research on the growth of the Barbados domestic dairy industry and on the Texaco Food Crops Farm, Trinidad, with a re-orientation to a focus on market demand. This included seeking innovative solutions to the problem of harvesting sorrel for a George Sammy project with the support of union representatives and involving members of the families of farm workers in harvesting. In the 1970s he conducted research on local inputs to the food processing industry[3]. He then moved on to be Head of Planning & Information at the CARDI and later established his own publication, "Caribbean Farm News": He also served as advisor to a Commonwealth Advisory Group on Economic Recovery in Guyana and returned to Trinidad in the early 1980s with a growing interest in permaculture defined (D. Edwards, 2007) as:

> ...the conscious design and maintenance of agricultural productive ecosystems that have the diversity, stability and resilience of natural ecosystems. It is the harmonious integration of landscape and people providing their food, shelter, energy and their material and non-material needs in a sustainable way.

David Edwards also points out that

> ….. in contrast to some economists, John was always concerned for the people covered by his research….he was always concerned to cover practicable, important issues…(But) the emphasis and nature of his interests were reoriented markedly in his later work in Trinidad. Here he directed his attention to people in the community and how they could meet their human needs.

[3] On which project this author served as research assistant

This conclusion is supported by his wife, Angela Cropper, who points out that

> John had moved beyond strict Agricultural Economics in his thinking about Agriculture, and had come to relate it as a holistic and embracing life, catering to livelihoods and as well as to national economy, and to many aspects of human well being. [4]

This is the background to the person who became a founding member of SEDU and took up a challenge to advance a sustainable livelihoods approach to the problem of de-forestation of the Northern Range, Trinidad[5]. I wish to pay public tribute to John's contribution to the founding of SEDU. Perhaps the most appropriate words to acknowledge this were voiced by Lloyd Best, not in the particular context of SEDU, but his more general and generous approach to institution building:

> Not only did we count on him and lean on his shoulder. Without quite realizing it, we were confident of his presence, uncomplaining, quiet and without demonstration, empowering and encouraging… for himself he sought no notice by the device of refusing the spotlight. Not only had he opted for the shadows, prodding everyone else forward. Invariably he made sure the job had been completed, finished and done. [6]

2.0 Sustainable Development: The Global Challenge

The concept of sustainable development itself brings together two complex concepts: sustainability and development. Each deserves distinct definitional and conceptual elaboration before being adjoined, as it were.

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4 The Cropper Foundation: Annual Report 2002-3.

5 John had read a report by Asad Mohammed and myself (Pantin and Mohammed, 1993) on one such community in the Northern Range but felt that the solutions did not adequately address the livelihoods option and we agreed that he should rise to the challenge of documenting and detailing this alternative, sustainable livelihoods approach

6 The Cropper Foundation: Annual Report: 2002-3.

2.1 Sustainability

Common (1985) notes that: "To sustain is to support without collapse." In more specific economic terms, Peezey (1992) interprets sustainability to be: "…a non-declining utility of a representative member of society for millennia into the future."[7]

2.2 Development

Seers (1969) defines development simply as the "realisation of the human potential", identifying three key measurable development indicators as adequate nutrition, a job and equitable distribution of income and wealth.

Sen (1983), in a similar vein, sees the development challenge as that of facilitating human beings to develop the 'capabilities' required to meet 'entitlements' of food, security, etc.

However, the very concept of 'development' as a goal achievable through policy interventions has been questioned in the literature. Ardnt (1981), for example, distinguishes between transitive and intransitive concepts of development where the one refers to a process which occurs 'naturally' through the evolution of human societies while the other perceives development as something susceptible to human intervention.

2.3 Sustainable Development

The term Sustainable Development was itself popularized by the 1987 World Commission on Environment and Development, more popularly known as the Brundtland Commission or Report. Here, Sustainable Development was defined as, "….development that meets the needs of the present without compromising the ability of future generations to meet their own needs "(WCED, 1987).

Two economists have sought to include the disciplinary perspective in their definitions, with Pearce (1989) defining sustainable

[7] As cited in Turner ed.1993

development, for example, as "…about being fair to the future. It is about leaving the next generation a similar, or better, resource endowment than that which we inherited."

> Munasinghe (1993) suggests that the economic goal is
>
> ... to maximize the net welfare of economic activities while maintaining or increasing the stock of economic, ecological, and socio-cultural assets over time (to ensure the sustainability of income and intra-generational equity) and providing a safety net to meet basic needs and protect the poor (thereby advancing intra-generational equity.)

2.4 Critiques of Sustainable Development

The concept is not without question or critique. In a review of the literature, Lele (1991) points, for example, to the lack of a clear articulation of concepts, analytical methods and operational principles of Sustainable Development (SD):

> SD is in real danger of becoming a cliché like appropriate technology - a fashionable phrase that everyone pays homage to but nobody cares to define ... The absence of a clear theoretical and analytical framework however, makes it difficult to determine whether the new policies will indeed foster an environmentally sound and socially meaningful form of development.

O'Riordan (1988) also has cautioned that the concept can be used as

> ….a mediating term designed to bridge the gulf between 'developers' and 'environmentalists.' Its beguiling simplicity and apparent self-evident meaning having obscured its inherent ambiguity.

O'Riordan in fact traces the origins of the concept of sustainable development to Africa-based conferences organized in the mid-l960s by the International Union for the Conservation of Nature (IUCN). These conferences focused on natural resources and wildlife. In 1973, the IUCN

came up with the concept of 'eco-development.' However, in 1978, the IUCN resolved that its philosophy

> ...while continuing to concentrate on conservation issues, shall place conservation firmly in its socio-economic context, thereby including population and other major influences such as poverty.[8]

By 1980 the IUCN proposed a World Conservation Strategy for sustainable utilization. The IUCN strategy moved to the acceptance of a triple-level approach to sustainability with the fundamental objective being the provision of basic needs. This IUCN position reflected an earlier conclusion coming out of the report of a panel of experts to the 1971 United Nations Conference on Human Environment (The Founex Report, 1971). This Founex Report defined 'bad environment' to include poverty, poor water supply or housing, sanitation and nutrition; and also sickness, disease and natural disasters. The Founex Report also spoke of the 'pollution of poverty.'

2.5 The Three-sided Interface/Functional Linkage between the Environment and Society and Economy

Whatever the critique of and cautions on the term 'sustainable development', this literature has brought to the fore the need to embrace a holistic framework in terms of the linkages between economy, society and the environment as source, sink and threat.

Human beings depend on nature as a (re)source for several reasons. First, for oxygen. Second, for water resources. Third, for soil resources to facilitate agriculture, agro-forestry and livestock production. Fourth, for energy resources provided predominantly, at present, by hydrocarbon resources (oil, natural gas, coal and in some societies from wood) but also from wind, water (hydro-electricity from rivers) and ocean thermal energy conversion (OTEC) and the sun. Fifth, for

[8] as cited by O'Riordan, 1988

bio-diversity for game and medicinal purposes but also for psychic relief. Such natural resources are either depletable in use (i.e. exhausted as, for example, minerals), or renewable in use (e.g. fisheries, forests, etc).

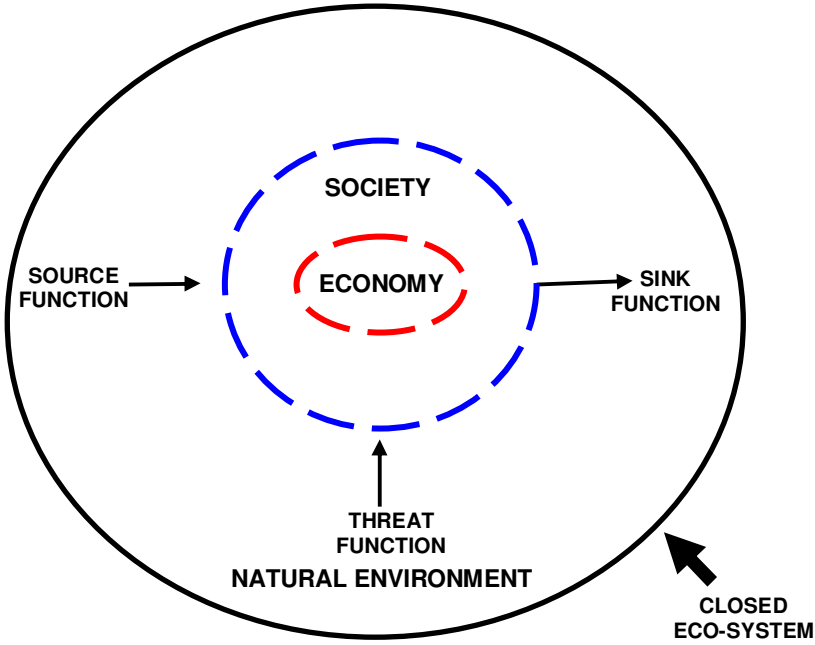
Second, nature serves as a sink for the wastes generated in production and consumption. The conversion of nature's resources into inputs of production which are processed and then finally consumed simultaneously generates waste at each stage of the production/consumption process (including recycling) as well as a heat sink which, in turn, explains global warming as another dimension of globalization.

A deterioration in the quality or quantity of any of the renewable natural inputs into society - resulting from use beyond their absorptive or carrying capacity - contributes to a deterioration in the quality of human life. At the most obvious, industrial pollution leads to health problems via its negative impacts on air, water and soil quality and also through negative feedback into the human food chain such as polluted fish, livestock or food stocks. Moreover, human beings also can suffer negative psychological impacts from the depletion of nature in terms of its role in leisure. Loss of aesthetic value is therefore also a dimension of pollution.

Finally, nature poses a threat to the socio-economy in terms of earthquakes, volcanic eruptions, wind storms (hurricanes, tornadoes) and the related rainfall, with the sometime combination of these, as in the December 2004 tsunamis that resulted in mass death and destruction in south Asia and the Pacific and more recently in Java in July 2006.

In the particular case of small island economies, this third threat function poses a major developmental challenge as, for example, in the case of the Caribbean island of Grenada where an estimated 90% of buildings suffered damage as a result of Hurricane Ivan in September 2004. Moreover, global climate change is projected to exacerbate the threat which nature poses in general, but particularly to small islands in the 21st century, an issue to which we return in Section 3. Figure 1 illustrates graphically this three-sided interface.

Figure 1
Triple-sided Interface between Economy and Environment



2.6 Thinking Global

The global eco-system faces a real and present danger of over-shoot and collapse as a result of an incessant flow of energy waste adding to the heat sink effect and also, pollution of the atmosphere, seas and land space by a range of toxic and other chemicals - including cocktails brewed by admixing in nature. Daly (1991) has suggested, for example, that perhaps the most appropriate index of the impact of economic activity on the environment, and hence of outer limit, is the share of total world

production of photosynthesis appropriated by human beings as measured by net primary production .

3.0 Sustainable Development: The SIDS Challenge

The challenge of sustainable development is, therefore, a global one while simultaneously having a national/local dimension, captured in the now famous saying: 'Think Global, Act Local'. However, all countries and regions are not coming to the global challenge from the same initial conditions. Rather, we can identify three broad, generic types of economies: 'over-developed', 'under developed' and 'sustainably developing' economies and societies.

3.1 'Over-developed' Economies

First, we can identify one definable category of economy generally termed a 'developed' country but which Daly (1996) usefully defines as an 'over-developed' country, meaning by this one whose consumption of goods and services on a per capita basis, if generalized to the entire global population, would be not sustainable on an environmental basis i.e. would lead to over-shoot and collapse of the global eco-system based on the demands it would make for natural resources and on the sink function of the global environment in terms of consequential levels of waste – including in particular, heat waste - which would need to be absorbed.

3.2 'Under-Developed' economies

At the other extreme are what Daly (1996) also defines as 'under-developed' economies, meaning those whose per capita consumption of goods and services, if generalized to the entire global population, would be well within the global eco-system carrying capacity but which simultaneously would leave many with a quality of life which does not permit 'the realization of the human potential'.

3.3 Intermediate or 'sustainably developing' countries

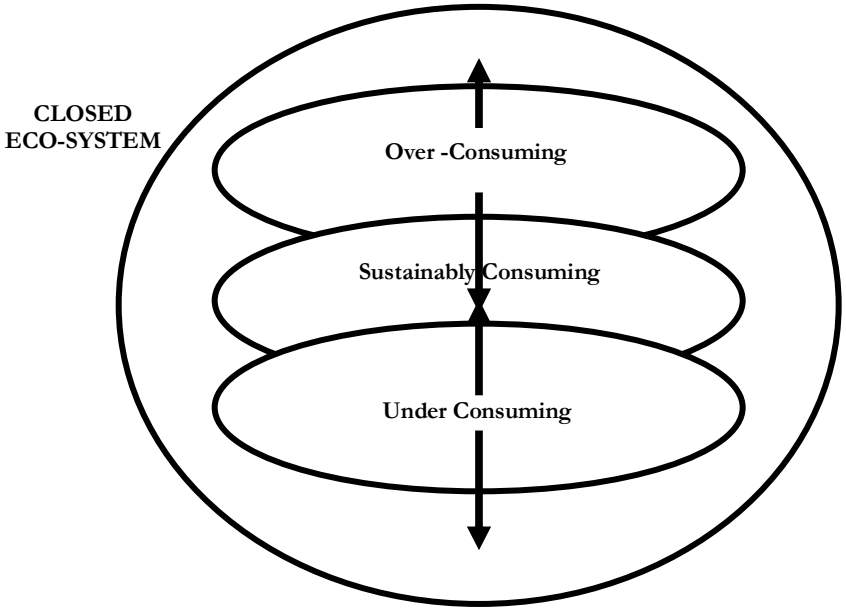
A third category is now added to the modified description of Daly's two polar types by this author, and it is that of the 'intermediate' or 'sustainably developing' economy which would be considered to be consistent with an economy and society on a positive trajectory to sustainable betterment. Two kinds of economies can be seen to meet this bill.

First are 'over-developed' countries which are acting positively to reduce the environmental demands which they make on the global eco-system (or their global ecological footprint) while simultaneously contributing to their responsibility and, as well, self-interest as global citizens by the real, net transfer of resources (money, goods and services, savings and investment and knowledge) to 'under-developing' countries and also seeking to persuade other 'over-developing' countries to chart a similar course. Casual empiricism suggests that this categorization can be applied to at least some of the Scandinavian countries and, to a lesser but growing extent, the countries of Western Europe and Canada, with Japan and the USA, ironically, coming lower down the totem pole in terms of global citizen responsibilities.

A second type of economy which would qualify to be classified as 'sustainably developing' would be one which would currently be grouped as 'under-developed' but which is explicitly seeking to realize sustainable development on its own societal terms while, of course, paying attention to its global responsibilities.

Figure 2 seeks to capture the three categories of countries to graphically emphasize the extent to which countries may be tending away or towards the middle, virtually empty, category of sustainably developing countries.

Figure 2: 'Over,' 'Under' and Sustainable Developing Countries



3.4 Types of Natural Resource-based SIDS

The reality facing the Caribbean and most other small island developing states (SIDS) includes, for example, significant unemployment, poverty, dependence on one to three natural resource exports and an eco-cultural fragility and vulnerability to natural hazards. The common challenge therefore is to devise economic strategies which simultaneously address these realities whether socio-economic or environmental.

One needs to begin by identifying differing types of natural resource dependence which exist in SIDS and the requirements for

transformation into fully employed, globally competitive, productive-oriented economies with equity (in economic, social and environmental terms both within and between generations).

Four sub-categories of natural resource-dependent SIDS countries can be identified. First are those countries dependent on their agricultural soils for export of primary agricultural commodities. Second, those whose economies are based on the amenity values of their natural resources for tourism or natural products including, increasingly, pharmaceuticals. Third, those whose incomes are derived primarily from non-hydrocarbon minerals such as bauxite and copper. Finally, we can identify those who draw their economic sustenance from the export of oil or natural gas. The first two sub-categories are therefore dependent on renewable resources and the third and fourth sub-categories on non-renewable resources.

3.5 Natural Resource-based Rentier Economies

The common denominator among all such economies is their dependence on natural resource-based economic rents defined most generally as forms of unearned income provided by nature. Ricardo (1817)[9], for example, distinguished between rent as factor income ('in popular language, the term is applied to whatever is annually paid by a farmer to his landlord') and economic rent ("Rent is that portion of the produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil").[9] Alfred Marshall (1920) reserved the concept of economic rent to refer to "income derived from the gift of nature".[9)]

Natural resources - whether renewable or non-renewable - therefore generate economic rents from their use. Countries highly dependent on natural resource rents can be described as rentier economies. There is, of course, no complete rentier economy. In a similar sense, Marshall suggested that there are few examples of 'pure economic rents.' An economy would qualify to be classified as 'rentier' in nature, however, if natural resource rents play a dominant role in the macro-

[9] As cited by Kaplinski (1998)

economy and/or the fiscal operations of the state. It would, however, be safe to conclude that mineral-based economies and, more particularly, petroleum-based economies represent the 'purest' type of rentier economy.

It is not the fact of having natural resources which determines that a country would be classified 'rentier' in nature, but whether substantial value is added to the natural resources by owners of capital - whether state and/or private – in such resource based economies. It is this absence of value added which permits categorization of such economies as rentier in nature. Other countries which add such value cannot be so classified. Kaplinsky (1998) points out, on this score, that,

> … many other countries gain from the exploitation of scarce natural resources, including 'industrialized' economies such as the USA, Canada and Australia. Where the industrialized countries differ is that they have been able to extend their operations along the value chain to undertake downstream processing activities. ...while the Gulf States extract oil, high-productivity extracting economies such as the USA and the UK have more developed hydrocarbon-based processing activities….Brazil and South Africa produce pulp, but Finland and Sweden also manufacture paper-making machinery… [11]

3.6 Economic Characteristics of Rentier Economies

Three main economic characteristics can be identified as associated with such 'rentier' economies. First, the conventional macro-economic indicators utilized for evaluating economic performance can be extremely misleading in such resource-based economies. As Seers (1964) pointed out in the 1960s, in the case of oil exporting economies such as Trinidad and Tobago and Venezuela, there can be the paradox of persistent and significant growth in real GDP and per capita GDP alongside growing unemployment and poverty. The reason is that natural resource exports can be extremely lucrative - at least in periods of boom - and hence mask

the fundamental structural weaknesses of such rentier economies. Kaplinksy (1998) points out that Botswana, for example,

> … was one of the most rapidly growing economies in the world over the 1970s and 1980s, despite having virtually no industry and very poor agricultural land. This was almost entirely due to its deposits of low-cost, high-quality diamonds and the workings of the diamond cartel.

Second, resource exports tend to distort and 'crowd out' productive economic activities in the other sectors of the economy. One of the peculiar features of such rentier economies, therefore, is what Beblawi (1987) terms the break in the 'work-reward' relationship since economic rents finance consumption in the rest of the economy. As a result, as Chatelus (1984) observes: "… most economic activities (in rentier economies) are…a means of ensuring income circulation, rather than production-oriented behaviour."[10]

In periods of economic boom, in particular, balance of payments constraints tend to be relaxed and lead to overvalued exchange rates which facilitate consumption of imports. As a result, other productive sectors, particularly agriculture, tend to be 'crowded out'.[11]

Third, rentier economies tend to have 'disguised' economic, and hence social, problems which only manifest themselves when there is a downturn in the flow and/or value of economic rents. Seers (1964) observes, on this score, in the case of open petroleum economies that

> Factors that elsewhere would express themselves in balance of payments crises, such as wage increases or inadequate initiative in developing local industry, will here cause growing unemployment. An economy of this type has what might be called disguised, rather than over, balance of payments tensions.

[10] As cited by Beblawi, (1987)

[11] See Ait-Amara, in Beblawi (1987) for an analysis of the impact of oil on agriculture in the Middle East

3.7 Small Island Rentier Economies

In a narrow definition, Beblawi (1987) perceives the rentier economy as

> …one substantially supported by expenditure from the state, while the state itself is supported from rent accruing from abroad; or more generally an economy in which rent plays a major role.

However, a broader approach is taken here to include all economies in which natural resources of one kind or another play a significant role in the economic survival of the society even if the rents are not directly filtered through the State (for example, tourist-based SIDS) . Bertram (1980) argues, for example, for a radical reconceptualization of the meaning of 'sustainable development' in Pacific micro-economies, suggesting that these are not autonomous economic units but sub-units of a regional economy which survive on the basis of rents:

> ...conventional notions of what constitutes economic development cannot be applied to the very small island economies of the Pacific. . .Given that these economies are driven by rents. . .the focus of analysis must not be on production constraints but on questions of incentives, rent-seeking behaviour by households, and the political economy of aid bargaining.

Bertram and Walters (1985) have dubbed such economies MIRAB (migration, remittances, aid and bureaucracy) economies. The report of a 1986 Puerto Rico workshop adapted this concept to refer to MIRAGE (migration, remittances, aid, government and education) economies. (Beller et al., 1990)

3.8 EMMCI Principles for Natural Resource-based Economies

Five economic principles ought to inform natural resource management in countries whose fortunes are highly dependent on the source function of their natural resource base for their economic well

being. These are the principles of Equity, Maximization of value added together with Measurement, Capture and Investment of Economic Rents.

3.9 Equity Principle

There are two related concepts of equity which arise in natural resource-based economies. Both follow from the fact that, by definition, natural resources are owned in common by all members of such societies and therefore, in accordance with well enshrined principles of property rights, such owners ought to obtain an equitable share of the benefits from the utilization of such natural resources.

The first concept is that of intra-generational equity in terms of the benefits accruing to the present generation. The second relates to inter-generational equity. The literature tends to focus on inter-generational equity, thereby assuming intra-generational equity. The operationalization of these two related equity principles are given effect in terms of the four which follow below.

3.10 Maximization of Value Added Principle

The owners of any asset ought to naturally maximize the benefits which derive from its use. In the case of natural resource assets the obvious objective for natural resource-based economies is to have as much ownership rights as is feasible along the entire value chain, from raw material to final product. Historically, however, natural resource countries have tended to benefit largely from shares of royalty or taxation of profit income (together, sometimes, with equity participation) at the natural resource extraction end rather than across the entire value chain. To maximize value added also implies creating knowledge systems for human resources to be deployed along the value chain.

3.11 Measurement (of Economic Rents) Principle

To give effect to the equity principle therefore requires that there be a measurement of the value of economic rents generated from natural resource exploitation. There is an obvious linkage between the maximization of value added principle and the measurement principle.

3.12 The Capture (of Economic Rents) Principle

Given the equity and measurement principles, the logical corollary is the need for those who own the natural resources to be able to 'capture' economic rents. Again, this relates both to renewable and non-renewable resources.

3.13 The Investment (of Captured Economic Rents) Principle

Given the capture of economic rents, the equity principle - particularly that of inter-generational equity - implies that such economic rents should be invested. In the case of a natural resource-based economy, the challenge is larger than simply maximizing the return on capital. It also involves reducing the future dependence on the very natural resources which generate the captured rents in the first place and the implementation of strategies and policies which contribute toward the sustainable development of the natural resource-based economy. One key element here is that of natural resource risk minimization via diversification. Diversification of the natural resource risks has two dimensions.

3.14 Risk Minimization via Diversification of Investment within the Natural Resource Sector

On the one hand, there can be diversification within the natural resource itself. This is linked to the maximization of value added principle and would take a natural resource-based economy, for example, from

investment only within the national geographic location for natural resource exploitation to the development of knowledge as to how to find, extract, transport, process and ultimately market such natural resources. In this way, the knowledge could be utilized in other countries/ geographic spaces even if, or when, the particular country's own natural resources are either exhausted or no longer economically viable to extract. Or, if renewable, to internalize capabilities in other geographic spaces.

In other words, natural resource-based countries should establish firms which can operate across national boundaries in the same way as transnational corporations do as a matter of course. The competitive advantage of such transnational corporations is not in owning natural resources but in their knowledge of how to exploit market opportunities and to generate the necessary capital to give effect to this.

There is some evidence of such trans-border diversification within the natural resources. Both Kuwait and Venezuela, for example, have invested in refining and retail vehicular fuel markets in the USA and Western Europe. In the case of tourism, two Jamaican-owned hotel chains have invested elsewhere in the Caribbean.

3.15 Diversification Outside the Natural Resource Sector

The second more obvious form of diversification is in terms of investment in other natural resources or, more particularly, in non-natural resource-based industries including the now much vaunted knowledge industries.

3.16 Mis-specification of the Rentier Economy in the Neo-liberal Model

Unfortunately, the concept of the 'rentier economy and state and society' has not been recognized by the neo-liberal literature although it does focus on one type of economic rent which results from the use/abuse of state power. Such a monopoly or 'policy rents' is the result of a process in which the holder's "… wealth potential is increased by

restrictions on other potential competitors, restrictions that are artificial or contrived in not being naturally inevitable. Laws prohibiting others from selling white wine, or opening restaurants, or engaging in legal practices are examples" (Alchian, 1987). Neo-liberalism has utilized the role of such a monopoly or policy rents in post World War Two economic policies throughout much of the economic periphery as persuasive evidence that 'Government Failure', as Krueger (1990) has argued, is rampant. The causal factor in this outcome is suggested by neo-liberal economists to be the rent-seeking behaviour[12] of political and economic elites which distort market relations.

This neo-liberal analysis of dominant rent-seeking behaviour is not without truth and merit. However, this neo-liberal literature is marked by three main limitations. First, it fails to distinguish between the several forms of economic rents and focuses merely on a single type of policy rents. Second, as a result, it fails to recognize and/or concede that there are some economies which depend unavoidably on resource rents. For these economies, economic liberalization does not solve the rentier reality of their economies but merely shifts the distribution of such unearned incomes predominantly to business elites, including foreign corporations. Third, as a result of the above two failures, the neo-liberal model ignores – increasingly deliberately - the fact that in the very period that so-called rent-seeking behaviour was dominant in some economies, other countries which were natural resource-poor (Japan and the other newly industrializing countries of South-East Asia) were transforming their economies with substantial state interventions and hence this brings into question its conclusion that public policy interventions by definition will always inevitably result in 'government failure'.

3.17 Actual State-Market Relations in the Oil Rentier Economy

One significant blind spot of the neo-liberal model is its failure to recognize that the traditional roles of the state and market are reversed in the rentier economy. What this neo-classical economic literature

[12] See Alchian, (1987)

surprisingly ignores, therefore, is the dominant role of the state in reproducing the rentier economy. This is a result of the loss of the institutional moorings of neo-classical economics. Adam Smith, for example, was quite clear that the invisible hand of the market could not be fully realized unless the 'dead hand' of the institution of the feudal state was itself changed. The problem with rentier economies is that there is a tendency for economic stagnation based on the linkage between the rentier economy and a rentier state and society.

In the traditional economy, firms earn what has been called in another context 'bounty' which the state then seeks to levy on. In the rentier economy, the 'bounty' accrues first to the state and it is market players who then seek to 'lever' state actors. Fadil (1987) points out, for example, that in the case of oil-rentier economies:

> …the state becomes the main intermediary between the oil sector and the rest of the economy. It receives revenues which are channelled to the economy through public expenditure, and since public expenditure generally represents a large proportion of national income, the allocation of these public funds between alternative uses has great significance for the future development pattern of the economy.

Even this description of the state-market process could be inadequate since the first requirement for rent distribution is that of rent capture. There is no guarantee that this will actually occur. This is not merely true of non-renewables but also of renewable natural resources. However, the problem of rent capture is even more evident in the case of non-renewables. In the context of a dominant neo-liberal model advocating a level playing field it is difficult to explain, for example, the generous tax concessions which foreign, as well as local firms, have been able to achieve in the natural gas sector in Trinidad and Tobago. In the 1990s and early 21st century, for example, investors in the natural gas sector in Trinidad and Tobago have received tax holidays ranging from a floor of five years, to seven years in one instance and ten years in the case of British Petroleum's first liquified natural gas (LNG) plant at Pt. Fortin.

Ram (2000) has estimated that the rate of return to Trinidad & Tobago from this first LNG plant ranges from 7%-86% while the return to BP is estimated to range from between 200%-342%.[13] Since several assumptions had to be made in conducting this study, we may assume a margin of error. Nevertheless, the wide gap between the rates of return to the state and to BP is cause for concern, particularly if we take into account, as Ram also notes, that some costs to Trinidad and Tobago were excluded:

> The costs to Trinidad and Tobago are taken as the user costs from implementing the project. However, this study has failed to take into account the other costs of exploitation, such as subsidies and environmental degradation. One negative environmental externality includes the building of the plant on a popular beach. This beach is no longer available for recreational activities.[14]

Transforming the natural resource rentier state to one which is transparent, accountable and focused on economic production and efficiency is therefore an *economic* objective which is a pre-requisite for the technical economic policies to be implemented. In other words, the above proposed policy interventions to redress the negative impacts of the 'pure' characteristics of rentier economies are naïve, first best solutions, with little chance of implementation without recognizing the fact that rentier economies tend to beget rentier states. Beblawi (1987) defines a rentier state as: "… any state that derives a substantial part of its revenue from foreign sources and under the form of rent..."

[13] M.Sc. Environmental Economics dissertation of Justin Ram from the Univ. College of London conducted under the supervision of the late Professor David Pearce, Co-Director of the Centre for Social and Economic Research on the Global Environment(CSERGE) in 1999.

[14] Interestingly, this study also estimates a negative return of 2% to the forestry sector in T&T.

3.18 Overall Macro- economic Policy: The Differing Realities of SIDS

Even genuine efforts to transform such economies are burdened by the assumption that one can borrow from the macro-economic policies utilized in a differing type of economy. One critical example is that of conventional, textbook monetary policy which requires, for example, that foreign exchange reserves be monetized. In the context of windfall profit income from temporary natural resource-based booms, such monetization leads to a rapid haemorrhage of scarce foreign exchange if seen in a longer inter-temporal sense.

The transformation of the rentier economy therefore requires that the national economic realities be recognized and addressed in terms of appropriate policy interventions beginning with the concept of a macro-economy which can have two interpretations. First, a description of all of the economic activity which takes place within a specified geographical area termed a country or economy. This is consistent with the definition of gross domestic product as "the value of all goods and services produced within a particular economy within a specified time, normally one year."

However, there is a second, more substantive sense in which we can conceptualize something called the macro-economy, defined here as the key economic variables common to the entire economy and which are susceptible to influence through the use of national-level economic policy-making instruments in the interest of realizing certain national economic goals, key among these being full employment.

The actual reality in small and island developing states and economies is remarkably different from the Keynesian-type economy. In fact, one can question whether there is a macro-economy in the first instance, if by this we mean key national economic variables readily susceptible to manipulation in the interest of full employment.

The reality of SIDS includes their substantial economic openness such that trade can be close to, equal to, or greater than, GDP. In other words, SIDS depend substantially on export earnings to finance imports

for consumption and production purposes. The most outstanding example of this is plantation economies established in the Caribbean solely to produce output for export and to import their consumption needs. Such plantation economies have been accurately described as "producing what they do not consume, and consuming what they do not produce."

The two key assumptions of the Keynesian-type economy are therefore vitiated in the context of such small economies, that is, there is limited linkage between domestic demand and domestic supply. Second, one also cannot assume the existence of a diversified range of robust, technologically dynamic firms producing a range of goods and services for the domestic market and for export. Arguably, perhaps, one can conclude, as Best does, that in plantation-type economies, "the balance of payments is the macro-economy."

Hein (1985) makes a similar point when he notes,

> ... it is a well established fact that in very small economies the importance of trade is overwhelming. Imports actually exceed GNP in a number of cases. Yet the work of major economists often either neglect trade altogether or treat it as a secondary factor... it follows that the theories of these authors on which much of economic theory and teaching is still based- are of least relevance to problems of microstates, and could even be misleading when applied to them. It is consequently necessary to use very different approaches. For instance any study (or teaching) of micro States' economics would be justified in starting with a focus on international trade and the external sector and treating the domestic economy as a mere dependent appendage. Similarly, the usual distinction between macro-economics and micro-economics is not very helpful in the study of very small countries.

The challenge facing such SIDS, therefore, is to divine the key national-level economic variables which need to be manipulated in the interest of the goal of equity which involves economic equity (requiring, in turn, full employment together with equitable income and wealth

distribution) and eco-cultural equity (meaning ensuring future generations have the opportunity to experience a similar or superior range of ecological and cultural assets as does the current generation). From this perspective it is national-level economic variables rather than macro-economic variables which become relevant.

3.19 An Appropriate Industrial Policy for Caribbean Development

The opportunity therefore exists to devise an appropriate industrial policy for the Caribbean, which seeks to develop a globally competitive economy in areas of specialization which are environmentally friendly. The experience of the so-called newly industrializing countries (NICs) shows that industrial policy itself is not unproblematic in terms of the environmental impact, as Gassert (1985) demonstrates[15].

> Industrial policy can integrate the diversification objectives of SIDS. Industrial policy is defined … as: Policy that attempts to achieve the national economic and non-economic goals of a country, by intervening in the allocation of resources among industries or sectors of the country, or in the (industrial) organization of an industry or sector.

The theoretical justification for industrial policy rests on the existence of market failure in national and/or international factor and product markets.[16] Industrial policy also can be justified by the empirical evidence of the correlation between the movement of countries to global competitiveness - certainly in the post World War Two period - and the practice of some appropriate variant of industrial policy. The evidence for this is richly captured in a paper by Lall (1995) to a conference on Industrial Policy and Caribbean Development held in Trinidad.

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[15] Gassert provides a detailed analysis of the health impact of the electronics assembly industries within the export processing zone strategies in Asia.

[16] See Itoh et al., (1988) and Lall (1995) for elaborations of this market failure rationale for industrial policy

In fact, economic history also suggests that no country has been able to make economic and technological progress since the rise of capitalism and the first industrial revolution in Britain without some appropriate variant of industrial policy (Lall, 1995).

The two universal elements of industrial policy, whatever the peculiarities of country variants, are targeting of priority sectors and industries for investment, and the crafting of macroeconomic policies supportive of growth of these targeted sectors and industries.

3.20 Targeting

There are two elements to such targeting. First, targeting of production from existing investment in plant and machinery since these represent sunk costs which one should seek to recover although not necessarily to replace capital. Second, targeting of markets and products for new investment. In terms of the latter, one important principle is to at least investigate building linkages between existing resources and industries and new opportunities.

In both instances the specific focus of industrial policy in the Caribbean context should be on using existing investment and certainly new investment to create or augment competitive production in areas which are environmentally neutral or positive in their impact, including culture. In other words, the basis of an industrial policy for the Caribbean must be a long-term perspective on the most competitive areas of investment for Caribbean economies, consistent with the region's "carrying capacity". This "carrying capacity" is a dynamic concept which is of obvious importance in small island eco-systems. In this sense, the notion of optimal scale of ecological economics is extremely relevant to the small island case.

The main proposal is for the development of an industrial policy for the Caribbean which seeks to exploit the economic opportunities from the small island ecological reality. Targeting could modify two of Hein's suggested specialization areas in SIDS, detailed earlier, in terms of those which cause little or no disturbance to the eco-cultural environment as

well as those which "tread lightly" on the eco-cultural environment. (Hein, l990). To this we can add activities which augment eco-cultural resources.

3.21 Appropriate National Macro Policies

The conversion of concrete, targeted products, derived from specific studies, into actual implementation, would benefit immensely from supportive public policy. In fact, one could argue that in the absence of such support, perverse macro policy signals will frustrate investment in such targeted priority sectors and activities. Successful implementation of a strategy therefore requires identification and operationalizing of national economic policy instruments which trigger the desired behavioural response and actually steer micro-economic actors in the desired direction.

3.22 Trade and Technology Policy

Similarly, trade and technology policy ought to be integrated with industrial policy. Trade negotiations, for example, should dovetail with targeted industries.

3.23 Human Resource Policy

The educational systems in Caribbean SIDS – certainly in the English speaking Caribbean – have been largely divorced from the requirements for economic diversification. There is, therefore, a need for linking industrial policy and its targeting of competitive niches to the content of both the formal and informal education system.

3.24 Fiscal and Monetary Policy

There is need for positive discrimination in fiscal and monetary policy in support of investments targeted by industrial policy. This

proposal contradicts the naive neo-liberal notion of neutrality in the use of fiscal and monetary instruments. The use of tax discrimination for export processing zones is suggestive of the possibility.

3.25 Inclusion and Exclusion Sectors for Foreign Investment

The proposal here is to seek to steer foreign investment - whether direct or portfolio - to targeted activities and sectors considered consistent with the goal of sustainable peace and human betterment. Again, this proposal stands in contra-distinction to the neo-liberal proposal for leaving such foreign investment decisions to allegedly efficiently functioning capital and equity markets.

3.26 A Modified Currency Board

There is much to be said for the case made by advocates of the neo-liberal model in support of self-adjusting macro-policy instruments. The point is that the specific forms of self-adjusting instruments favoured by the neo-liberal model simply do not serve the developmental objective very well. In particular, the neo-liberal model leads to significant variations in all domestic prices whether for products, or for domestic money (the interest rate) and foreign currency (the exchange rate) to the extent that speculation in such markets, rather than productive investment, can become the most sensible arenas for profit taking. Stability in wage, exchange and interest rates and in the prices of basic wage goods is important in itself and as a basis for global competitive production costs.

Monetary policy is extremely difficult in some small island economies as Khatkhate and Short (1980) noted. Moreover, the case for operating a liberalized foreign exchange market is rendered virtually absurd in small, island economies since there is no real demand for such currencies. One alternative quasi self-adjusting mechanism can come from a modified currency board system. In such a system, domestic currency is backed by holdings of foreign exchange at a fixed exchange rate. In the most restricted form, there is 100 per cent backing of domestic money by

foreign currency. The currency board system is really a version of the gold standard system and has a similar advantage, which is to permit the almost immediate, and automatic, transmission of changes in external fortunes to the domestic economy. Economies operating under such a system cannot easily experience balance of payments crises. In addition, a currency board system insulates the monetary authorities from the pressures of governments which seek to engage in excessive money creation for purely partisan, political reasons[17].

The empirical evidence suggests that the modified currency board system has played a major role in protecting the Eastern Caribbean Central Bank countries from themselves, and the fiscal, foreign debt and balance of payments crises which have befallen some of their other Caribbean Community (CARICOM)[18] and Spanish/French speaking neighbours.

3.27 A Common Caribbean Currency

In addition to a modified currency board, the experience of the Organization of Eastern Caribbean States (OECS) also supports the case for a common regional currency. There are two main advantages here. First, all member countries have to agree to policy changes, including exchange rate adjustments. This condition increases the influence of the technical managers of the system over the purely political. Second, the regional currency also provides a buffer between the foreign debt difficulties of any individual member country and any concomitant pressures for so-called "structural adjustment" policies. In fact, in the absence of a common currency arrangement, at least one, and possibly two or three, OECS countries, would have suffered the same fate as their larger counterparts in the Caribbean in terms of liberalization of exchange rates in the face of substantial foreign indebtedness.

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[17] It is interesting to note that there was a debate on the introduction of such currency board systems in the ex-Soviet bloc in the early 1990s. See Schwartz (1992) for details.

[18] Guyana and Jamaica in particular, and Trinidad and Tobago to some extent, but not Barbados to date.

The proposal for a common regional currency applies therefore to the non-OECS. The first stage would have to involve adoption of a modified currency board system by such countries.

3.28 Managing Natural Hazards/Disasters

The case can be made for a disaster fund for small islands negatively affected by climate change in which the major country sources of climate change also make substantial contributions. This is one area in which international assistance can be emphasized since the evidence suggests that the major contributor to climate change originates in the polluting activities of the rich, industrial countries; it is not unreasonable, therefore, to propose their compensation for the transborder impact of their actions.

4.0 A Sustainable Livelihoods Approach: In Memory of John Cropper

There is a special need to address both poverty eradication and sustainable livelihoods as micro-expressions of a 'macro' SD goal, given substantial and persistent poverty overhang in the region. John Cropper, in fact, pioneered SEDU's work with a 1998 study on 'Re-Greening of the Northern Range'. Later he also led research on a Department of Fisheries-commissioned study on "Alternatives to Fishing in Venezuelan Waters for Fishers in Cedros Peninsula" in the context of the then Venezuelan Government's decision to remove their access to that neighbouring country's fishing grounds. Later, SEDU also undertook other studies on sustainable livelihoods including a 2001-5 study on a 'Sustainable Livelihoods Approach to Poverty Eradication in the Caribbean' for the United Kingdom's Department for International Development.

The focus of John Cropper's original work was to link the livelihoods of those living in informal communities in the Northern

Range to watershed protection and management, particularly through cultivation of commercial fruit trees[19].

The key conclusion of John Cropper's assessment of alternatives for Cedros fishers was that there were opportunities for eco-tourism, fish farming, agriculture and agro-processing[20].

4.1 The SEDU DFID Study

SEDU's study on poverty and sustainable livelihoods in the Caribbean was conducted in two phases and involved a multi-disciplinary team. The main findings of this study were based on drawing generic lessons from detailed case studies of two communities in St. Lucia and Belize (and later one in Grenada to validate findings). The main findings of this study were as follows:

- Caribbean natural resource- based communities may be poor in income and formal education/certification but rich in natural and heritage assets and with significant entrepreneurial energy, but there is a lack of an opportunity consciousness among some, including the youth;
- Poverty reduction, more than eradication, is acknowledged in formal public policy laws, structures and policies in the region but with limited implementation on the ground. In other words, an implementation gap exists. This also feeds low expectations and is further compromised by a close link with short-term political objectives of governments;
- There is a desperate need to mainstream poverty eradication and establish a multi-stakeholder oversight body and unit with nodes in public, private sector and civil society to ensure that poverty eradication - like gender (and increasingly HIV-AIDS) - is mainstreamed into policies. There is a need for specified

[19] This work has been continued by The Cropper Foundation in terms of its Northern Range Assessment study.

[20] This work has assumed new importance in the light of efforts to establish aluminium smelters and other heavy industry in the larger Cedros area on the grounds that it would bring economic benefits

budget lines to address same in all relevant stakeholder organizations;

- There is a need to implement practical projects in communities 'living in poverty' directly or indirectly linked to the sustainable livelihoods approach.

In conclusion, this paper has sought to begin with the very big picture of the challenge of sustainable development at the global level. It then turns to the case of small and island developing countries in terms of their natural resource dependence but ends, in the spirit of John Cropper, with the importance of the micro-level picture of the livelihoods of ordinary people on the ground, as it were.

REFERENCES

Albala-Bertrand, J.M. 1993. Political Economy of Large Natural Disasters with Special Reference to Developing Countries. Oxford: The Clarendon Press.

Alchian, Armen. 1987. Rent. In The New Palgrave: A Dictionary of Economic Theory and Doctrine, Vol. 4. edited by J. Eatwell, M. Milgate, and P. Newman, London: Macmillan.

Al-Janabi, Adnan A. 1979. "Production and Depletion Policies in OPEC." *OPEC Review*, Vol. 3, No. 1, 34-44

Ardnt, H. W. 1981. "Economic Development: A Semantic History". *Economic Development and Cultural Change*. Vol. 29, No. 3, 457-466.

Attanasio, O. and M. Szekely (eds) 2001. Portrait of the Poor: An Asset-Based Approach. Washington DC: Inter-American Development Bank

Barnett, H. J. and C. Morse. 1963. Scarcity and Growth: The Economics of Natural Resource Availability. Baltimore: RFF Press

Beblawi, H. and G. Luciani (eds.). 1979. "The Rentier State." Vol. II. USA: Croom Helm.

Beller, W.P., P. d'Ayala and P.L. Hein (eds) 1990. Sustainable Development and Environmental Management of Small Islands. Paris: UNESCO.

Berkoi, Faruk N. 1976. "Natural Disasters a Neglected Variable in National Development Strategies." *International Social Journal* Vol. 28. No 4.

Benedict, B. 1967. Sociological Aspects of Smallness. In Problems of Smaller Territories edited by B. Benedict. London: Athlone Press.

Briguglio, L. 1995. "Small Island Developing States and their Economic Vulnerabilities". *World Development* Vol 23, No 9.

Common, M. 1995. Sustainability and Policy: Limits to Economics. Hong Kong: Cambridge University Press.

Daly, Herman E. 1996. Beyond Growth: The Economics of Sustainable Development. Boston: Beacon Press.

_____. 1991. Steady-State Economics. 2nd ed. Washington, D.C.: Island Press.

de Albuquerque, K. and McElroy, J. 1990. "Caribbean Small-Island Tourism Styles and Sustainable Strategies." *Environmental Management* Vol. 16, No. 5, 619-632.

Devarajan, S. and Anthony C. Fisher. 1981. "Hotelling's 'Economics of Exhaustible Resources': Fifty Years Later," *Journal of Economic Literature* Vol. 19, 65-73.

"Development and the Environment," Founex Report, Founex, Switzerland, 4-12 June 1971, reproduced in In Defense of the Earth, The Basic Texts on Environment, Founex, Stockholm, Cocoyoc, Nairobi: UNEP 1980.

Dolman, A. 1985. Paradise Lost? The Past Performance and Future Prospects of Small Island Developing Countries. In States, Microstates and Islands edited by E. Dommen and P. Hein. London: Croom Helm.

Dommen, E. and P. Hein, eds. 1985. States, Microstates and Islands. London: Croom Helm.

Doumenge F. 1985. The Viability of Small Intertropical Islands. In States, Microstates and Islands edited by E. Dommen and P. Hein. London: Croom Helm.

Edwards, D. 2007. Inaugural John Cropper Memorial Lecture. UWI. SEDU. October, 2007.

Fadil 1987. In "The Rentier State." Vol. II. edited by H. Beblawi and G.Luciani. USA: Croom Helm.

Gassert, Thomas. 1985. Health Hazards in Electronics: A Handbook. Hong Kong: Asia Monitor Resource Centre.

Girvan, N. and D. Simmons (eds). 1991. Caribbean Ecology and Economics. St.Michael, Barbados: Caribbean Conservation Association.

Hamilton, K. and Michael A. Clemens. 1999, "Genuine Savings Rates in Developing Countries," *World Bank Economic Review* Vol. 13, No. 2, 333-356.

Jovel, R. J. 1989. "Natural Disasters and their Economic and Social Impact." *Cepal Review* No. 38.

Kaplinsky, Raphie. 1998. "The 'N'th Rent". *IDS Discusison Paper*.

Khatkhate, D. and B. Short. 1980. "Monetary and Central Banking Problems of Mini State." *World Development* Vol. 8 No. 12, 1017-25.

Krueger, A. 1990. "Government Failures in Development." *The Journal of Economic Perspectives* Vol. 4, No. 3, 9-23.

Lall, Sanjaya. 1995. Industrial Policy: A Theoretical and Empirical Exposition. In Industrial Policy and Caribbean Development edited by D. Pantin. UWI, St Augustine: Department of Economics and Consortium Graduate School.

Lele, Sharachchandra M. 1991. "Sustainable Development: A Critical Review." *World Development* Vol. 19, No. 6, 607-621. (The Founex Report, 1971).

Long, F. 1978. "The Impact of Natural Disasters on Third World Agriculture: An Exploratory Survey of the Need for Some New Dimensions in Development Planning." *American Journal of Economics and Sociology* Vol. 37, No. 2, 149-163.

Marshall, Alfred. 1920. Principles of Economics. 8th ed. London: Macmillan.

McElroy, J., Potter, B. and Towle, E. 1986. "Challenges for Sustainable Development in Small Caribbean Islands." Invited paper presented at Interoceanic Workshop on Sustainable Development and Environmental Management of Small Islands (San Juan, PR, Nov. 1986).

Mikesell, R. 1997. "Explaining the Resource Curse, With Special Reference to Mineral-Exporting Countries." *Resources Policy* Vol. 23, No. 4.

Motamen, Homa. 1979. "Economic Policy and Exhaustible Resources." *OPEC Review* Vol. 3, No. 1, 45-75.

Munasinghe, Mohan. 1993. "Environmental Economics and Sustainable Development." *The World Bank Environmental Paper* No. 3.

O'Riordan, Timothy. 1988. The Politics of Sustainability. In Sustainable Environmental Management: Principles and Practice, edited by R. K. Turner. London: Bellhaven Press.

Pantin, Dennis A. 2005. Governance in Natural Resource Based Rentier Economies in the Caribbean, In The Caribbean Economy: a Reader edited by D. A. Pantin. Kingston, Jamaica: Ian Randle Publishers.

_____. 1997. Alternative Ecological Vulnerability Indices for Developing Countries with Special Reference to Small Island Developing States. Report prepared by Dennis Pantin for the United Nations Department of Economic and Social Affairs, December 1997.

_____. and A. Mohammed. 1993. The Prospects for Sustainable Economic Development in the Caribbean. A Case Study on Sustainable Development Issues. Prepared for the Caribbean Conservation Association, Barbados.

_____. 1980. "Resource Depletion Theories and Planning in Mineral Exporting Economies with Particular Reference to Petroleum Exporters", *OPEC Review*, Vol. 4, No. 3, 42-79.

Pearce, D. 1989. "An Economic Perspective on Sustainable Development." *Development* No. 2/3, 17-20.

_____. & Turner, K.T. 1990. Economics of Natural Resource and the Environment. Hertfordshire: Harvester Wheatsheaf.

Pezzey, J. 1992. "Sustainable Development Concepts: An Economic Analysis." *World Bank Environment Paper* No. 2. Washington, D.C.

Ram, Justin. 2000 "Rent Capture, Rates of Return and Natural Resource Utilization, The case of Trinidad and Tobago." M.Sc. Dissertation. UCL

Roemer, M. 1979. "Resource-Based Industrialisation in the Developing Countries," *Journal of Development Economics* , Vol. 6, 162-202.

Schwartz, Anna J. 1992. Do Currency Boards Have a Future?" Wincott Memorial Lecture. Occasional Paper. No. 88. London: Institute of Economic Affairs.

Seers, Dudley. 1969. "The Meaning of Development." *International Development Review* Vol. 11, No. 4, 3-4.

_____. 1964. "The Mechanism of an Open Petroleum Economy." *Social and Economic Studies* Vol. 13, 233–42.

Selwyn, P. 1980. "Smallness and Islandness", *World Development*, Vol. 8, No. 12, 945- 951.

_____. 1975. Industrial Development in Peripheral Small Countries. In Development Policy in Small Countries edited by P. Selwyn. London: Croom Helm.

Sen, Amartya. 1983. "Development: Which Way Now?" *The Economic Journal*, Vol. 93, No. 372, 745-762.

Shand, R.T. 1980. Island Smallness: Some Definitions and Implications. In The Island States of the Pacific and Indian Oceans: Anatomy of Development edited by R.T.Shand. Australian National University, Development Studies Centre Monograph No. 23.

Srinivasan, T.N. 1986. "The Costs and Benefits of Being a Small, Remote, Island, Landlocked or Ministate Economy." *World Bank Research Observer* Vol. 1, No. 2, 205-18.

Tietenberg, T.H. 1992. Economic Instruments for Environmental Regulation. In The Earthscan reader in Environmental Economics

edited by Anil Markandya and Julie Richardson. London: Earthscan.

Turner, R.K. (ed). 1993. Sustainable Environmental Economics and Management. London: Belhaven.

Vassiliou, G. 1995. Tourism and Sustainable Development Lessons from the Cyprus Experience. In Critical Issues in the Sustainable Development of Small Developing Islands, World Development Studies, No. 1 (Helsinki, World Institute for Development Economics Research of the United Nations University).

Wace, N. 1980. Exploitation of some of the Advantages of Remoteness and Isolation in the Economic Development of Pacific Islands. In The Island States of the Pacific and Indian Oceans: Anatomy of Development edited by R.T.Shand, Australian National University, Development Studies Centre Monograph No. 23.

World Commission on Environment and Development. 1987. Our Common Future. Report of the World Commission on Environment and Development. Oxford, UK: Oxford University Press.