

ICTSD Series on Trade-Supported Strategies for Sustainable Development



# Trade, Economic Vulnerability, Resilience and the Implications of Climate Change in Small Island and Littoral Developing Economies



By **Robert Read**, Department of Economics, Management School, Lancaster University



International Centre for Trade  
and Sustainable Development

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ICTSD welcomes feedback and comments on this document. These can be forwarded to Paolo Ghisu, [pghisu@ictsd.ch](mailto:pghisu@ictsd.ch) and Ingrid Jegou, [ijegou@ictsd.ch](mailto:ijegou@ictsd.ch).

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## ABBREVIATIONS AND ACRONYMS

|        |  |
|--------|--|
| ACP    | African, Caribbean and Pacific (Group of States) |
| EEZ    | Economic Exclusion Zone                          |
| FDI    | Foreign direct investment                        |
| GDP    | Gross domestic product                           |
| GNP    | Gross national product                           |
| IPRs   | Intellectual property rights                     |
| MEA    | Multilateral environmental agreement             |
| PPMs   | Process and production methods                   |
| RandD  | Research and development                         |
| REER   | Real effective exchange rate                     |
| REPAs  | Regional Economic Partnership Agreements         |
| SIDS   | Small island developing states                   |
| SILDEs | Small island and littoral developing economies   |
| SMEs   | Small- and medium-sized enterprises              |

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## FOREWORD

While climate change is a global concern, its impacts are expected to cause extraordinary hardship in developing countries, especially those that rely heavily on sectors that are highly exposed to climatic impacts. Among developing countries, small island and littoral developing economies (SILDEs) are very susceptible to the physical impacts of climate change because of their size, proneness to natural hazards and generally low adaptive capacity, while the costs of adaptation relative to the Gross Domestic Product (GDP) are high. Moreover, climate change is expected to have critical implications for the sustainability of SILDEs' economic and social well-being, since it will likely alter their comparative advantage and trade flows. The loss of trade and growth opportunities is expected to be particularly acute in the agricultural, fisheries and tourism sectors, which are often their main economic activities.

Such countries' macro-economic characteristics - thin markets, lack of diversification in production, high degree of economic openness, excessive dependence on a narrow range of exports and on strategic imports - also make SILDEs highly vulnerable to external economic shocks. This is why fluctuation of commodity and energy prices and international fluctuations of interest rates can contribute to high growth volatility. Furthermore, SILDEs often face the challenges of a rapidly growing population, susceptibility to natural disasters, lack of economies of scale, remoteness, high transportation and communication costs, and costly public administration and infrastructure.

This economic vulnerability affects growth, sustainable development and poverty reduction in SILDEs. It is thus crucial that they build their economic resilience to cope with external shocks and adapt to the impacts of climate change. To do so, they need to take actions to improve their competitiveness and enhance their supply-side capacities, while at the same time addressing environmental and social goals. Indeed, this may create a system of complementarities and linkages between economic sectors; it may also stimulate the diversification of production and exports, strengthening the resilience of their economies.

The present Issue Paper (No. 12) on "Trade, Economic Vulnerability, Resilience and the Implications of Climate Change in Small Island and Littoral Developing Economies" by Robert Read, Senior Lecturer at the Department of Economics at Lancaster University, provides an overview of the challenges confronting SILDEs in building their resilience to economic vulnerability and achieving sustainable development in the context of climate change. It also provides policy recommendations to guide SILDEs in enhancing economic resilience.

The author argues that SILDEs appear relatively better prepared to cope with the challenges of climate change than many larger developing countries. Nevertheless, they still face a number of critical challenges, particularly in the context of the structural and policy constraints imposed by their economic characteristics and capacity for resilience. The paper concludes that building that resilience to growth volatility and external shocks, including the impact of climate change, requires appropriate trade policies alongside measures to stabilise earnings and strategic import dependence. It is also crucial to develop the capacities of SILDEs to diversify production, enhance productivity and add value to exports. This requires indigenous capacities to innovate and develop new technologies; it also requires the absorption of adaptation and mitigation technologies.

With this paper, ICTSD aims to contribute to a knowledge-based debate in this area and foster greater coordination between trade and climate change issues, particularly as they affect the least and most vulnerable developing countries.



Together with the author and all who assisted him with the paper, I trust that this work will not only be of interest but, most importantly, I very much hope it will contribute to effective and constructive solutions for international trade and climate change negotiations and beyond.

Enjoy the reading and please do provide us with feedback,

A handwritten signature in black ink, appearing to read 'R. Ortiz', with a horizontal line underneath.

Ricardo Meléndez-Ortiz  
Chief Executive, ICTSD

## EXECUTIVE SUMMARY

Small island and small littoral developing economies are especially vulnerable to the effects of climate change because of their size, proneness to natural hazards and generally low adaptive capacity, while the costs of adaptation relative to GDP are high. These climate change effects include rising sea levels, stronger and more frequent tropical cyclones and sea surges, rising sea surface temperatures and increasing acidification of surface waters. The consequences are likely to include increasing inundation of low-lying coastal areas, higher rates of coastal erosion, growing contamination of fresh water aquifers and lenses and irreversible ecological damage to coral reefs, coastal mangroves and fisheries. All of these effects can be expected to have severe consequences for those countries with large littoral or coastal ecosystems relative to their total land area - in particular, small island and littoral developing economies (SILDEs).

This paper focuses specifically on SILDEs because they are particularly vulnerable to similar effects of climate change on a similar range of economic activities, notably inshore and offshore fisheries and tourism. The paper identifies 45 small developing economies that can be classified as either SILDEs, all of which are vulnerable to similar effects of climate change. Forty-one of these countries have populations of less than 3.5 million; the remaining four have larger populations but are still classified as small island developing states (SIDS). A further 28 non-sovereign territories vulnerable to similar climate change effects could also be classified as SILDEs but are not considered explicitly in the paper.

The socio-economic characteristics of SILDEs - their high exposure to both the positive and negative effects of globalisation - mean that climate change has critical implications for the long-term sustainability of their economic and social well-being. Climate change is expected to have a major impact on all developing countries through its effects on comparative advantage and therefore trade flows. The very strong participation of most SILDEs in international trade means that these effects may be considerable. The loss of trade and growth opportunities is expected to be particularly acute in the agricultural, fisheries and tourism sectors.

### **Sources of Economic Vulnerability and Growth Volatility in Small Island and Littoral Developing Economies**

Openness to trade is a key factor in economic growth in SILDEs and also a prime source of their resilience. Their heavy reliance upon international trade means that even small trade shocks have a large impact, leading to high growth volatility. Reducing their trade dependence might appear desirable but is likely to severely inhibit their long-run growth and resilience. Improving the trade performance of SILDEs is therefore the most effective policy to enhance their growth and resilience.

The principal source of growth volatility in SILDEs is the instability of export earnings as a result of export concentration. Diversification to alleviate earnings instability and growth volatility, however, is severely constrained by diseconomies of scale. SILDEs also have a high exposure to demand shocks in key export markets and dependence upon strategic imports. High instability has important macroeconomic implications; it lowers long-run growth and investment and raises unemployment. Appropriate prescriptive policies are therefore needed in SILDEs to manage economic vulnerability and build resilience capacity.

### **Building Economic Resilience in Small Island and Littoral Developing Economies**

Good governance is a key element of policy-making and building capacity for economic resilience and is dependent upon the availability of human and social capital. Building resilience capacity in SILDEs fits with 'growth-enhancing' governance, which focuses on enabling effective catching-up by developing countries.

*Economic Policy*

SILDEs need to develop their capabilities to diversify production, enhance productivity and add value to exports. This requires indigenous capacity to innovate and adapt technology. Building resilience to climate change also requires the absorption of adaptation and mitigation technologies. The pattern of specialisation in SILDEs suggests that they require only a narrow range of climate change-related technologies, while diversification requires investment in climate-proofed infrastructure and human capital.

Domestic RandD in SILDEs is constrained by diseconomies as well as a lack of critical mass of capital and knowledge. The absorptive capacity of labour is key to assimilating adaptation and mitigation climate change technology. Most SILDEs rely upon external sources for technology, e.g. foreign direct investment (FDI). FDI embodies advanced technologies, know-how and market access, all of which are scarce in SILDEs.

*Creating Spillovers and Linkages*

Linkages and spillover effects, direct and indirect, improve international competitiveness by raising domestic employment, technological intensity and labour productivity. They also improve co-ordination and integration between sectors by encouraging local supply chains. The economic structures of SILDEs are relatively narrow and shallow, limiting local linkage creation and spillover effects. These effects are further inhibited by shortages of skilled labour that limit the benefits of technology transfer.

**Human and Social Capital Formation in Small Island and Littoral Developing Economies**

Human capital formation and augmentation through education and training enhances the domestic stock of human capital and has critical implications for comparative advantage, competitiveness and growth in SILDEs. Arguably, they possess greater social capital, so facilitating greater social enhancement and poverty alleviation would build their resilience capacity.

**Environmental Sustainability in Small Island and Littoral Developing Economies**

More stringent environmental standards as a result of climate change are likely to require costly investment in adaptation and mitigation process and/or production methods by SILDEs, with implications for their competitiveness. Many SILDEs depend upon renewable and non-renewable resources for their income, employment and trade, raising issues concerning the depletion of natural capital, environmental degradation and the preservation of unique bio-diversity assets. SILDEs, however, are likely to be in a relatively strong position to implement improved policies to control degradation and depletion so as to comply with increasingly rigorous environmental standards. Such policies also foster the preservation of unique bio-diversities that are a potential source of their comparative advantage.

**Inequality and Poverty Reduction***Macroeconomic Policy Guidelines*

Because of their structural openness to trade, SILDEs should be well -placed to reduce inequality and poverty in the context of building resilience capacity and adaptation to climate change. Openness to trade promotes non-regressive adjustment and enhances competitiveness but also heightens exposure to external sources of volatility. Limiting trade in SILDEs, however, is likely to inhibit their future growth and give rise to increasing inequality and poverty. Openness is also important in liberalising trade in

climate-friendly environmental goods and adaptation and mitigation technologies. SILDEs should have easy access to these resources owing to their low trade barriers. Their exports, however, may face discrimination on environmental grounds between like products and those with dual use.

Building resilience to growth volatility in SILDEs requires appropriate trade policies alongside measures to stabilise earnings instability and strategic import dependence. The infeasibility of diversification has led many SILDEs to alleviate volatility via fixed exchange rate policies. Their greater social capital and cohesion should mean that strongly regressive policies to deal with earnings and growth volatility are avoided.

#### *Interactions Between Human Capital and Social Capital*

Improving interactions between human and social capital in SILDEs is more problematic. Sustaining domestic competition and promoting local linkages and spillovers are likely to be very difficult because of a weak potential for creating linkages and spillovers coupled with shortages of appropriate skills.

### **Building Resilience for Sustainable Development in Small Island and Littoral Developing Economies in the Context of Climate Change: Principal Policy Recommendations**

#### *Enhancing Indigenous Technological Capacity in Small Island and Littoral Developing Economies*

- There is a pressing need to diversify production structures in SILDES.
- SILDEs lack capacity for large-scale RandD and instead must rely upon trade and FDI for new technologies and examples of best practice.
- SILDEs need appropriate policies to maximise potential trade and FDI linkage and spillover effects. Domestic technological spillovers depend upon the absorptive capacity of indigenous human capital.
- Human capital is critical for SILDEs but investment is needed to enhance the domestic stock and improve absorptive capacity for the challenges of development and climate change.

#### *Human and Social Capital Formation in Small Island and Littoral Developing Economies*

- Human capital formation is vital for sustainable development and building resilience capacity in SILDEs.
- SILDEs need to ensure that their social capital supports growth-enhancing governance on which to build their resilience.

#### *Environmental Sustainability in Small Island and Littoral Developing Economies*

- Investment in climate change-related adaptation and mitigation technology is needed to maintain the international competitiveness of SILDEs and ensure continued access to key export markets.
- SILDEs need effective policies and governance for sustainable natural resource conservation to limit depletion and environmental degradation.
- SILDEs need to minimise the environmental implications of increasing value-added in downstream processing by ensuring that energy-intensive and polluting activities embody best practice climate change technologies.

- SILDEs need to limit the predation of natural competitive advantages bestowed by their unique bio-diversities, which offer niches for future growth.

*Inequality and Poverty Reduction in Small Island and Littoral Developing Economies in the Context of Climate Change*

- Openness to trade is crucial to building resilience in SILDEs and has progressive effects on income equality and poverty reduction.
- The social capital endowment in SILDEs can ensure that adjustment and stabilisation policies prioritise income equality and poverty alleviation.
- SILDEs need to use their social capital to improve domestic linkage creation between the informal and formal sectors.

## INTRODUCTION

Small island and, to a lesser extent, small littoral developing economies are especially vulnerable to the effects of climate change because of their size, proneness to natural hazards and generally low adaptive capacity, while the costs of adaptation relative to GDP are high (Mimura *et al.*, 2007). These climate change effects include rising sea levels, stronger and more frequent tropical cyclones and sea surges, rising sea surface temperatures and increasing acidification of surface waters. The consequences are likely to include increasing inundation of low-lying coastal areas, higher rates of coastal erosion, growing contamination of fresh water aquifers and lenses and irreversible ecological damage to coral reefs, coastal mangroves and fisheries. All of these effects can be expected to have severe consequences for those countries with large littoral or coastal ecosystems relative to their total land area - in particular, small island and littoral developing economies (SILDEs).

This paper focuses specifically on SILDEs because they are particularly vulnerable to similar effects of climate change on a similar range of economic activities, notably inshore and offshore fisheries and tourism. The paper identifies some 45 small developing economies that can be classified as SILDEs, all of which are vulnerable to similar effects of climate change. Of these, 41 have populations below 3.5 million; the remaining four are classified as small island developing states (SIDS) in spite of their relatively large size. A further 28 non-sovereign territories vulnerable to similar climate change effects could also be classified as SILDEs but are not considered explicitly in the paper.

The socio-economic characteristics of SILDEs - their high exposure to both the positive and negative effects of globalisation - mean that climate change also has critical implications for the long-term sustainability of their economic and social well-being. Climate change is expected to have a major impact on the economies of all developing countries through its effects on comparative advantage

and therefore trade flows. The importance of international trade to most SILDEs means that these effects may be considerable. The loss of trade and growth opportunities is expected to be particularly acute in the agricultural, fisheries and tourism sectors.

The economies of SILDEs are generally characterised by thin markets, a lack of diversification in production, excessive dependence upon a narrow range of exports and export markets, a reliance on imports for strategic goods and services - including energy and foodstuffs - and a lack of domestic competition. Many of these characteristics result directly from the effects of their small size, which gives rise to a wide range of diseconomies of scale. Like many larger developing countries, they too face challenges arising from their demographic profiles - with high population growth rates, high dependency ratios, high levels of out-migration and dependence upon overseas remittances - and their remoteness - leading to high transport, communication and co-ordination costs.

SILDEs are especially vulnerable to external economic shocks in a number of different forms: exposure to price fluctuations in their principal exports and strategic imports; changes in the global regulatory environment; natural disasters; and the physical impacts of climate change, including rising sea levels. Because of their size, SILDEs have a greater exposure to such external shocks than larger economies and the impacts of these shocks are also disproportionately large. This means that they are likely to experience greater income instability and growth volatility and therefore greater risk and uncertainty in their long-run growth process.

The effects of climate change are likely to be felt most by those in poverty, by developing countries in general and by SILDEs in particular. This is because of the limited capacity of SILDEs to deal with climate variability and extremes. Key economic activities in many SILDEs, such as fisheries and tourism, are among those sectors most susceptible to its impacts. Climate change

therefore threatens to exacerbate existing sources of vulnerability as well as creating new ones that are likely to challenge sustainable socio-economic development in all developing economies and SILDEs in particular (see Mimura *et al.*, 2008).

The ability to counteract vulnerability and its consequences relies upon the resilience of SILDEs - that is, their resource capacity to recover from and/or adjust to the negative effects of exogenous shocks. A critical issue is that the costs of adaptation and mitigation are likely to constitute a significant proportion of their GDP. Building resilience in SILDEs is dependent upon devising and implementing appropriate policy strategies to reduce their vulnerability and its harmful impacts accompanied by the accumulation of precautionary resources. This requires actions targeted to improve the competitiveness of SILDEs and upgrade their supply-side policies while simultaneously ensuring that social and environmental objectives continue to be met. This action is most urgent in the case of the poorest SILDEs, which lack both sufficient resources and policy capacity to foster improved resilience.

The objective of this exploratory paper is to derive prescriptive policy actions for SILDEs in facing the challenges of vulnerability and building resilience capacity so as to stabilise incomes and reduce poverty in the context of climate change. It provides a brief overview of the key economic characteristics of SILDEs (based upon the literature on small economies), the key determinants of their economic growth and a discussion of vulnerability and resilience. This is followed by an extended discussion of economic vulnerability, growth volatility and resilience. Attention then turns to the analysis of the boundaries of trade policy space and the implications for vulnerability and resilience in SILDEs in the context of climate change. This analysis broadly follows the Coralles Leal trade policy space framework (2007), with separate sections covering four key areas of interest: economic policy; human and social capital formation; environmental sustainability; and inequality and poverty reduction. The final section provides policy recommendations for building resilience in SILDEs in the context of climate change.

## 1. INTRODUCTION TO SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES

This section provides brief background concerning the reasons for this paper's specific focus on small island and littoral developing economies (SILDEs), their key economic characteristics, their sources of growth and the nature of vulnerability and resilience.

### 1.1 Small Island and Littoral Developing Economies

The precise definition of a small economy has been the subject of debate for several decades. One of the earliest analyses argues that economies with populations ranging between 10 and 15 million are small (Kuznets, 1960) while orthodox economic analysis defines a small open economy as one that is unable to affect its own terms of trade - an argument that might reasonably be applied to virtually all economies apart from the very largest. Given that some 60 percent of nation states have populations of less than 10 million and 40 percent less than 3.5 million, the focus of mainstream economics on relatively large economies is hard to explain.

The United Nations institutions define small economies as those with populations of less than one million while the Commonwealth uses a threshold of 1.5 million. Armstrong and Read, however - authors of several large-

scale analyses of the growth determinants of small economies - use a natural break in the population distribution between three and 3.5 million. The distribution of countries according to their population size, however, is effectively continuous such that any threshold is arbitrary. Nevertheless, it is important to note that the key economic characteristics of SILDEs, identified in section 1.3 below, are also continuous but their effects increase in intensity as size falls. This paper therefore follows Armstrong and Read in adopting a relatively broad definition, since most of the issues under discussion apply, to different extents, to many larger economies as well.

The focus of this paper, however, is on the implications of economic vulnerability, resilience and climate change specifically on small island and littoral developing economies (SILDEs). SILDE is a non-standard term used here to encompass the vast majority of all small developing economies that possess a littoral, whether they are islands/archipelagos or simply have an oceanic coastline. This focus is critical in that SILDEs are all particularly vulnerable to similar effects of climate change on a similar range of economic activities, notably inshore and offshore fisheries and tourism.

**Table 1: Small Island and Littoral Developing Economies**

| Sub-Saharan Africa (13)          |                    |                       |
|----------------------------------|--------------------|-----------------------|
| Cape Verde                       | Comoros            | Congo                 |
| Djibouti                         | Equatorial Guinea  | Gabon                 |
| Gambia                           | Guinea Bissau      | Liberia               |
| Mauritania                       | Namibia            | Sao Tome and Principe |
| Seychelles                       |                    |                       |
| South Asia (1)                   |                    |                       |
| The Maldives                     |                    |                       |
| Middle East and North Africa (2) |                    |                       |
| Kuwait                           | West Bank and Gaza |                       |



Table 1: *Continued*

| <b>Latin America and Caribbean (12)</b>                                       |                         |                     |
|---|-------------------------|---------------------|
| Antigua and Barbuda   | Belize                  | Dominica            |
| Grenada   | Guyana                  | Jamaica             |
| Panama  | St Kitts and Nevis      | St Lucia            |
| St Vincent and Grenadines   | Suriname                | Trinidad and Tobago |
| <b>East Asia and Pacific (13)</b>   |                         |                     |
| Brunei  | Fiji                    | Kiribati            |
| Marshall Islands  | Micronesia, Fed. States | Nauru               |
| Palau   | Samoa                   | Solomon Islands     |
| Timor Leste   | Tonga                   | Tuvalu              |
| Vanuatu   |                         |                     |
| <b>Additional states classed as Small Island Developing States (SIDS) (4)</b> |                         |                     |
| Cuba  | Dominican Republic      | Haiti               |
| Papua New Guinea  |                         |                     |

Source: Adapted from Armstrong and Read (2002a)

Note: The table excludes four land-locked small developing economies - Botswana, Bhutan, Lesotho and Swaziland.

A total of 45 possible SILDEs are identified in Table 1, of which 41 are sovereign states with populations below 3.5 million. Four others are officially classified as small island developing states (SIDS) although their populations are greater than the 3.5 million threshold; three of the 45 are littoral rather than island states. There are a further 28 non-sovereign territories vulnerable to similar climate change effects that could also be classified as SILDEs but are not considered explicitly in the paper.

## 1.2 Likely Implications of Climate Change

Island and littoral economies have been identified as among the most vulnerable environments to the effects of climate change (Michel and Pandya, 2010). These effects include: rising sea levels; stronger and more frequent tropical cyclones and sea surges; rising sea surface temperatures; and increasing acidification of surface waters (Michel and Pandya, 2010). The consequences of climate change are therefore likely to include increasing inundation of low-lying coastal areas, higher rates of coastal erosion, growing contamination of fresh water aquifers and lenses, and irreversible ecological damage to coral reefs, coastal

mangroves, and inshore fisheries, and possibly deep water fisheries (Pallewatta, 2010).

The Millennium Ecosystem Assessment defines a littoral or coastal ecosystem zone as extending up to 100 kilometres inland or until an elevation of 50-metres is reached together with an outward extent of the 50-metre oceanic contour (World Resources Institute, 2005). This definition makes very explicit the link between the effects of climate change and the high degree of vulnerability of small island and littoral developing economies (SILDEs). Further, although they make very little contribution to global greenhouse gas emissions, SILDEs probably have the least resource capacity to deal with its effects. The economic structures of many SILDEs are also highly susceptible to the effects of climate change because of the critical importance of the fisheries and tourism sectors. The growth of tourism in SILDEs, particularly in those that are more remote, has been dependent upon the expansion of relatively low-cost long-haul air links with the leading industrialised economies. Many SILDEs, however, remain heavily reliant upon maritime transport for their trade links with respect to physical goods.

### 1.3 Key Economic Characteristics

This section identifies the salient economic characteristics of small island and littoral developing economies (SILDEs), with reference to the more general literature on small economies. This provides the basis for a better understanding of their distinct economic structures and the consequent constraints that they face, giving rise to their vulnerability to both economic shocks and the effects of climate change.

The economic and social development challenges facing small economies such as SILDEs have only become fully apparent in recent decades. These growth challenges are distinct and arise directly as a consequence of their small size. To varying extents, the impact of diseconomies of scale determines the boundaries of their feasible domestic productive activities, composition of output, trade, economic growth and policy-making. It should be noted, however, that many larger developing economies, also experience a similar lack of critical economic mass owing to their relatively low aggregate GDP.

#### Small Domestic Markets

Domestic demand in SILDEs lies below the necessary minimum scale for a wide range of productive activities. This means that the unit costs of supplying many goods and services domestically are relatively high, including administration and infrastructure. It also precludes the emergence of large-scale manufacturing dependent upon abundant labour supply, a phenomenon that is often associated with high growth and local RandD in developing countries (Thomas, 1982; Briguglio, 1995). Diseconomies of scale also limit domestic competition by constraining the feasible number of incumbent firms (Kuznets, 1960). This gives rise to a prevalence of natural monopolies and oligopolies and therefore further upward pressure on domestic prices.

#### Domestic Resource Constraints

The natural resource base of SILDEs is generally limited, with some notable exceptions, since most occupy small geographic areas with limited and homogeneous natural resource endowments. Some Pacific SILDEs, however, possess substantial marine resources through their control of large Economic Exclusion Zones (EEZs) many times greater than their land areas.

Domestic labour supply is also constrained by small populations. In spite of their small labour forces, many poorer SILDEs suffer from relatively high rates of unemployment. Income-enhancing growth therefore depends primarily upon nurturing high-value-added activities that are scale neutral and utilise human capital intensively (Bhaduri, *et al.*, 1982). Surplus labour needs to be absorbed by sectors reliant on relatively low skills, such as tourism (Armstrong and Read, 1995). Long-run growth and development in SILDEs is therefore critically dependent on investment in education and training (Briguglio, 1995; Armstrong *et al.*, 1998).

Migration to alleviate labour market problems is a particular feature of many SILDEs. Limited domestic employment opportunities have led to significant out-migration from the smallest and poorest, coupled with relatively large inflows of workers' remittances as a consequence.

#### Specialisation and Constrained Diversification in Production and Exports

The combined effects of small domestic markets, diseconomies of scale constraints and limited labour supplies mean that the pattern of domestic output in SILDEs is necessarily relatively undiversified. This high degree of specialisation in production, often in niche activities, results in a naturally high degree of concentration in exports and, possibly, export markets. SILDEs are therefore highly exposed to the risk of exogenous trade shocks, export price and earnings instability and growth volatility.

### Structural Openness to International Trade and Trade Policy

Small size necessitates a high degree of openness to international trade in SILDEs since there is necessarily substantial asymmetry between their patterns of domestic production, which are highly specialised, and domestic consumption, which is highly diversified (Kuznets, 1960). Many essential, as well as non-essential, goods and services must therefore be imported. Further, these imports must be financed by export earnings, such that SILDEs have very limited scope for trade policy interventions. This necessarily heavy reliance upon international trade - structural openness - provides a strong case for the pursuit export-led growth strategies by SILDEs.

The structural openness to trade of SILDEs means that their growth orientation must be in close accord with their underlying comparative advantage. This has important implications for the pattern of sectoral specialisation in SILDEs and they have therefore tended to avoid many of the pitfalls associated with overly protectionist industrialisation strategies in many larger developing economies - inefficiency, lack of international competitiveness, unemployment and entrenched anti-trade interests.

#### 1.4 Key Determinants of Economic Growth

The sustained growth of many small economies generally provides compelling evidence that, while the challenges that they face are very tangible - including vulnerability - they are not insuperable barriers to growth and prosperity. A disproportionate number of small economies can be found in the World Bank's Upper Middle and High Income groups (see Table 1, Armstrong and Read, 2006). This is a strong indication that many of them have significantly outperformed many larger developing economies in recent years (Armstrong *et al.*, 1998; Armstrong and Read 2001, 2006). This section overviews the principal reasons for their strong growth performance.

### Sectoral Determinants of Growth

An initial UNCTAD study of the sectoral structure of small island developing states (SIDS) highlights the apparent importance of natural resources and/or services together with remittances (UNCTAD, 1997). Subsequent empirical analyses of the sectoral determinants of growth in small economies generally find that rich natural resource bases and strong service sectors - notably financial services and tourism - are statistically significant factors (Armstrong and Read, 1995, 2001; Armstrong *et al.*, 1998). The contribution of manufacturing is generally indeterminate, reflecting very wide differences between relatively large small economies - such as Jamaica and Mauritius - and the rest. Agriculture, however, is generally important only in the poorest small economies and is found to have a significantly negative impact on growth performance.

#### Human Capital and Growth

The general inference is that the role of human capital is critically important although it is very hard to evaluate its specific contribution to growth. The sectoral evidence (see above) provides tentative support for this view to the extent that human capital-intensive activities, such as financial services and data -processing, are key sources of growth. Further, many small economies rank highly in the UNDP Human Development Index (HDI), which incorporates a significant education component (Briguglio, 1995).

#### Remoteness and Growth

The critical importance of international trade to small economies suggests that their proximity to more dynamic markets is likely to generate beneficial growth effects, including regional linkages. These trade linkages are not easily available to more remote SILDEs, particularly those in the Pacific. Empirical studies, using either World Bank-defined global regions or great circle distances from the major industrialised economies, find that location within a dynamic

region has a significantly positive effect on growth in small economies generally while remoteness has a significant adverse effect (Armstrong *et al.*, 1998; Armstrong and Read, 2006). These findings support the view that high trade costs for visible goods and services, such as tourism, hinder growth (see also Winters and Martins, 2004).

### Good Governance and Growth

The strong performance of many small economies in the UNDP Human Development Index is often taken as *de facto* evidence that they enjoy high levels of social capital and social cohesion. This implies some form of direct or indirect relationship between the HDI indicators, good governance and economic growth performance. If this is the case, then SILDEs should exhibit greater resilience - as well as greater vulnerability - than larger economies in dealing with instability and growth volatility.

There is copious anecdotal evidence to support the view that many small economies have been able to formulate and implement opportunistic growth-promoting strategies in spite of significant constraints on their policy autonomy. These strategies include targeting revenue-raising by offering favourable personal and corporate tax rates and creating a favourable regulatory environment to attract offshore financial services, among other activities. Many have also shown great ingenuity by engaging in international free-riding and rent-seeking, made possible by their relative international insignificance. Free-riding includes reducing expenditure by relying on the defence umbrellas of larger neighbours, global trade liberalisation and the use of third countries' currencies (discussed in section 2.4). Rent-seeking includes regulatory differences (e.g., tax rates), location-specific niches such as strategic military bases, satellite tracking stations, astronomical observatories, issuing stamps and the internet - notably Tuvalu's address '.tv' and other specialist niches such as the Fijian Army's regular provision of UN peacekeeping forces (see Kakazu, 1995; Baldacchino and Milne, 1999; Armstrong and Read, 2002b).

### 1.5 The Economic Vulnerability

SILDEs experience greater economic vulnerability relative to larger countries because of their greater inherent exposure to exogenous economic, political, strategic, ecological, environmental and meteorological factors (Holmes, 1976; Briguglio, 1995). Vulnerability was originally conceived as a measure of the exposure of SIDS to this broad range of factors but its current focus is primarily the economic causes and effects of vulnerability. The characteristics of SILDEs (section 1.3) are critical determinants of economic vulnerability since they are exposed to a greater incidence of short-run volatility about their long-run growth paths and amplify the magnitude of exogenous shocks. Growth volatility therefore has a disproportionate impact on SILDEs compared with larger developing economies.

The growth process in SILDEs therefore embodies a greater degree of risk and uncertainty, such that they can expect to experience lower long-run growth trends because of the greater associated risk premiums (Easterly and Kraay, 2000). This implies that attaining high income levels requires greater effort and has a higher domestic resource cost than for larger economies. Small economies therefore face greater challenges in achieving sustained long-run growth than do most larger economies (Briguglio, 1995).

### 1.6 Resilience

Resilience is a recent conceptual development and explains the different resource capacities of countries to respond to and ameliorate the impacts of economic vulnerability. The capacity to build resilience and mobilise resources to offset the effects of exogenous shocks may be beyond the means of many SILDEs (see Briguglio *et al.*, 2004; 2006), so further hampering their long-run growth (UNCTAD, 1988). Exposure to economic vulnerability and an accompanying lack of resilience-building capacity are likely to be greatest in least developed economies (Easterly and Kraay, 2000; Armstrong and Read, 2002a).

The sustained growth experience of many small economies, however, suggests that the impact of vulnerability in SILDEs is somewhat less than expected and/or that they possess greater resilience capacity to assuage its effects. This could be explained by some combination of their sectoral economic structure, pattern of

specialisation and effective endogenous policy-making. If the quality of endogenous policy-making plays a critical role in building resilience to vulnerability, then similar exogenous shocks may give rise to very different effects on the long-run growth and income of individual SILDEs.

## 2. SOURCES OF ECONOMIC VULNERABILITY AND GROWTH VOLATILITY IN SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES

This Section provides a more in-depth analysis of the principal sources of economic vulnerability and growth volatility in SILDEs. In so doing, it first discusses the concept of openness to trade, since this appears to be the source of some confusion in analytical and policy circles, and its relationship with economic vulnerability and growth in the context of building resilience. The remainder of the Section is devoted to discussion of the sources of economic vulnerability and its macroeconomic implications for SILDEs.

### 2.1 Openness to International Trade and Economic Growth

The relationship between openness to international trade, economic vulnerability and growth has given rise to some misunderstanding and confusion. Trade openness is not the cause of economic vulnerability but rather provides the means through which the effects of exogenous shocks are amplified and transmitted to the domestic economy. It is, however, the critical determinant of economic growth in small economies and therefore a prime source of resilience.

Openness to trade is often defined simply as the share of international trade (total exports plus imports) in gross domestic/national product (GDP/GNP). This definition, however, embodies two related effects:

- The extent to which economies are, by necessity, more open given their size and level of development - *structural openness*.

- The extent to which economies are able to determine their own trade policies, contingent upon their (population) size - functional openness.

The economic literature regards openness to international trade as being one of several important determinants of economic growth. Large-scale cross-section studies of country growth using global data sets find substantial general empirical support for trade openness having a positive and significant impact on economic growth

International trade is critical to the growth of SILDEs because it is the means by which they are able to increase the extent of their market and alleviate some of the constraints imposed by their size. Further, their long-run economic development is primarily dependent upon trade because their small domestic markets have only limited capacity to generate autonomous growth.

The extent of the reliance of SLDEs on international trade is demonstrated by their very high trade/GDP ratios, which usually far exceed 100 percent. The magnitude of these ratios has important implications with respect to the impact of external trade shocks and the volatility of domestic growth because the multiplier effects of trade are very large (Ashoff, 1989). Even relatively small changes in trade may therefore generate very large domestic growth effects (see Box 1), hence the concern of economic vulnerability analyses with trade openness.

**Box 1: The Trade Multiplier and the Growth Effects of Trade Shocks in Small Island and Littoral Developing Economies**

The trade multiplier indicates the effects of changes in trade (exports and/or imports) on growth or *vice versa*. The precise magnitudes of the growth effects of export or import shocks, however, depend upon several factors that vary between economies.

Assuming balanced trade and no change in export prices, the magnitude of a demand shock on exports is determined by the proportionate share of the change in exports in GDP multiplied by the value added of those exports. If exports are 100 percent of GDP, a 10 percent fall in exports with an average value added of 30 per cent would result in a 3 percent fall in GDP. This would also result in reduced imports, determined by the marginal propensity to import which is likely to be very high in a small economy (e.g. perhaps greater than 0.9), such that if imports have the same share of GDP as exports (100 percent), they would fall by 27 percent in this case.

A supply shock in a strategic import, however, may have much more powerful effects. Given the trade shares as above, if oil comprises 25 percent of total imports and its price rises by 50 percent, GDP would fall by 12.5 percent if there were no change in import volume. Imports, however, would very likely be reduced, so reducing the magnitude of this effect. The indirect effects on GDP would depend upon the extent to which energy-intensive exports could bear price increases or reduced value added to maintain competitiveness, as well as the potential for substitution in energy consumption.

It is important to note that Singapore has experienced sustained economic growth success over nearly half a century with a trade/GDP ratio that is currently around of 325 percent. This is not a paradox (Briguglio *et al.*, 2006) but rather demonstrates the very strong relationship between economic growth and trade openness in high income small economies. Trade openness *per se* is therefore not the cause of economic vulnerability and growth volatility but is rather the primary source of economic growth and resilience.

**2.2 Openness to International Trade and Economic Vulnerability**

Openness to international trade exposes the economies of SILDEs to the competitive rigours of participating in the global economy, including the risk of exogenous shocks and growth volatility. Policies to reduce their trade dependence therefore might appear at first glance to be highly desirable since they would reduce the risk and magnitude of many such shocks. Such policies, however, would be

severely detrimental to their long-run growth and resilience.

The structural openness and large trade multipliers of SILDEs suggest that the most effective policies to augment their growth and enhance their resilience are those aimed at improving their trade performance. Building resilience therefore requires specific focus on those structural factors in their trade that give rise to economic vulnerability and growth volatility and the identification of appropriate macroeconomic policies to ameliorate their impacts.

**2.3 Sources of Structural Trade Instability, Economic Vulnerability and Growth Volatility**

There are five principal types of structural instability that arise from international trade and give rise to economic vulnerability and growth volatility. This section provides an overview of these sources of instability and growth volatility, potential policies to reduce their impact in SILDEs as well as a brief discussion of the impact of remoteness on vulnerability.

## Export Concentration

Export concentration results from a high degree of specialisation in output and exports, leading to an undiversified portfolio of exports of goods and services. It therefore exposes an economy to a greater risk of exogenous shocks as well as increasing the likely magnitude of their impact. Export concentration in SILDEs is a direct consequence of the constraints imposed by diseconomies of scale on the range of domestic productive activities that they can undertake efficiently. While international trade increases the extent of their market, the gains from specialisation (such as scale economies) are partly offset by the increased risk of greater concentration in output and exports. Export concentration is therefore more likely to be associated with smaller absolute economic size - i.e., lower levels of economic development - smaller populations and limited trade openness (greater protectionism).

Export concentration is usually calculated using a simple Herfindahl Index. This measures the share of the three most important exports in total export earnings. These calculations should also take into account inflows of worker remittances since these are an important additional source of foreign exchange earnings for SILDEs.

The standard solution to the problem of export concentration is diversification. Diversification by SILDEs, however, is highly constrained by diseconomies of scale in alternative activities. The fundamental problem of export concentration is the susceptibility to trade shocks in the goods and services actually being exported. Relatively homogenous commodities are more likely to be vulnerable to trade shocks than niche income elastic ones. The empirical evidence suggests that many relatively developed small economies specialise in relatively scale-neutral niche income elastic activities in addition to natural resources (where they exist). This suggests that they have been able to minimise at least some of the instability problems associated with export concentration.

## Export Price and Earnings Instability

A high degree of export concentration exposes SILDEs to the risk of severe instability in export prices and earnings. Export price instability refers to changes in the simple commodity or net barter terms of trade - that is the proportionate change in the prices of imports expressed in terms of export prices. It therefore measures the price effects of exogenous shocks in export (and import) markets as the prices of traded goods and services change. The principal cause of export price instability is export concentration, particularly in primary commodities, and the principal solution therefore remains diversification, subject to the constraints outlined above. Analysis of export price instability to the exclusion of export earnings instability, however, provides an incomplete assessment of the impact of vulnerability and the need for greater resilience.

Export earnings instability is a much more important indicator of economic vulnerability than export price instability because it considers the impact of exogenous shocks on a country's aggregate export earnings. It therefore measures the "income effect" of any shock by considering the export supply response - i.e., the impact of both price and volume changes on export earnings. The income terms of trade measures the proportionate change in export earnings given changes in the relative prices of imports and exports as well as export volumes. The income and commodity terms of trade are identical, however, if the domestic export supply response is highly inelastic - very likely to be the case with some goods and services in SILDEs. Export earnings instability is therefore partly determined by the pattern of sectoral specialisation and the characteristics of the exported goods and services.

Export earnings instability, however, is generally less prevalent than export price instability for two reasons:

- Diversification smoothes aggregate export earnings.



- The income effects of price shocks can be neutralised by means of compensating supply responses.

The standard remedy for export price and earnings instability is again to reduce the impact of exogenous price and demand shocks through diversification so as to spread the risk across a greater range of exports. Many developing countries that export highly volatile commodities also specialise in counter-cyclical and more stable commodities (MacBean and Nguyen, 1987). This suggests that SILDEs should to try to specialise in a range of goods and services with complementary characteristics.

### Geographic Export Concentration

Geographic export concentration refers to the dependence of many developing economies on a limited number of key trading partners for their principal export markets (Ostlind, 1953). This gives rise to vulnerability to demand shocks in key export markets, leading to additional price and earnings instability. Geographic export concentration is measured using a Herfindahl Index in the same way as export concentration. In this case, the index expresses the share of the three most important export markets by value.

The remedy for geographic export concentration is to diversify export markets although penetrating new markets may be very difficult for SILDEs. This is because of their lack of market knowledge, marketing techniques and logistical skills as well as poor transport links and protectionism in export markets. These barriers are most acute for relatively remote SILDEs. In spite of several decades of preferential access, many African, Caribbean and Pacific (ACP) states have struggled to diversify their export markets within the EU.

One possible solution to geographic export concentration is to attract export-oriented inflows of FDI. These can provide improved access to a range of existing and new markets through their embodied know-how and skills. Alternatively, improved market access can be secured via free trade agreements, such as the

Regional Economic Partnership Agreements (REPAs) between the ACP and the EU under the 2000 Cotonou Agreement. Such agreements are fraught with potential difficulties for SILDEs primarily because they are very much second best solutions (see Read, 2005a).

### Dependence upon Strategic Imports

The substantial inherent asymmetries between consumption and production in SILDEs give rise to a high degree of dependence upon strategic imports of goods and services that they are unable to produce domestically at a feasible price. The effects of trade shocks in these strategic imports feed through to the domestic economy via changes in import prices - and possibly supply shortfalls - leading to earnings instability.

It may be necessary to provide some strategic goods and services locally on social grounds, almost regardless of their monetary cost; e.g., emergency health care. The broader experience of such import substitution policies, however, has a mixed record in developing countries. For SILDEs, domestic production of essential imports, including energy, food and technological inputs, is not always possible such that they are highly vulnerable to trade shocks in the supply of these goods and services.

The impact of strategic import vulnerability in SILDEs can be reduced by effective inter-temporal supply management. This has two elements:

- The accumulation and management of precautionary stocks of essential imports, where possible
- The efficient use of spot and futures markets, where available, to hedge future supplies at predictable prices

Futures markets exist for energy supplies and many foodstuffs so that hedging can smooth fluctuations in prices and, to some extent, manage demand. However, hedging cannot provide complete insulation from price swings and supply shocks although it can smooth

their effects and confer a degree of certainty to future prices and supplies. For many other strategic goods and services, however, such markets do not exist and SILDEs remain exposed to the vagaries of global market conditions.

### Remoteness as a Source of Trade Instability

Remoteness is regarded as being an additional source of vulnerability, primarily because of the risk of disruption to transport and communications, including infrastructure, that prevent efficient economic and social co-ordination. These risks are greatest in SILDEs for two reasons; the distances involved and their low priority because of the small value and volumes of traffic involved. Many SILDEs are dependent upon low status air and sea routes and subject to timetables and itineraries determined by commercial priorities over which they have little control. These create additional barriers to trade and increase their vulnerability by raising unit transport costs, so reinforcing their isolation, particularly in those SILDEs which are dispersed archipelagos.

A possible solution to some of the transport problems imposed by remoteness is through direct involvement, whether through ownership or subsidies, so as to introduce some degree of control over routings and timetables. This may be undertaken by countries at the national or possibly regional level though co-operation

The remoteness of some SILDEs also has important implications for their economic vulnerability in the context of climate change. Most are reliant upon shipping to carry the bulk of their trade in goods. In addition, many remote SILDEs have developed their tourism sectors based upon low-cost long-haul air links to major markets in high income countries. Both of these modes generate high emissions and so are likely to be affected by the restructuring of international transportation logistics as appropriate carbon-pricing becomes increasingly pervasive. Rises in shipping costs will raise domestic prices, reduce incomes and reduce international competitiveness and/or domestic value added. The increasing cost of air travel will reduce the attractiveness of

remote long-haul destinations to mass tourism and the competitiveness of exports of goods reliant upon airfreight, notably fresh flowers and foodstuffs (fish, fruit and vegetables).

### 2.4 Macroeconomic Implications of Earnings Instability

The volatility of national income as a result of earnings instability has important domestic macroeconomic effects in terms of lower long-run growth, reduced investment and increased unemployment (discussed at length in Guillaumont, 2007). This suggests that prescriptive domestic macroeconomic policies are crucially important in managing the adverse impact of economic vulnerability and building resilience in SILDEs.

Export earnings instability also causes balance of payments instability and therefore exchange rate volatility and foreign exchange reserve management problems. Exchange rate volatility in SILDEs is amplified by thin currency markets; that is low trade volumes because currency demand is weak, regardless of macroeconomic fundamentals. Thin markets also tend to over-react to trade and other economic shocks, so exaggerating the currency effects of growth volatility, with a bias towards excessive depreciation. Exchange rate volatility increases the risk and uncertainty associated with foreign currency transactions; a major challenge for SILDEs given the dominance of foreign currency transactions in their aggregate economic activity.

Exchange rate volatility, particularly over-depreciation, feeds inflationary pressures via higher import prices and its effects on exports with high import content. This has critical implications for the international competitiveness of SILDEs as well as their macroeconomic stability via the volatility of their real effective exchange rate (REER). The REER is a key indicator of international competitiveness since it reveals the extent to which domestic price changes are absorbed by the exchange rate.

The instability of domestic investment is high in developing countries generally although REER volatility is significantly lower in smaller economies (Guillaumont, 2007). This can be explained by their very small share of non-tradeables in total consumption, such that REER volatility results from external rather than internal price changes. Although this explanation is attractive, a considerably more powerful explanation is provided by the exchange rate policies and management of currency volatility in SILDEs.

Balance of payments instability in conjunction with thin currency markets tend to militate against SILDEs possessing an independent exchange rate or even possibly their own currency. Instead, some form of fixed exchange rate or the use of a third country's currency provides insulation against exchange rate volatility at the expense of domestic monetary sovereignty.

Most SILDEs use some form of external exchange rate stabiliser while larger more developed ones use a trade-weighted currency basket. Uncoupling the link between the balance of payments and REER has therefore enabled many SILDEs to insulate their domestic

economy from exchange rate volatility (see Armstrong and Read, 1998; 2002b). The absence of an autonomous exchange rate also reduces the potential for Dutch disease, although windfall earnings must still be sterilised by the Central Bank.

The abandonment of an autonomously-determined exchange rate means a loss of monetary sovereignty which imposes further constraints on domestic macroeconomic policy in SILDEs. The rate of interest effectively ceases to be a domestic policy variable since it is primarily determined exogenously by a third country central bank. Similarly, inflation, the REER and international competitiveness are determined by price changes in third countries, given the small share of non-tradeables in domestic consumption in SILDEs. Unemployment, however, remains a domestic policy variable determined by structural factors and rigidities in local labour markets. Policies to reduce unemployment must therefore focus on improving local labour market efficiency. Government expenditure is also constrained since monetary expansion, whether by printing money or increased borrowing, is either highly constrained under fixed/par exchange rates or must be denominated in a hard currency.

### 3. KEY ELEMENTS IN BUILDING ECONOMIC RESILIENCE IN SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES

Good governance and social capital are key elements in optimal policy-making and building capacity for economic resilience in SILDEs. In turn, these are partly dependent on the domestic availability of human capital. Resilience capacity building dovetails neatly with the critical distinction between market-enhancing governance and growth-enhancing governance. The former reflects the priorities of the new Washington Consensus in advocating neo-liberal policies, such as efficient markets. The empirical evidence suggests that these policies are not on their own significant contributors to growth success. The latter focuses on growth policies that enable effective catching-up by developing countries through three key institutional-building objectives (Khan, 2007):

- Facilitating rapid and effective market and non-market transfers of assets and resources to more productive sectors.
- Managing incentives and needs for achieving rapid and effective productivity improvements through technological acquisition (innovation or up-grading), enhanced learning and knowledge absorption.

- Maintaining political stability in a context of rapid social and economic transformation.

These growth-enhancing institutional objectives are located within the limited policy space available to SILDEs resulting from their key economic characteristics as well as fitting well with inferences concerning their social capital and good governance. Corrales Leal's uses a similar framework to identify trade policy spaces so as to analyse supply-side economic resilience capacity building (Corrales Leal, 2007). This provides a useful and appropriate framework for the analysis of the interaction and linkages between international trade, vulnerability, resilience and climate change in SILDEs in the context of four critical policy arenas:

- Economic policy
- Social effectiveness
- Environmental sustainability
- Inequality and poverty reduction

Each of the following four sections addresses these interactions and linkages with respect to the above policy arenas.

## 4. ENHANCING TECHNOLOGICAL CAPACITY AND LINKAGE CREATION IN SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES

Corrales Leal identifies two strategic considerations in the enhancement of supply-side capabilities and the internal amplification of benefits with respect to economic policy: These are the enhancement of technological capacity and the generation of linkages and spillovers.

### 4.1 Enhancing Technological Capacity

This refers to the development of local capabilities so as to diversify production, enhance productivity and add value to exports. This requires the existence or development of capacities to innovate and to adapt and create technology rather than relying on external sources. The improvement of indigenous technological capacity is critical to enabling developing countries to close the “knowledge gap” (Stiglitz, 1999). In the context of climate change, this also requires the incorporation of adaptation and mitigation technologies into domestic productive activities. There are several elements to this discussion, all of which are problematic for SILDEs.

#### Diversifying Domestic Production

Diseconomies of scale impose severe constraints on the capacity of SILDEs to diversify their production, particularly with respect to scale extensive activities. Many SILDEs possess relatively small-scale manufacturing sectors but only the largest tend to have larger scale manufacturing (e.g. Mauritius). Most small economies specialise in relatively scale-neutral niche activities - such as financial and information services and tourism - with the exception of extracting valuable natural resources (minerals, fisheries), where they exist. Two important points arise in this context:

- Narrow specialisation in SILDEs suggests a need for only a narrow range of climate change-related technologies, prior to diversification at least.

- Their strong bias towards services and some natural resources with limited agriculture and manufacturing activity means that the pattern of specialisation in SILDEs is generally more in line with the needs of climate change and carbon-reduction than most other economies.

#### Agriculture

The agricultural sector in most SILDEs is relatively minor compared to larger developing economies, primarily because of a general dearth of cultivable land and people. Agriculture is most important among the poorest SILDEs with low growth rates. Where export-oriented, it focuses mainly on relatively environmentally-friendly monoculture (e.g. bananas, coconuts and sugar) as opposed to heavily carbon-intensive and polluting livestock. Diversification out of agriculture in many SILDEs has therefore been driven by economic considerations (e.g. reduced competitiveness in the wake of the WTO banana dispute). The impact of climate change on agriculture is therefore very much dependent upon the structure and orientation of the sector in individual economies. For the poorest SILDEs in particular, adaptation measures for agriculture are critical to fostering country-wide resilience.

#### Services

The critical role of services in the growth of small economies generally provides a means for relatively scale neutral diversification. However, a critical distinction, must be made between tourism and “cleaner” activities such as financial services and data-processing. Mass tourism, in particular, has a high import multiplier and threatens over-development, loss of diversity, pollution, erosion and climate change, all of which fit uneasily with the objectives of sustainable development. Cleaner service activities are less vulnerable to high transport and other infrastructural

costs as well as having long-term growth prospects, such that they offer climate adaptation and development benefits. Further expansion and diversification in SILDEs, however, requires improved investment in climate-proofed infra-structure - including advanced communications technology, data server farms and energy grids - and human capital (Carrión, 2009).

### **The Capacity for Domestic RandD**

Diseconomies of scale and a lack of a critical mass of capital constrain the capacity for domestic research and development (RandD) in SILDEs and therefore limit their generation of indigenous technological innovation and improvements (Briguglio, 1995). The private sector is unlikely to generate globally competitive firms with sufficient resources of human and financial capital to undertake cost-effective RandD and knowledge creation, particularly in large-scale technology-intensive sectors (e.g. aviation, cars, electronics and pharmaceuticals). Further, public sector financing of RandD in SILDEs is likely to fall well short of the critical threshold necessary to be internationally competitive creators of knowledge. Most, if not all, SILDEs will therefore have to rely upon external rather than domestic sources of adaptation and mitigation climate change technology. However, there is evidence, that some small-scale and scale neutral innovation and adaptation strategies to deal with the direct consequences of climate change can be self-generated in SILDEs (de Comarmond and Payet, 2010).

### **Enhancing the Domestic Stock of Human Capital**

The accumulation of human capital - through general education, vocational training and learning-by-doing - and its effective utilisation is a critically important determinant of economic growth. Its contribution to the growth of SILDEs is even more important because their high degree of openness to trade means that human capital is a key source of comparative advantage and therefore international competitiveness. Given that labour supplies are

severely constrained, increasing labour productivity and its domestic value added through human capital formation is a domestic policy imperative in SILDEs.

A critical shortcoming of transferring adaptation and mitigation climate change technology to SILDEs, however, continues to be the absorptive capacity of their labour in spite of investment in human capital formation. Skills training and learning-by-doing are not always scale extensive, such that SILDEs need to improve their stocks of human capital to generate productivity gains. International cooperation in learning and knowledge creation at tertiary level is a feature of both the University of the South Pacific, financed by 14 states and spread across campuses in a number of Pacific islands, and the University of the West Indies, with three main campuses in the Caribbean.

### **FDI as a Source of Technology and Knowledge**

Foreign direct investment (FDI) enhances domestic economic growth through inflows of international capital that embody advanced technologies, know-how and market access, all of which are in short supply in SILDEs. The marginal productivity of FDI is therefore generally greater than that of capital from alternative sources. Small economies attract disproportionately large inflows of FDI (Read and Soopramanien, 2003; Read 2008). These counter-intuitive flows are highly correlated with relatively open trade policies; most notably, in the case of Singapore. This relationship echoes Bhagwati's proposition that more open economies have a greater receptivity to and success in attracting FDI (Bhagwati, 1978). Since FDI inflows into SILDEs are likely to be export-oriented, as opposed to domestic market-oriented, they can also be expected to generate strong growth through their trade multiplier effects.

The fundamental issue with respect to the transfer of adaptation and mitigation climate change technology to SILDEs remains whether private sector channels are sufficient (Gueye, 2009a). FDI is a prime source of advanced technology to enhance local best practice

and this remains the case for climate change-related technology. Limited markets in SILDEs, however, suggests that few, if any, pecuniary incentives exist for foreign investors to upgrade the domestic technological base, regardless of the status of intellectual property rights (IPRs). The burden of action on climate change technology in SILDEs therefore lies with national governments and, regardless of the level of governance, dependent upon the existence of appropriate institutions and absorptive capacity.

#### **Enhancing Technological Capacity: Implications in the Context of Climate Change**

The task of enhancing technological capacity in SILDEs is daunting even in the absence of the need for adaptation and mitigation climate change-related technologies. Low aggregate levels of finance, human capital and technological know-how, coupled with limited local markets, mean that many SILDEs lack the critical mass to engage in large-scale indigenous RandD. The lack of RandD capacity also hinders the diversification of domestic productive activities where feasible. The pattern of specialisation in many SILDEs, however, is more favourable than in many larger developing countries with respect to climate change. However, there remains considerable concern, that a key barrier to the adoption of climate-friendly technologies in developing countries, including SILDEs, remains the high cost of IPR royalties and licence fees.

Enhancing domestic value added in SILDEs by increasing local downstream processing of natural resources can be expected to encounter similar problems. Further, many of the associated processing technologies are energy-intensive although new installations can be expected to utilise technology that is close to best practice. There is, however, some concern regarding the competition effects of sharing best practice adaptation and mitigation technologies (Gueye, 2009b). This may be less problematic than the issue of domestic monopoly for SILDEs because of the market size constraints on the feasible number of firms.

Increased and more effective investment by SILDEs in human capital formation alone is therefore unlikely to be sufficient to overcome these constraints. This implies that the transfer of best-available technology to promote best practice in their export sector, primarily natural resources rather than manufacturing, may be problematic without foreign participation unless external financing is forthcoming.

#### **4.2 Enhancing the Creation of Linkage and Spillover Effects**

The international competitiveness of SILDEs can be enhanced by promoting linkage and spillover effects, direct and indirect, all of which increase domestic employment, technological intensity and labour productivity. Linkage and spillover effects improve complementary co-ordination and integration between domestic economic sectors by encouraging the development of local supply chains - both backward (upstream) and forward (downstream) - the formation of industrial clusters and industrial districts.

Corrales Leal views these effects as arising primarily as a result of stimulating increased international trade (Corrales Leal, 2007) but similar, if not identical, effects can be expected to arise from inflows of FDI. The potential for international trade to enhance supply-side capabilities in SILDEs through linkage and spillover effects can thus be inferred from analysis of FDI inflows. The actual impact of FDI in terms of enhancing domestic supply-side capabilities, however, can be expected to be greater than that of an equivalent endogenously-generated increase in exports because it embodies advanced technology, know-how and market knowledge.

There have been few, if any, studies of the supply-side impacts of increased trade in SILDEs and only a limited number of studies of the effects of FDI. A study of FDI in Fiji and Samoa finds that the level of linkage and spillover effects are generally much lower than might be expected in larger more developed economies (Read and Driffield, 2004; Read, 2005b). This

suggests that the potential for similar positive supply-side impacts in SILDEs resulting from increased trade is also likely to be constrained. The principal reasons identified for the failure of the FDI linkages and spillovers to develop in Fiji and Samoa to their full extent are as follows:

### **The Size of the Host Economy**

The size of SILDEs appears to have three separate but related effects on the creation of FDI linkages and spillover effects:

- The general level of development. The types of FDI attracted to developing countries and the form of linkages and spillovers that they are able to support are much more limited than in the case of industrialised economies.
- The types of FDI inflows attracted to SILDEs are likely to be confined to resource- and efficiency-seeking as opposed to the full range of FDI in larger countries (i.e., market-seeking in particular).
- The economic structures of SILDEs are both narrow and shallow. This further limits the scope for creating local FDI linkage and spillover effects and limit potential linkage and spillover effects from trade.

### **Host-Country Industry Characteristics**

The linkage and spillover impacts of FDI inflows cannot be separated from their underlying motivation. In SILDEs, they are likely to be primarily resource- and efficiency-seeking, mirroring the critical importance of comparative advantage in determining the viability of domestic output of tradeable goods and services.

- Resource-seeking FDI is largely concerned with exporting locally-sourced natural resources, possibly after initial processing. The local linkage effects relate principally to the large-scale exploitation of the resource itself - in return for a resource rent - and domestic value added - determined by the extent of local downstream processing.

- Efficiency-seeking FDI in developing countries is mainly concentrated in simple export-oriented assembly operations processing imported semi-finished goods with low real labour costs. The primary objective is to minimise costs so that this FDI cannot be expected to generate significant linkage and spillover effects. The principal contribution is direct employment although additional linkage and spillover effects may arise from the local sourcing of key inputs and local sub-contracting.

### **The Local Availability of Skilled Labour**

A critical factor constraining the successful transfer of technology to a host-country is the absorptive capacity of the local labour force. Further, the linkage and spillover effects generated by such transfers are dependent upon the technological competence and skill intensity of local producers. These same constraints can be expected to limit the trade effects of new or existing domestic activities utilising new technologies.

- In Fiji and Samoa, the transfer of technology to domestic firms was minimal although some new technology was introduced as a result of FDI. The labour forces in both countries appeared to lack the requisite skills to support inflows of FDI, revealed by significant skill shortages that have inhibited the growth of local labour productivity and therefore value added. Local firms and workers gained most from FDI inflows in those sectors for which there was public provision of high-level training. Internal training was provided for low-skilled local employees but expatriate contractors undertook most highly skilled functions. The magnitude of linkage and spillover effects, whether from FDI or trade, has thus been inhibited by a lack of suitably skilled local labour.
- Foreign investors generally tend to employ the most skilled workers and pay them wages that reflect their higher productivity. Indirect spillover effects arise when labour moves from foreign-owned and/or export-



oriented firms to local firms. Labour turnover in Fiji and Samoa, however, is low because of the limited availability of alternative employment opportunities, high unemployment or under-employment, the low level of embodied skills of many local employees and the low technological capacity of local firms. All of these factors limit the movement of skilled local labour between foreign and domestic firms and so reduce the prospects for any indirect spillover effects.

### Existing Policies to Create Local Linkages

The study of Fiji and Samoa identifies several important issues relating to the provision of supportive policies for the creation of local linkages and spillover effects in SILDEs:

- Government policies that use export and capital subsidies to encourage inward FDI tend to attract export-oriented inflows that have little interaction with local firms. This type of FDI also tends to crowd out the domestic sector. Many of the case-study firms imported second-hand technology, suggesting that very little cutting-edge technology was being employed. In some cases, this technology was still too advanced to be operated by local employees.
- Little effort was made by policy-makers to maximise the extent of the linkages and spillovers being created and their potentially beneficial effects. The Fijian Government expended more resources and effort in trying to attract new FDI inflows rather than ensuring that the full benefits of existing FDI were being reaped. The more agnostic position of the Samoan Government towards FDI gave rise to even greater ambivalence regarding support for linkage and spillover creation. A key challenge for policy-makers

in SILDEs is to maximise the local linkage and spillover effects arising from trade and FDI inflows.

- FDI incentives in more advanced economies have been linked to promoting exports, sub-contracting and/or technology transfer in addition to local content requirements. Such comprehensive policies towards linkage and spillover creation rely on a minimum threshold level of industrial infrastructure. This, however, is likely to be beyond the capacity of many SILDEs. Nevertheless, it is reasonable to expect that foreign investors, as in the case of domestic exporters, will seek to use and/or encourage local sources of supply where possible. It should therefore be feasible to accelerate this process through government policy initiatives.

### Linkage and Spillover Creation: Implications in the Context of Climate Change

The general conclusions of the discussion of linkage creation and spillovers in SILDEs echo many of those raised earlier in the analysis of enhancing local technological capacity. The small local economy is unlikely to be attractive to foreign investors except for export-oriented activities which can be expected or required to embody climate change-related technologies. Further, although human capital is a critical source of comparative advantage in SILDEs, the evidence from Fiji and Samoa suggests that their absorptive capacity remains low. Many SILDES may therefore lack the capacity to absorb climate change-related technologies effectively. The failure to maximise the benefits of existing linkage spillover effects also indicates institutional and policy weaknesses that may hamper the effective utilisation of adaptation and mitigation climate change technologies.

## 5. A STRATEGY FOR HUMAN AND SOCIAL CAPITAL FORMATION IN SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES

This requires that competitiveness policies should enhance opportunities and freedoms, including the generation of sustained and relevant real income increases. The three lines of action on human and social capital formation complement the two economic policy strategies outlined above.

### 5.1 Contributing to Human Capital Formation

Education and training at all levels enhance the domestic stock of human capital. Human capital formation encompasses the formal education system as well as training processes provided by intermediate organisations and firms (vocational and on-the-job training). This focus fits closely with endogenous growth theory which views human capital as a key determinant of economic growth, regardless of country size.

#### Human Capital and Comparative Advantage

The relative scarcity of labour in SILDEs means that they cannot compete with mass-produced labour-intensive goods and services exported by more populous developing countries. Economic growth through improved domestic value added therefore depends upon the quality of their labour since people are their most important indigenous natural resource.

The formation and augmentation of domestic human capital has critical implications for the comparative advantage, international competitiveness and growth of SILDEs (Bhaduri *et al.*, 1982; Briguglio, 1995, Armstrong *et al.*, 1998; Armstrong and Read, 1998). Many have invested heavily in education and training to increase their stock of human capital, hence their strong performance in the UNDP Human Development Index. The conjunction of human capital accumulation with open trade policies enhances domestic absorptive capacity (the assimilation of new technology) and so contributes to growth via increases in domestic labour productivity and value added.

For SILDEs, this can be expected to provide a considerable impetus to growth. Investment in human capital therefore stands them in good stead as globalisation proceeds.

In spite of substantial investment in human capital formation by many SILDEs, the evidence from Fiji and Samoa suggests that there remains a continuing need for increased public provision of vocational training and enhancement of the acquisition of technical skills.

#### Labour Migration and Human Capital

High levels of migratory outflows, particularly of human capital, to larger and more prosperous neighbouring economies are a critical problem for many SILDEs. For some, notably in the Pacific, this has led to a high degree of dependence upon inflows of worker remittances (MIRAB economies - migration, remittances and bureaucracy - see Bertram and Watters, 1985; Bertram, 1986, 2006). SILDEs that are traditional sources of large migratory outflows of labour may find themselves locked-in to a MIRAB-type structure and its associated shortcomings.

Inflows of remittances provide some compensation for public expenditures on educating and training migrants and the opportunity cost to the local economy of losing their scarce skills. The domestic effects of these inflows, however, may be very low given the dominance of imports in consumption in SILDEs. Policies to promote growth through investment in human capital formation may therefore result in continued out-migration of skilled labour in the short- and medium-term. For some MIRAB-type SILDEs, the scarcity of both skilled labour and related domestic job opportunities may be an almost intractable problem and retard progress towards a more diversified domestic economic structure. Further, the effects of climate change and rising sea levels may act as additional "push" factors in out-migration.

Many more prosperous small economies, however, notably those in Western Europe, are net *importers* of labour. In-migration provides the means to overcome local skill shortages, given domestic labour supply constraints (Armstrong and Read, 1995, 1998). Improved growth prospects in SILDEs may therefore lead to a gradual reversal of the direction of these migratory flows.

### **5.2 Fostering and Strengthening Social Capital**

This fits well with the discussion of social capital and good governance in SILDEs in section 3. The objective is to create or enhance networks of co-operation that bind economic agents to their communities and enhance the social impact of economic growth on the poor. Smaller societies, such as those in SILDEs, may enjoy greater growth-enhancing governance relative to many larger developing countries because they are likely to possess more social capital. This may place them at an advantage in translating growth effects into social enhancement as well as poverty alleviation. This is not to say that SILDEs possess sufficient social capital but rather that they appear more likely to have some of the foundations of growth-

enhancing governance on which to build their resilience.

### **5.3 Institutional Innovations**

This refers to the introduction of institutional innovations to enable informal sectors to benefit directly from facilities in the new financial markets. These are not specific to SILDEs and include:

#### **The Enhancement of Property Rights**

A component part of good governance that relates to enshrining property rights in law. Many developing countries, including SILDEs, lack secure property rights, facilitating biases and corruption in legal processes as well as limiting access to credit.

#### **The Promotion of Credit and Credit Institutions**

The legal enforceability of property rights improves access to credit and financial markets, particularly the urban and rural poor, by enabling them to leverage their (land) assets. This may require operational changes in existing credit institutions and/or the creation of new institutions designed to promote access to credit in hitherto ignored or neglected market segments.

## 6. ENVIRONMENTAL CONSIDERATIONS IN ENHANCING COMPETITIVENESS AND SUSTAINABILITY IN SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES

Environmental sustainability recognises the inter-dependencies between attaining specific economic goals to enhance domestic competitiveness and their environmental implications. These issues are not specific to SILDEs. Taking account of environmental considerations in enhancing competitiveness requires them generally to consider three main issues:

### 6.1 Compliance with Environmental Standards

Complying with minimum national or international environmental standards is increasingly important for developing countries in order to secure market access for their exports, particularly in the leading industrialised economies. These represent minimum entry standards and compliance by SILDEs may require costly modifications to domestic process and production methods (PPMs) or technological upgrading.

The extent to which the imposition of PPM-based trade barriers, such as environmental standards, is permissible under the WTO rules remains the subject of debate. Several GATT/WTO cases focus on the interpretation of Paragraph (g) of GATT Article XX (General Exceptions) - trade protection of exhaustible resources on conservation grounds, such as the well-known dolphin-tuna and shrimp-turtle cases.

Climate change is likely to be a catalyst for more stringent national and international environmental standards being applied to an increasingly wide range of goods and services. Compliance will require exporting countries, such as SILDEs, to undertake possibly costly investment in new climate change-related adaptation and mitigation process and/or production methods. This may necessitate large scale up-front investment (sunk costs), increased unit production costs and lower domestic value added, all of which have

implications for their future international competitiveness.

### 6.2 Natural Resource Use

Many SILDEs depend in part on the export of renewable and non-renewable natural resources. This issue has two environmental policy components; natural resource depletion and environmental degradation, both of which require environmental accounting.

#### Natural Resource Depletion

This applies to both non-renewable and renewable natural resources, such as fisheries, that are threatened by over-exploitation as well as climate change. The impact of climate change may therefore compound existing problems associated with excessive depletion.

This is most noticeable in fisheries, including aquaculture; a sector of importance to SILDEs because of its contribution to local employment and diets as well as export revenues. The sector is sensitive to climate change in terms of production volumes, species mix and fishing methods, with knock-on implications for employment, GDP and growth (Ghisu and Gueye, 2009). The long-term viability of the sector is therefore dependent upon the carrying capacity of specific environments and the extent of over-fishing. SILDEs are particularly vulnerable because climate change is expected to affect coastal fisheries more severely than oceanic ones.

Good governance of fisheries in sovereign waters (EEZs) and on the high seas is therefore critically important. The responsibility for effective fisheries conservation within EEZs rests firmly with national government. The sector's sustainability depends greatly on the quality of governance in implementing and enforcing appropriate policies, particularly in the light of the greater impact upon coastal fisheries. Effective conservation of common fisheries on the high seas is reliant upon

international agreement and is even more difficult to monitor and enforce, particularly for SILDEs. This is especially important with respect to migratory pelagic fish stocks such as tuna.

Climate change is likely to increase the intensity of competition between countries for scarce

fisheries stocks, especially on the high seas. Over-fishing and other forms of non-compliance may trigger catastrophic stock collapses to the detriment of all concerned. For example, there are critical differences between Fiji and Samoa in their governance of tuna stocks and compliance with internationally-agreed conservation policies.

### Box 2: Governance of Natural Resource Conservation: Tuna Policies in Fiji and Samoa

The long-term sustainability of common fishery resources depends upon the willingness of national governments to implement and enforce multilateral conservation policies. The West Pacific tuna fishery makes a major contribution to the economies of both Fiji and Samoa and they are both signatories to relevant multilateral agreements, including the Convention on the Conservation of Highly Migratory Fish Stocks in the Western and Central Pacific. In spite of the critical importance of managing this resource in a sustainable manner, there are important differences in their interpretation, implementation and enforcement of sustainable exploitation policies.

The Samoan Government is making a serious attempt to manage its tuna fishery in a sustainable manner in accordance with multilateral recommendations. In so doing, it has acted to manage those critical variables that are within its policy control, including promoting good governance practices that have eliminated many opportunities for rent-seeking behaviour. The long-term sustainability of the sector in Samoa remains dependent upon exogenous factors, primarily Pacific tuna stocks.

Poor levels of local governance and inconsistent national economic policies in Fiji have meant that the tuna fishing licensing system is susceptible to rent-seeking behaviour and corruption, aided by a lack of transparency in allocation criteria and over-use of discretion. This has led to the number of active tuna licences exceeding the threshold set by the Fijian Cabinet. The Government has also failed to enforce national legislation on minimum wages, indigenous crew requirements and health and safety. Fiji's commitment to the sustainable management of its tuna fishery has therefore been undermined by poor governance and has also reduced potential employment and other direct and indirect linkage effects.

The differential effectiveness of these sustainable tuna fishery management policies demonstrates potential shortcomings in national implementation and enforcement of multilateral agreements. Further, it also illustrates the critical role of good governance by SILDEs in ensuring compliance by commercial interests with sustainable development objectives (Read, 2006).

### Environmental Accounting for Resource Depletion

Policies designed to enhance resilience may necessitate increases in the rate of natural resource depletion and a possible acceleration in the exhaustion of renewable and non-renewable natural capital. Environmental accounting provides a means to evaluate the long-term implications of depleting natural capital by

incorporating its effects into the calculation of GDP and therefore economic growth. These accounting techniques can incorporate adjustments with respect to climate change over and above standard resource depletion. It is more difficult to account effectively for commonly-owned resources, such as migratory pelagic fisheries, where the monitoring and enforcement of conservation policies is problematic, as in many SILDEs.

### Environmental Degradation in Agriculture

Environmental degradation in the agricultural sector of SILDEs may not be quite as significant as has been suggested (Carrión, 2009) for two reasons:

- The small size of the agricultural sector in most SILDEs, because of the scarcity of cultivable land and their low populations.
- The tendency of this sector to specialise in crop cultivation rather than livestock production.

The principal economic problem with respect to agriculture in SILDEs is its relative backwardness in terms of productivity and efficiency. Agriculture, often subsistence, is generally a feature of the poorest SILDEs where it remains a major source of employment and income. Population growth may increase the stress on limited land resources through rising intensity of its use unless mitigated by continued migration.

Export-oriented agriculture in SILDEs, however, is often characterised by monoculture, sometimes in the form of plantations. This has important implications for environmental degradation in terms of synthetic fertilisers and pesticides leaching into the soil and local water supply as well as the threat to local biodiversity. Some SILDEs, notably in the Caribbean, have been investigating export-oriented high value organic agricultural production for markets in the leading industrialised economies.

### Environmental Degradation in Fisheries and Aquaculture

There is little evidence that oceanic fish stocks are greatly threatened by local as opposed to general environmental degradation. Inshore fisheries, as well as coastal mangrove resources, in SILDEs, however, are affected by inadequate sewage systems as well as flows of water-borne and leached waste products from agriculture and mineral extraction. Dealing effectively with these issues requires investment in better quality water systems and improved waste management.

The situation is more severe with respect to environmental degradation associated with land-based and inshore aquaculture, both of which are growth sectors in some SILDEs. In addition to being resource-intensive, these activities are leading to the loss of mangroves, so promoting coastal erosion, threatening coral reefs and increasing pollution and the incidence of water-borne diseases.

### Environmental Degradation in Mineral Extraction

Mineral extraction is reliant upon continuous technological improvements to exploit increasingly low grade and/or more costly deposits. Existing and new extraction processes may be degrading to a country's own environment and may also have market access implications in terms of compliance with environmental standards. The general view is that new installations of extraction and processing technology, while usually energy-intensive, are likely to more closely embody best practice in terms of climate change adaptation and mitigation. Further, environmental degradation may have critical implications for local biodiversity (see below).

Like products may have different environmental impacts; for example, crude oil with a high sulphur content (e.g., from Venezuela) emits more pollutants during both refining and consumption such that it is subject to more stringent environmental regulation. Trade discrimination between like products for environmental reasons is subject to WTO disciplines, primarily under GATT Article XX (g) (see also Sugathan, 2009).

### Environmental Degradation in Tourism

Mass tourism in particular is viewed as a major contributor to environmental degradation and these effects are likely to be amplified in SILDEs, notably in terms of its threat to over-development, the local environment (e.g. coral reefs) and bio-diversity. SILDEs are likely to have a much lower sustainable carrying capacity for tourism which, when exceeded, may lead to conflict and the erosion of indigenous social capital.

### 6.3 Biodiversity

Bio-diversity is an important natural resource asset in itself, both nationally and internationally, and islands are notable for fostering and supporting significantly higher levels of bio-diversity. This bio-diversity is an important environmental asset and a potential source of competitive advantage requiring sustainable management. Many SILDEs may be better placed than other developing countries in terms of their natural bio-diversity assets and their capacity to pursue niche environmental activities such as eco-tourism.

Climate change represents a major threat to the sustainability of bio-diversity. Many SILDEs are unusually well-endowed with natural environmental assets owing to their distinctive ecosystems and are thus global 'guardians' of biodiversity. Their eco-systems, however, are small and vulnerable to climate change disruption and other human activity, particularly agriculture and tourism (Carrión, 2009). The unique bio-diversity of SILDEs is particularly susceptible to climate change such that the need for sustainability in their economic development is of paramount importance.

### 6.4 Environmental Considerations and Sustainability: Implications in the Context of Climate Change

The environmental sustainability of economic growth and development results from an appropriate trade-off between national or international economic objectives and the

environmental implications of the means used to achieve them. Given the critical importance of international trade to growth in SILDEs, this section considers the implications of compliance with international environmental trade standards, natural resource depletion, resource accounting and the effects on bio-diversity.

This analysis suggests some grounds for more cautious optimism with respect to SILDEs than in the case of many other developing and developed countries. The principal reason for this is that their pattern of sectoral specialisation is generally more favourably disposed to achieving environmental sustainability. While many SILDEs are dependent upon renewable and non-renewable resources - mineral extraction, tourism and fisheries - for their income, employment and trade, they are not heavily involved in sectors that are prime sources of environmental degradation, e.g. livestock production and large-scale manufacturing. Nevertheless, their reliance upon natural resources *per se* raises issues concerning the depletion of natural capital, environmental degradation and the preservation of unique bio-diversity assets. Many SILDEs are likely to be in a relatively strong position to implement improved policies to control degradation and depletion so as to comply with increasingly rigorous environmental standards - e.g. export-oriented organic agriculture. Such policies also foster the preservation of their unique bio-diversities that are also a potential niche source of comparative advantage.

## 7. PROMOTING THE REDUCTION OF INEQUALITY AND POVERTY IN SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES

The primary emphasis of the Corrales Leal framework with respect to improving income distribution and alleviating poverty is the use of appropriate supporting economic policies. These relate to: the setting of appropriate macroeconomic guidelines; encouraging competitiveness and economic growth in productive sectors; and facilitating interactions between human and social capital.

### 7.1 Macroeconomic Guidelines

The identification of appropriate macroeconomic guidelines for SILDEs is additional to the operationalisation of sound macroeconomic policy principles. It is possible to identify several macroeconomic policy criteria that are of specific relevance to SILDEs.

#### Minimising Growth Volatility

Building resilience to growth volatility in SILDEs requires the appropriate identification and use of trade policy and financial mechanisms along with stabilisation measures where exposure to external shocks is high. This applies in particular to the critical effects of export earnings instability and fluctuations in market conditions of strategic imports.

The high degree of openness to international trade of SILDEs is sometimes erroneously regarded as being the principal cause of economic vulnerability. Trade is actually a critical source of growth and resilience building capacity, such that attempts to reduce it are likely to be both misguided and potentially extremely harmful. The standard solution to earnings instability is diversification but this is unlikely to be an appropriate remedial policy in SILDEs, with the exception of geographic export concentration, because of the impact of diseconomies of scale on the structure of domestic output. Instead, many SILDEs alleviate some of the impact of earnings instability by uncoupling their currency from the balance of payments through some form of fixed exchange rate (see section 2.5).

An interesting by-product of removing this link is that it has enabled the financial services sectors to flourish in some SILDEs. This is because the sector's credibility is dependent upon third country (hard) currencies which tend to have much lower volatility, so increasing the rate of return.

#### Non-Regressive Adjustment and Stabilisation

Adjustment and stabilisation policies to prevent or assuage the economic effects of vulnerability should have as minimal regressive impact as possible. The burden of adjustment should therefore not fall on the poorest sections of society.

Earnings and growth volatility tend to be regressive because of their adverse macroeconomic impacts on employment and inflation. Given that many SILDEs, arguably, enjoy greater social capital and cohesion than other larger developing countries, this should mean that policies with strongly regressive effects are generally avoided.

#### Prioritising Poverty-Alleviation

This requires that policies aimed at reducing poverty should have precedence, including improvements in access to education and health and the formation of human capital. This is again related to social capital and social cohesion and should be to the relative benefit of SILDEs.

### 7.2 Competitiveness and Development in Productive Sectors

This relates to prioritising measures that create employment opportunities and increasing the capital assets of the poor. It comprises three elements:

#### Promoting Local Complementarities and Linkages

These measures are intended to encourage the creation of local linkages between firms as well as non-market interactions, such as agglomeration and the formation of industrial



clusters. The discussion regarding the acquisition of technology and the creation of local linkages and spillovers in SILDEs suggests that the development of these effects may be inhibited by the limited scope for manufacturing activities, the small number of firms and skill shortages.

#### **Modulating Effective Tariff Rates**

Domestic trade policy interventions should be calibrated to ensure that the pattern of incentives in key sectors is in accord with comparative advantage. This ensures that net domestic value added at world prices is positive for all domestic export-oriented activities, such that they are internationally competitive and not disadvantaged by perverse trade protection structures.

Structural openness to trade is a key economic characteristic of SILDEs. The operationalisation of domestic trade policy (functional openness) can be expected to vary according to domestic priorities and may, in some cases, be relatively protectionist. Most, if not all, SILDEs have, unlike many larger developing countries, avoided implementing mis-specified protectionist import-substituting industrialisation strategies. As a result, they have not suffered greatly from distorted patterns of domestic incentives, including the promotion of activities with negative value added that undermine international competitiveness, saturated domestic markets and sluggish long-run growth.

A further dimension to this discussion is that many import-substituting development strategies have actually had a regressive effect on domestic inequality and led to increased poverty. This is because such policies tend to favour capital-intensive sectors, so depriving labour-intensive sectors of investment and raising unemployment. Economic development based upon relatively open trade policies, however, such as in SILDEs, is more likely to promote equality and reduce poverty, subject to governmental redistribution policies.

Structural and functional openness in SILDEs is therefore important in the context of

liberalising trade in climate-friendly environmental goods. Their trade barriers against these goods and adaptation and mitigation technologies are likely to be low or non-existent, allowing ease of market access. SILDEs, however, are likely to face difficulties with respect to the potential for discrimination on environmental grounds between like products and those with dual use (see Sugathan, 2009). These issues remain subject to negotiation in the WTO Doha Round.

#### **Providing Credit to the Informal Sector**

This relates to ensuring that small- and medium-sized enterprises (SMEs), micro-enterprises and entrepreneurs all have access to credit.

### **7.3 Interactions Between Human Capital and Social Capital**

The human and social capital strategy is based upon the prioritisation of public expenditure on education and health complemented by interaction at the sectoral level:

#### **Fostering Chains of Business Co-operation**

This refers to the facilitation of linkages between micro-businesses and other forms of mutual support with the modern economy. This may be particularly difficult to achieve in many SILDEs because of a weak potential for linkage and spillover creation, both within and between sectors, and a shortage of appropriate skills (see section 6.1). On the other hand, greater social capital in SILDEs should promote and enhance the conversion of non-economic linkages into economic ones.

#### **Implementing Training Performance Requirements**

These relate to designing effective incentives to increase firm participation in labour force training initiatives. This issue is particularly important for SILDEs, given their need to augment their human capital stock in order to support and reinforce their international competitiveness. The evidence cited in section 4.1 suggests that, in spite of efforts to enhance their domestic stock of human capital, many SILDEs fall some way short of providing

sufficient training in terms of labour skill and productivity effects.

#### **7.4 Inequality and Poverty Reduction: Implications in the Context of Climate Change**

SILDEs appear surprisingly well-placed with respect to the implementation of measures to reduce inequality and poverty in the context of building resilience capacity and adaptation to climate change. While structural openness to trade exposes their economies to earnings instability and therefore growth volatility, it also facilitates non-regressive adjustment and enhances competitiveness and the creation of linkages.

Many SILDEs have already undertaken much to alleviate the macroeconomic impact of their economic vulnerability by uncoupling the link between their balance of payments and exchange rate. By reducing macroeconomic instability and growth volatility, such policies have increased stability and therefore stimulated higher rates of growth than would otherwise have been possible. Recommendations that instability and volatility be reduced by reducing the role of trade are

misguided and likely to both inhibit future growth and give rise to increasing inequality and poverty.

The modulation of effective tariffs is closely related to the high degree of structural openness of SILDEs, which requires export-oriented activities to be in accord with their underlying comparative advantage. This also has important implications for promoting equality and poverty-reduction since these are strongly associated with relatively open trade policies, while more protectionist trade regimes tend to be more regressive. Openness is also important with respect to liberalising trade in climate-friendly environmental goods since trade barriers in SILDEs are likely to be very low.

Improving interactions between human and social capital in SILDEs, however, is likely to be more problematic. In spite of their inherent comparative advantage in human capital-intensive goods and services and possibly rich endowments of social capital, sustaining domestic competition and promoting local linkages and spillovers are likely to be difficult. The evidence suggests that efforts to enhance the stock of human capital in SILDEs have fallen short of their needs.

## 8. BUILDING RESILIENCE FOR SUSTAINABLE DEVELOPMENT IN SMALL ISLAND AND LITTORAL DEVELOPING ECONOMIES IN THE CONTEXT OF CLIMATE CHANGE: POLICY RECOMMENDATIONS

This section synthesises and summarises the key policy conclusions arising from the arguments presented in this paper and the links between trade, economic resilience and climate change in SILDEs. These policy proposals are intended to provide a checklist of desirable criteria with respect to building up economic resilience in SILDEs, with particular reference to climate change adaptation.

### 8.1 Enhancing Indigenous Technological Capacity in the Context of Climate Change

- The patterns of specialisation in SILDEs correspond relatively closely to the needs of climate change adaptation and mitigation but they need to ensure that these activities are climate-proofed.
- Narrow production structures in SILDEs suggest that only a limited range of climate change-related technologies is required.
- The poorest SILDEs need to diversify away from agriculture to raise their incomes and boost growth; this may have adverse climate change implications.
- Most SILDEs lack critical mass and the capacity to engage in large-scale RandD. Instead, they must continue to rely upon trade and FDI for new technologies and examples of best practice.
- Human capital is a critical potential source of comparative advantage for SILDEs but further investment is required to build domestic capacity to respond to the dual challenge of development and climate change.
- The capacity of SILDEs to assimilate new, including climate adaptation and mitigation, technologies requires improvements in the absorptive capacity of their human capital stock.
- Structural openness to trade provides the key channel for SILDEs to access new

technologies, including climate change-related ones, through trade or export-oriented FDI.

- Improvements in the absorptive capacity of human capital in SILDEs will enhance the potential for domestic spillover effects from trade and FDI.
- SILDEs need to ensure that appropriate policies are in place to maximise potential linkage and spillover effects from existing trade and FDI flows.

### 8.2 Human and Social Capital Formation in the Context of Climate Change

- Human capital formation via formal education and vocational training is vital for sustainable development and building resilience in SILDEs.
- SILDEs need to ensure that their social capital is converted into stronger growth-enhancing governance on which to build resilience.

### 8.3 Environmental Sustainability in the Context of Climate Change

- SILDEs may need to invest in costly new climate change-related adaptation and mitigation technologies to maintain their international competitiveness and ensure continued access to key export markets.
- SILDEs need to ensure that their policies and governance with respect to sustainable natural resource conservation and exploitation are effective.
- SILDEs need effective policies to monitor and tackle the impact of environmental degradation in key sectors, notably agriculture, mineral extraction, tourism (see bio-diversity below).
- Improving value-added in downstream processing has environmental consequences,

particularly in mineral extraction. SILDEs need to ensure that energy-intensive and polluting activities embody best practice in terms of climate change.

- SILDEs need effective policies and governance to conserve their bio-diversities and limit predation in problematic sectors, notably tourism, agriculture and aquaculture.
- SILDEs must recognise the importance and value of their unique bio-diversities. These are a natural source of competitive advantage and can provide additional sources of economic growth.

#### **8.4 Inequality and Poverty Reduction in the Context of Climate Change**

- SILDEs need to maintain/enhance their openness to trade because of its progressive effects on income equality and poverty reduction by increasing employment and raising incomes.
- Structural openness to trade makes SILDEs particularly vulnerable to earnings and growth volatility. Building resilience against the impact of this volatility can be aided by appropriate exchange rate policies and other remedial policy actions.
- SILDEs need to use their social capital to ensure that adjustment and stabilisation policies prioritise income equality and poverty alleviation.
- SILDEs need to promote local complementarities and linkages in order to foster competitiveness and development via (see 8.1 above).
- SILDEs are highly open to trade but must ensure that their trade barriers against climate change-related goods and technologies remain low.
- SILDEs need active policies to use their social capital to promote domestic linkage creation between the informal and formal sectors.
- Investment by SILDEs in human capital needs to address current and anticipated needs for particular skills, which may also reduce out-migration by skilled labour.

## 9. CONCLUSION

This paper provides an exploratory overview of the challenges confronting small island and littoral developing economies (SILDEs) in building their resilience to economic vulnerability and achieving sustainable development in the context of climate change. Although they are more susceptible to the effects of climate change, SILDEs appear better prepared in some ways for the challenges of climate change than many larger developing countries. Nevertheless, they still face a number of critical challenges, particularly in the context of the structural and policy constraints imposed by their economic characteristics and building resilience capacity.

SILDEs are heavily constrained by their size regarding the range of productive activities that they are able to engage in because of the influence of diseconomies of scale. Further, the consequent substantial symmetry between their patterns of production and consumption requires SILDEs to be structurally open to

international trade. This is advantageous to the extent that it necessitates the pursuit of production and export activities that accord with their underlying comparative advantage, particularly those that are human capital-intensive. The narrow domestic production base of SILDEs, however, gives rise to several sources of structural instability that expose them to high levels of economic vulnerability and therefore greater volatility in their growth. SILDEs therefore have a greater need to build resilience capacity so as to counteract the effects of their greater vulnerability.

The Corrales Leal trade policy space approach provides a useful integrated general policy framework for discussing sustainable growth in developing countries. In the context of SILDEs, this framework highlights several policy issues of critical importance with respect to the challenges of economic vulnerability, building resilience and climate change.

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