

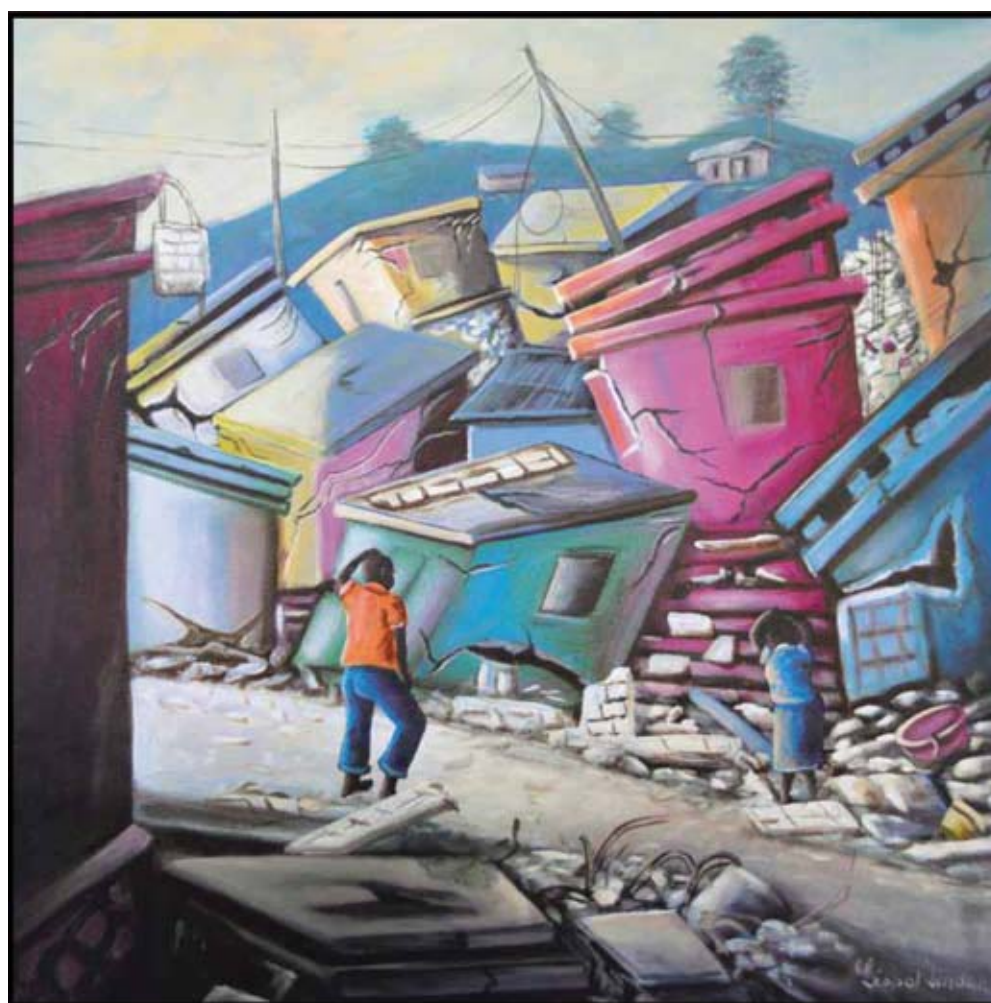
UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT
Geneva

THE LEAST DEVELOPED COUNTRIES REPORT 2010

Towards a New International Development Architecture for LDCs

CHAPTER 7

AN AGENDA FOR ACTION: (V) CLIMATE CHANGE AND (VI) SOUTH-SOUTH DEVELOPMENT COOPERATION



UNITED NATIONS
New York and Geneva, 2010

An Agenda for Action: (V) Climate Change and (VI) South- South Development Cooperation

Chapter

7

This chapter discusses the final core pillar of the NIDA — climate change adaptation and mitigation — and also South-South development cooperation, which is a transversal issue. Both these topics raise new policy issues which will become increasingly important for LDCs in the coming decade.

A. Financing climate change adaptation and mitigation in LDCs

Climate change adaptation and mitigation will require both finance and technology. The proposals presented in chapter 6 of this Report are designed to accelerate transfer of technology to and technology acquisition in LDCs, and they can be used not simply for economic development but also to promote a transition to a low-carbon growth path. The present section of this chapter thus focuses on the issue of climate change finance. The section considers the financial challenges confronting LDCs in meeting the adaptation and mitigation requirements occasioned by climate change in the light of their existing structural constraints. It proposes new international support mechanisms (ISMs) for financing their adaptation and mitigation, and examines key elements of a proposed international framework for the mobilization, administration and delivery of such financing.

Given that the international community's responses to climate change are regulated by an intergovernmental regime establishing rights and obligations for States parties to the regime and by a framework for negotiations on future actions through the United Nations Framework Convention on Climate Change (UNFCCC), any system of financing for climate change adaptation and mitigation should be considered with reference to the decisions and outcomes of deliberations within this forum. However, donors and multilateral development banks (MDBs) are tending to show an increasing preference for climate finance to be channelled outside the UNFCCC on a bilateral basis, which tends to undermine policy coherence and transparency (Tan, 2010). This reflects a lack of global governance of existing climate change financing, with no entity to enforce agreements reached (now and in the future) on climate adaptation and mitigation. This is a matter of concern. Given the clear link between development policy and climate change, a policy of sustainable economic development is necessary to minimize the effects of climate change and prevent its further threats by improving the adaptive capacity of LDCs (UN-DESA, 2009: 71).

This chapter proposes that the financing of climate change adaptation and mitigation, as part of a New International Development Architecture (NIDA) for LDCs, be based on five principles: (i) equity and compatibility

This chapter proposes that the financing of climate change adaptation and mitigation, as part of a New International Development Architecture (NIDA) for LDCs, would be based on five principles: (i) equity and compatibility with the global climate regime; (ii) accountable, transparent and representative governance; ...

with the global climate regime; (ii) accountable, transparent and representative governance; (iii) policy coherence with international trade and financial regimes and national development strategies; (iv) sustainability and predictability of financing; and (v) effective burden- and cost-sharing mechanisms.

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In order to fulfil the principles of equity and common but differentiated responsibilities, the international community needs to allocate responsibility to those who have primarily contributed to the problem for the crisis and recognize the vulnerability of those who have to bear the greatest burden of adjustment to climate change. Recent proposals to improve the existing burden and cost-sharing mechanisms are contained in the Greenhouse Development Rights Framework and the Responsibility-Capacity (GDRFC) Index (Baer, Athanasiou and Kartha, 2008). They include mechanisms for allocating responsibility based on a combination of emissions and incomes per capita and entitlements related to global per capita emission targets. The burden-sharing mechanisms proposed are based on capabilities to share the burden, which are related to income levels and are consistent with LDCs' development objectives (Baer, Athanasiou and Kartha, 2008). Table 36 shows the results of the GDRFC index for LDCs and other groups. The score for LDCs is 0.1 in 2010, 2020 and 2030. Hypothetically, using the indicator to establish contributions to a \$250 billion per annum global climate fund in 2010, the LDCs' share would be \$0.25 billion, that of Annex I countries¹ would be \$192.5 billion and non-Annex I countries \$57.5 billion. Over time, the indicators would shift to reflect changes in responsibility and capacity (table 36). As the costs of climate change adaptation and mitigation for LDCs rise, the greater will be the need to apportion these costs equitably within a progressive framework.

The primary elements of a positive agenda for a NIDA for LDCs in the area of climate change finance are: (i) to enhance the sustainability and predictability of climate financing; (ii) support the development of accountable, transparent and representative governance of a climate fund; (iii) promote the development of renewable energy opportunities; and (iv) encourage greater LDC engagement in initiatives for reducing emissions from deforestation and forest degradation (REDD). These elements are discussed in greater detail below.

Table 36

Greenhouse development rights: Results for LDCs and other groups

(Per cent of global, unless otherwise indicated)

	2010			2020	2030
	Population	GDP per capita (PPP dollars)	RCI	RCI	RCI
LDCs	11.7	1 274	0.1	0.1	0.1
Annex 1 countries	18.7	30 924	77	69	61
Non-Annex 1 countries	81.3	5 096	23	31	39
High-income countries	15.5	36 488	77	69	61
Middle-income countries	63.3	6 226	22	30	38
Low-income countries	21.2	1 599	0.2	0.3	0.5

Source: Worldwatch Institute, 2009.

Note: RCI – Responsibility Capacity Index.

1. ENHANCING THE SUSTAINABILITY AND PREDICTABILITY OF CLIMATE-CHANGE-RELATED FINANCING

(a) Systemic issues

Enhanced adaptation activities under the UNFCCC will be critical for LDCs, and must be considered from the perspective of sustainable development. Although adaptation measures should be mainstreamed into wider development planning generally, the costs of increasing the adaptive capacities of developing countries, particularly LDCs, should be calculated in addition to the resources necessary for maintaining economic and human development in these countries. Additional investment and funding for adaptation in LDCs is estimated to cost \$4–\$17 billion annually (UNFCCC, 2009). These figures are likely to be much higher if mitigation action is not taken soon to prevent further global warming.

Although the Copenhagen Accord emerging from the UNFCCC's fifteenth session of the Conference of the Parties (COP) has included pledges to scale up financing for developing countries under the UNFCCC, including up to \$30 billion between 2010 and 2012 for adaptation and mitigation (Copenhagen Accord, 2009: para 8), this amount still falls short of the conservative end of estimates for such financing. There is a further commitment to mobilize \$100 billion for mitigation efforts from a mixture of bilateral and multilateral public and private sources of finance, but this does not represent a commitment to provide financing per se; it merely commits to mobilizing resources (Third World Network, 2010). It also commits parties to the accord to establish a Copenhagen Green Climate Fund, as an operating entity of the UNFCCC's financial mechanism, which would support adaptation and mitigation activities and a Technology Mechanism to enhance action on development and technology transfer (Copenhagen Accord, 2009: para 10 – 11).

In addition to meeting the costs of adaptation, LDCs will also have to factor in the economic impact of climate change mitigation, in terms of their own transition to a low-carbon economy. A UNFCCC review in 2007 estimated that the additional investment and financial flows in 2030 to address climate change mitigation in developing countries will amount to 0.3–0.5 per cent of global GDP in 2030 and 1.1–1.7 per cent of global investment in the same year (UNFCCC, 2009). Approximately 46 per cent of such new flows are required for developing countries in 2030 due to expected economic growth and population increase, leading to higher energy demand (UNFCCC, 2009: 2; UNFCCC, 2008: para 60). These estimates do not include the operating or maintenance costs of mitigation investments (UNFCCC, 2008: para 63). On the basis of recent cost estimates, there is convergence that the climate change mitigation financing needs of developing countries will amount to \$100 billion to \$200 billion by 2020–2030, and for adaptation they will be about \$86 billion per annum in 2015 (UN-DESA, 2009; UNDP, 2007).

Given the scale of the challenge, it is critical to ensure sufficient financing for international climate adaptation and mitigation and the sustainability and predictability of the financial flows. LDCs are inherently more susceptible to economic shocks due to their structural weaknesses. Their requirement for a stable source of climate-related finance to buffer the unpredictable impacts of climate change and shift to climate-friendly economic investments is therefore more pressing.

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The size of the LDC Fund is still small relative to the scale of the problem faced by LDCs.

For LDCs, public external financing would have to provide the bulk of financing for climate-related activities, as it represents a much more stable and predictable source of finance. The need for government action to implement a strategic climate policy also means that such financing should both bolster the capacity of the State to respond to the climate challenge and ensure that those actions do not disrupt LDCs' wider development objectives. There should also be targeted and enforceable financial commitments by developed countries in this regard, such as a defined budgetary contribution to climate-related financing and compliance with those targets. For example, the size of the LDC Fund (LDCF) is still small relative to the scale of the problem faced by LDCs. Its scope and scale therefore needs to be expanded to meet the adaptation needs of LDCs. Similarly, the Adaptation Fund offers LDCs a more equitable and efficient framework for the administration and delivery of climate-related financing if it is under the aegis of the UNFCCC.

Market-based solutions cannot constitute the bulk of climate change-related financing for LDCs.

Although there is a role for the market for mobilizing additional financial resources for climate change adaptation and mitigation, as well as for providing climate-related goods and services, market-based solutions cannot constitute the bulk of climate change-related financing for LDCs. The complexity of the legal, financial, procedural and technical measures which must be established to enable effective utilization of carbon trading to mobilize financial resources go beyond the current institutional capacity of most LDCs. They would need to consider carefully the cost effectiveness of prioritizing the development of complex (and costly) regulatory and institutional structures to support the development of carbon markets vis-à-vis focusing on developing the public sector's capacity to mobilize financial resources and build domestic investment and economic infrastructural frameworks to support wider developmental objectives in order to reduce climate change vulnerabilities.

In many LDCs, public-private partnerships will be essential to finance adaptation and mitigation, as it is doubtful whether private sector mechanisms alone, such as disaster risk insurance and weather derivatives at national, local and household levels (UNEP, 2009: 18–20), are appropriate or adequate substitutes for concerted government measures and public investment in climate change adaptation. Although such instruments may transfer adaptation risk to the marketplace, the premium for such moves in the long term may prove financially disadvantageous to LDCs compared with upfront investment in adaptation measures.

(b) International support mechanisms for LDCs

The “crowding in” of private sector resources is aimed at supplementing – if not replacing – public sector finance to meet the scale of investments needed to support adaptation and mitigation.

Many of the proposed financing instruments operating outside the UNFCCC are geared towards private sector solutions to climate change (table 37), either as a source of climate-related financing or as adaptation or mitigation efforts in their own right. The former category includes utilizing and expanding national and international carbon finance markets for the following purposes: to reduce greenhouse gas (GHG) emissions in developed and developing countries, to generate finance for adaptation and mitigation actions in developing countries, including LDCs, and to facilitate private sector investment, notably foreign direct investment (FDI), for funding adaptation and mitigation operations. The “crowding in” of private sector resources in this respect is aimed at supplementing – if not replacing – public sector finance to meet the scale of investments needed to support adaptation and mitigation efforts (UN-DESA, 2009: 157). In addition, the latter category includes using the market and the private sector to allocate and provide goods

Table 37

Options for financing climate change adaptation and mitigation for developing countries

Intergovernmental financing options		Amount (\$ billion)	Criteria
Carbon-market-based levies	Application of a levy equivalent to 2 per cent of proceeds from the CDM to international transfers of CERs.	\$0.01–\$0.05	Estimates post-2012 require assumptions about future commitments. ^{a, b}
	Pakistan CDM levy	\$0.2–0.5	Proposed 3 to 5 per cent levy on CDM, primarily to finance climate-change adaptation through the Adaptation Fund. ^f
Auctions of emissions allowances	Auction of allowances for international aviation and marine emissions	\$10–\$25	Annual average for aviation rises from 2010 to 2030. Proposed by Norway MFA assuming a 2 per cent levy. ^b
		-	Annual average for maritime transport rises from 2010 to 2030 ^b
Levies on transport and travel emissions	International air travel levy	\$10–\$15	Based on a fee of \$6.50 per passenger per flight. ^b
	Tuvalu's burden sharing mechanism (BSM)	\$0.04 Annex II; \$0.003 non-Annex I	Proposal for a differentiated system of taxation on aviation and maritime transport, with a 0.01 per cent levy imposed on airfares and freight operated by Annex II countries, decreasing to 0.001 per cent for non-Annex 1 countries (LDCs/SIDS are exempt). ^e
	Aviation fuel taxes	\$4	Tax on kerosene (fuel consumption per X distance). ^g
Uniform global tax	Uniform global tax on CO ₂ emissions ^{e, f}	\$18–\$20	A global tax on all carbon emissions with a per capita exemption for LDCs based on the proposed Swiss Global Carbon Adaptation Tax. However, to the extent that the tax is successful it would progressively reduce the tax base, thus reducing revenues available for adaptation.
	Tobin tax	\$15–\$20	A tax of 0.01 per cent on wholesale currency transactions.
Assessed contributions	Mexico World Climate Change Fund ^e	\$10–\$95	Proposal for a Green Fund recommends that countries contribute on the basis of their historical emissions, population and income. Primarily for mitigation, rising from \$10 billion to \$95 billion in 2030 (plus an annual 2 per cent adaptation levy fund). LDCs would be able to draw on the funds without making contributions; ODCs would have to make a financial contribution.
	China plus G77 ^b	\$185–\$402	UNFCCC (2008) estimate based on a 0.5 per cent to 1 per cent of GDP contribution of Annex 1 countries via an unspecified revenue-raising mechanism.
Miscellaneous funding options	Funds to invest foreign exchange reserves ^c	\$200	Voluntary contributions of up to 5 per cent of foreign exchange reserves to a fund to invest in mitigation projects.
	Access to renewables programmes in developed countries ^c	\$0.5	Eligible renewables projects in developing countries could earn certificates that could be used for compliance with obligations under renewables programmes in developed countries, up to a specified maximum amount.
	Debt-for-equity swaps ^c	-	Creditors negotiate an agreement that cancels a proportion of the non-performing foreign debt outstanding in exchange for a commitment by the debtor Government to invest the cancelled amount in clean energy projects.
	Donated special drawing rights ^c	\$18	Some SDRs issued by developed countries could be donated to raise revenue for UNFCCC purposes.
Public-private partnership financing options			Leveraging private sector climate change adaptation and mitigation investment through the following:
Bonds	Government bonds (e.g. EU-Global Climate Funding Mechanism) ^d	\$1.3 until 2015	Traditional government borrowing, with budgets used directly to support LDC projects. Government bears risks related to projects financed by the bonds. Useful for raising large investments through institutional investors. The EU's Global Climate Funding Mechanism (GCFM) and the United Kingdom's International Financing Facility propose such a mechanism to meet adaptation financing.
	Green bonds ^{c, d}	-	Issued by a developed-country government institution with a sovereign guarantee (e.g. similar to World Bank green bonds), with a stronger link between bonds and investments. Raised funds would be directed to private sector co-investors in emissions reduction projects in LDCs. However, the risk remains with the government, but both public and private sectors have similar incentives to ensure maximum returns from the project. Some LDCs (e.g. Equatorial Guinea and the Sudan) might also be able to issue their own green bonds. An estimated \$120 billion of developed-country SDRs could be used as capital, and green bonds could be issued for raising \$40 billion per annum as concessional loans for clean energy investments. ^c
	Increased use of emission offsets ^d	-	Regulated entities would be required to cover their emission liabilities through a large number of offsets generated in LDCs, thus creating financial flows to LDCs. The bonds would offer the potential to access cheap abatement opportunities and funds for LDCs in the short term.

Sources: a UNFCCC, 2007; b UNFCCC, 2008; c Bredenkamp and Pattillo, 2010; d Stern et al., 2009; e Müller, 2008; f Africa Partnership Forum, 2009; and g Landau, 2004.

and services to facilitate adaptation and mitigation measures in developed and developing countries. Pursuant to this, public financing may be utilized to create market incentives and an enabling regulatory environment for the operation of commercial instruments and investments (table 37).

Most proposals for carbon taxes and taxes on international freight or transport allow exceptions for LDCs.

LDC Governments themselves could, through a combination of domestic resource mobilization (e.g. carbon taxes) and international carbon taxes and transportation levies, raise significant funds to finance adaptation and mitigation (table 37). Proposed initiatives such as imposing levies on emissions from international travel and transport should not lead to an unfair or undue burden on LDCs, and therefore should not be applied uniformly across all countries. Most proposals for carbon taxes and taxes on international freight or transport, such as the Swiss-initiated global carbon tax, the international air passenger levy or international maritime emissions reduction schemes, allow exceptions for LDCs to varying degrees. For example, Tuvalu's burden-sharing mechanism (adaptation blueprint) allows for a differentiated system of taxation on aviation and maritime transport, with a 0.01 per cent levy imposed on air fares and freight operated by Annex II countries, decreasing to 0.001 per cent for non-Annex I countries, and exemptions for flights and maritime freight to and from LDCs and SIDS (Africa Partnership Forum, 2009: 10). Such a tiered system balances the responsibilities between historical polluters and countries which bear the greatest burden of adjustment to climate change. Similarly, Maldives (on behalf of the LDCs) has proposed an international air passenger adaptation levy on fuels. The levy would be set fees per airline ticket, differentiated by class of travel. The estimated revenue streams from these funds could be significant, and could be combined with additional fund-raising schemes (table 37). As these proposals do not tie the revenue stream to the price of carbon, they are also likely to be more predictable. LDCs could also consider expanding the role and risk capacity of rural and community development banks to mobilize financing sources for local climate adaptation and mitigation projects.

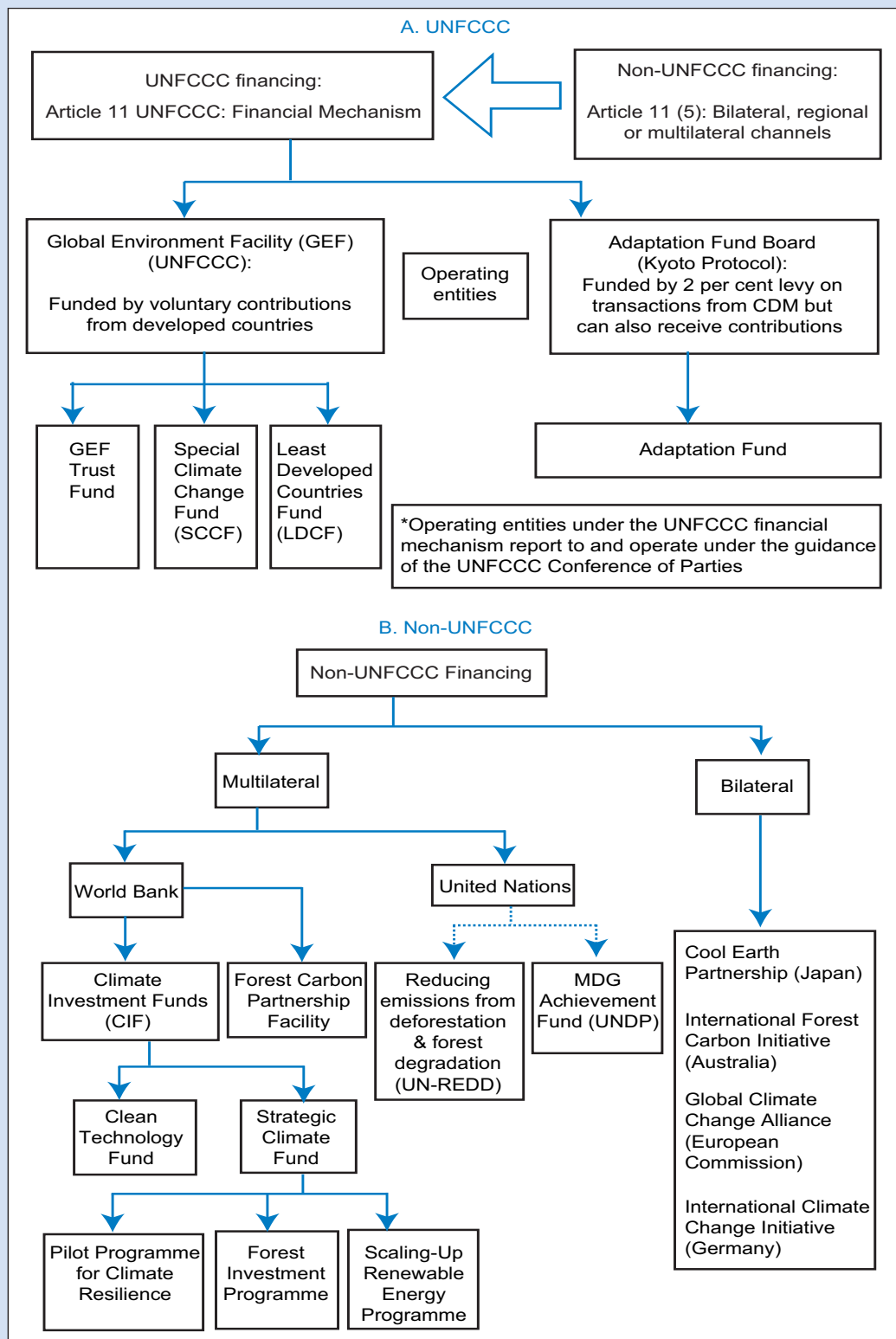
Maldives (on behalf of the LDCs) has proposed an international air passenger adaptation levy on fuels.

The donation of special drawing rights for climate finance (perhaps in the form of Copenhagen Accord's proposed Green Climate Fund) could also be part of a portfolio of measures to help address the adaptation and mitigation needs of LDCs (Bredenkamp and Pattillo, 2010). Similarly, the proposal for a Global Climate Financing Mechanism (GCFM), which would frontload climate finance (as a dollar invested now is likely to be more effective than a dollar spent in 2030 to tackle climate change) by borrowing from the private capital market with future revenues from the carbon market being used for repayment, could be further developed (table 37). The GCFM would have the potential to serve as a bridging financial facility until, for example, carbon taxes or an emissions allowance quota auctioning system could be established to generate sufficient revenues to meet developing-country adaptation and mitigation needs (Landau, 2004).

With regard to domestic resource mobilization for climate-related finance, applying a green tax on specific forms of GHG-emission-intensive industries in LDCs might also induce private firms to develop more climate-friendly modes of production (table 37). Revenues from such taxes could be allocated to GHG reduction projects that would otherwise be unviable under the clean development mechanism (CDM).²

Chart 40

UNFCCC and non-UNFCCC channels of climate-related financing



Source: UNCTAD secretariat.
Note: These schemes are not exhaustive.

2. DEVELOPING ACCOUNTABLE, TRANSPARENT AND REPRESENTATIVE CLIMATE FUND GOVERNANCE

(a) Systemic issues

There are two main channels of climate adaptation and mitigation financing available to developing countries: through the UNFCCC, and through non-UNFCCC channels (chart 40). The two main areas of contention concerning the design of an international architecture for climate change financing concern: a) the sources of financing, and b) the modalities for financing. Regarding the former, developed countries have expressed a preference for non-UNFCCC channels for the mobilization, administration and disbursement of climate-related financing, namely through existing bilateral and multilateral official development assistance (ODA) institutions such as the World Bank (Khor, 2008: 17; South Centre, 2009: 1–2). LDCs, on the other hand, would prefer such financing to be channelled through the UNFCCC with oversight of the funds provided under the authority of the COP. They believe this would assure greater accountability, transparency and, importantly, consistency with the UNFCCC's climate regulatory regime. A fundamental concern about having the climate funds located outside the UNFCCC is that they would remain primarily donor-driven initiatives premised on an asymmetric aid relationship between the donor and the recipient of financing (Porter et al., 2008: 51). The relationship of these funds to the UNFCCC's core principles and obligations is also unclear, and may create parallel structures of climate change governance that are contrary to the Convention.

Many of the shortcomings of the current modalities of climate-related financing arise from the fragmented and unrepresentative way in which climate funds are administered and regulated.

Channelling funds through ODA mechanisms also complicates the accounting of climate change-related financing and conflates developed countries' treaty-based financing obligations under the UNFCCC and their voluntary ODA commitments. Apart from causing funding to be "double counted" (i.e. using the same resources to meet both UNFCCC and ODA commitments), the utilization of funds outside the Convention to meet treaty obligations also makes it difficult for the UNFCCC to monitor developed countries' compliance with their obligations (Porter et al., 2008).

Many of the shortcomings of the current modalities of climate-related financing arise from the fragmented and unrepresentative way in which climate funds are administered and regulated. This is compounded by the asymmetrical structures of decision-making that govern most of these funds, which allow developed countries and international financial institutions to effectively serve as gatekeepers for the funding urgently required by LDCs. These governance deficiencies have led to funds being disbursed through mechanisms that do not reflect the needs and priorities of recipient countries and that impose greater administrative burdens on these countries. Representative governance structures giving equal voice to both the recipient and financing countries are also critical for properly identifying the scope and scale of the challenges facing developing countries in the context of climate change and for tackling those challenges in accordance with countries' economic and human development needs.

In addition a system of monitoring and reporting is needed to map the various financial flows so that those flows can be measured, reported and verified in the context of developed countries' obligations under the UNFCCC. The G-77 and China have proposed that a new financial mechanism be established under the UNFCCC which would require that any funding pledged outside the Convention be disregarded as part of the fulfilment of developed

countries' obligations. If implemented, this might stem the proliferation of multiple funding arrangements and prevent further fragmentation of financial resources. The proposed new financial mechanism operating under the authority and guidance of and fully accountable to the COP, would mean that financing would be placed within a much more representative decision-making and accountable structure, and it would ensure that the financing is compliant with the provisions of the UNFCCC.

The establishment of a new financing mechanism under the Convention would not preclude the establishment of funds outside it, but would reduce the incentives for developed countries to do so, and it would encourage them to enhance the capacity of the new financing mechanism to better "handle the potential financial flows and associated administrative and logistical matters" (South Centre, 2009: 13, para 26). It would also strengthen the links between financial resources and developed countries' commitments under the Convention, in addition to scaling up implementation of assistance to LDCs, while reducing the possibilities of double-counting and mixing of ODA and climate financing (ibid: para 27–29). The role of the MDBs in any future governance structure will be critical. The UNFCCC could provide an overarching governance structure for climate-related finance, of which MDBs and the climate investment funds would be key elements to leverage finance for climate change adaptation and mitigation in LDCs.

The mobilization, administration and delivery of climate finance need to be coordinated, as do the funded strategies and measures. The link between development strategies and climate change policy is crucial for LDCs. Removing structural obstacles to their economic and human development would assist in reducing their vulnerability to climate change and contribute towards meeting the broader challenge of transiting towards a low-carbon economy.

Consequently, ISMs for climate-related financing should be designed to address the constraints that LDCs face in meeting the multiple challenges of climate change and economic and social development. Support mechanisms such as the LDCF (discussed below) should not exacerbate these pressures through the imposition of more onerous conditionalities or by reducing the financing of non-climate-related development investments. Greater policy coherence is required between the new global and bilateral climate change funds and the national development plans of LDCs as recipients of this finance. At present there is insufficient alignment of Poverty Reduction Strategy Papers (PRSPs) with LDCs' national development policies and plans. It is also difficult to determine the degree of harmonization between the different bilateral and multilateral initiatives, outlined above, in the LDC context. LDCs need to lead in the design and implementation of their climate adaptation and national development strategies and donors need to align and harmonize their aid behind country priorities and systems.

(b) Reforming the LDCF

Funding of the national adaptation programmes of action (NAPAs) has been neither predictable nor sufficient to tackle the climate adaptation challenges in LDCs. The LDCF was established in 2001, long before the creation of the Adaptation Fund under the Kyoto Protocol, or the Cool Earth Partnership (Japan) and the Global Climate Change Alliance (European Union). However, even though it has made relatively slow progress in implementing priority adaptation projects because of the complexity of LDCF procedures, the

The link between development strategies and climate change policy is crucial for LDCs.

The LDCF should continue to support LDC adaptation, albeit in a reformed and financially replenished mode, by delivering effective finance and technical assistance.

The LDCF could play a role in enabling LDCs to access other adaptation funds by providing a project preparation facility which could address the co-financing constraints many LDCs face in accessing climate finance.

Fund should continue to support LDC adaptation, albeit in a reformed and financially replenished mode, by delivering effective finance and technical assistance.

LDC Governments should introduce a climate change adaptation planning cycle into their investment and budgetary plans to provide a means of coordinating funding for adaptation from various sources.

The amount of the required financial resources needs to be sufficient to perform the tasks expected of the LDCF (to support entire NAPA programmes rather than individual projects). If funds are limited, it may require a mandate to gradually reduce the scope of its activities to specific groups of actions or countries, rather than covering all LDCs inadequately. For example, the LDCF could play a role in enabling LDCs to access other adaptation funds by providing a project preparation facility which could address the co-financing constraints many LDCs face in accessing climate finance. In addition, the LDCF could, perhaps, develop a facility comprising non-governmental organizations (NGOs)/civil society to fund local level NAPA priorities identified by them, through innovative climate adaptation funding schemes.

In an era of intense post-Copenhagen climate-related debates on finance and the possible replacement of the Kyoto Protocol after 2012, the UNFCCC and its partners will need to consider whether the LDCF is still suited to its purpose. It could be argued that reform of the LDCF's operational structure, including the incorporation of a direct access component to the funding mechanisms for LDCs (as in the Adaptation Fund) and ensuring reliable funding (on a non voluntary basis) would make the LDCF a viable and necessary entity to assist LDCs in adapting to climate change.

LDCs could take steps to enhance their adaptation capacity through regional and cross-border arrangements to pool financial and other resources.

The LDCF's LDC Expert Group (LEG) and Council need to reach out more widely (e.g. to include civil society organizations) and build on potential improvements outlined in the LEG (2005) draft on NAPA implementation strategies and the guidelines of the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD/DAC) on mainstreaming adaptation by more closely aligning NAPA priority projects with government policies and budgetary processes (DANIDA, 2009).

LDC Governments should introduce a climate change adaptation planning cycle into their investment and budgetary plans to provide a means of coordinating funding for adaptation from various sources, and maintain the momentum, from NAPA preparation to implementation, of identified adaptation priorities. DANIDA (2009) proposes that systematic and inclusive learning platforms be initiated as a NAPA priority so that stakeholders can share lessons on implementation and improve the impact of adaptation projects.

Since LDCs lack the necessary technical capacities, they could also take steps to enhance their adaptation capacity through regional and cross-border arrangements to pool financial and other resources, especially for the development of regional early warning systems for extreme weather events.

A major challenge for LDCs will be that of transiting towards more sustainable and secure energy sources while maintaining and expanding access to affordable energy.

General budgetary support as an aid modality linking ODA to national policies may enable more flexible funding for LDC public budgets through administrative mechanisms which carry low transaction costs and strengthen national management of finances, resource control systems and accountability at the national level to promote greater climate-related finance. This will also require greater harmonization and alignment of donor funds at the national level (UNCTAD, 2008). For example, donors could pool their adaptation funds into a single national fund held by the finance ministry. The funds would be released on application by the respective line ministries to fund climate adaptation investments and programmes (OECD, 2009: 84).

3. DEVELOPING RENEWABLE ENERGY OPPORTUNITIES

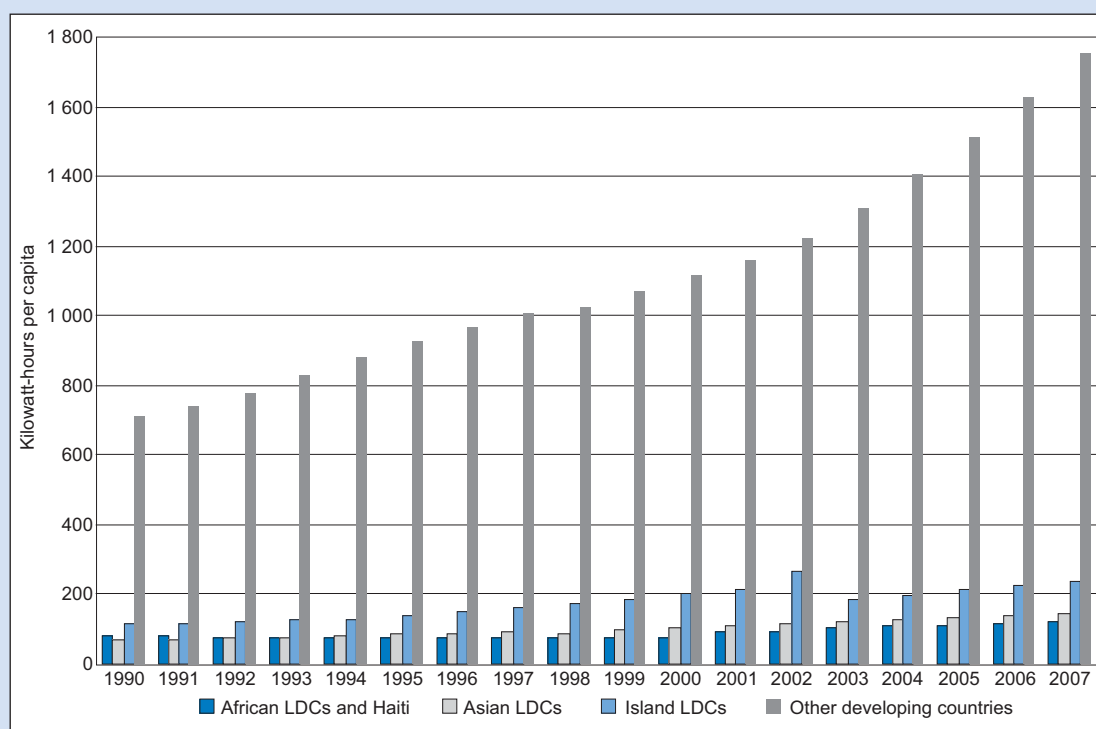
As energy use, primarily sourced from high carbon-emitting fossil fuels, account for 66 per cent of total GHG emissions, a major challenge for LDCs will be that of transiting towards more sustainable and secure energy sources while maintaining and expanding access to affordable energy for industrial and household use (UN-DESA, 2009: xi–xii and 35). Two thirds of developing-country parties to the UNFCCC have reported energy supply measures as key priorities for investment and financial flows, notably switching from fossil fuels to renewable energy (UNFCCC, 2007: para 758). UN-DESA (2009: 42) has identified energy as “the critical link between development and climate change mitigation” as global access to energy services remains as unequally distributed as income. It is estimated that four out of five people without electricity live in rural areas in developing countries, mainly in LDCs in South Asia and sub-Saharan Africa (UN-DESA, 2009). Electricity consumption per capita in LDCs averaged 9 per cent of that of other developing countries (ODCs) during the period 1990–2007 (chart 41).

LDCs are endowed with substantial renewable energy resources, but less than 10 per cent of their capacity is utilized.

Although there remain significant obstacles to LDCs’ expansion of energy services to their population,³ access to sustainable energy sources is crucial for helping them meet their socioeconomic development objectives. Energy poverty affecting approximately 75 per cent of LDCs’ populations will generate greater environmental pressures due to increased demand for the energy deficit to be addressed (UNCTAD, 2006). The estimated amount of carbon dioxide (CO₂) emissions that would be produced in meeting the needs of those who

Chart 41

Electricity consumption in LDCs and ODCs, 1990–2007 (Kilowatt-hours per capita)



Source: UNCTAD secretariat calculations, based on United Nations Statistics Division, *UNdata, Energy Statistics Database* (accessed May 2010).

Most CDM projects of LDCs have focused on renewable energy and reforestation.

There is an urgent need to develop effective forestry management and land-use change policies in LDCs to assist them in meeting the challenges of mitigation and adaptation.

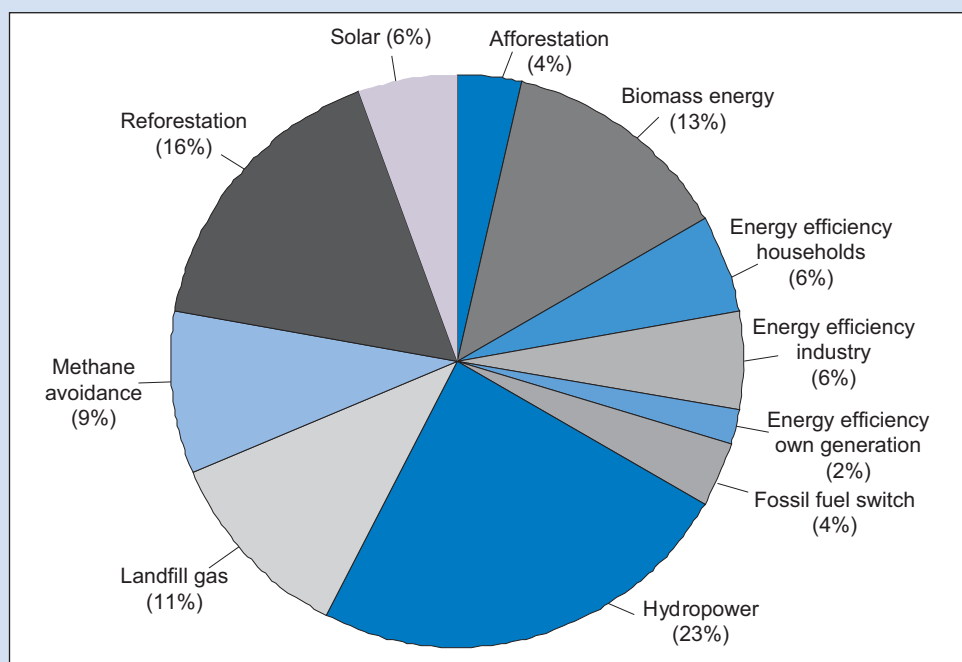
currently have no electricity or cleaner energy would represent a modest 2 per cent increase in global CO₂ emissions (Socolow, 2006). Stimulating the development and consumption of non-fossil fuel energy sources in LDCs may require a shift in the balance of existing subsidy arrangements. The removal of national subsidies for fossil fuels (e.g. kerosene, diesel and natural gas) may require compensatory measures for the poorest consumers in LDCs.

LDCs, particularly in sub-Saharan Africa, are endowed with substantial renewable energy resources (e.g. 12 per cent of the global hydropower potential), but less than 10 per cent of their 1.1 gigawatt capacity is utilized (Water for Agriculture and Energy in Africa, 2008). Yet in 2007, LDCs accounted for only 2 per cent of global net generation of renewable electricity as compared with 45 per cent in the ODCs. The biggest LDC producers of renewable electricity are Bhutan, the Democratic Republic of the Congo, Mozambique and Zambia.⁴ Greater decentralized power generation through small-scale renewable energy projects for the 1.6 billion people without access to modern energy could also boost “green” employment and development prospects in many LDCs (Sanchez and Poschen, 2009).

Similarly, although only 16 LDCs have a CDM project, most of these projects have focused on renewable energy (primarily hydropower and biomass energy) and reforestation (chart 42). So far, the CDM has had a negligible impact in terms of meeting LDC mitigation and adaptation needs, but if improved it has the potential to overcome financial barriers to renewable energy technology faced by LDCs.⁵ For example, a key requirement of the CDM is that the projects that industrialized countries invest in should conform with LDCs’ development priorities. This gives LDCs some scope to prioritize projects involving renewable energy technology for CDM investment. There is tremendous scope and potential for growth in LDCs’ renewable energy technology and power generation sectors. The renewable energy sector could

Chart 42

LDC CDM projects, by sector



Source: UNCTAD secretariat estimates, based on UNEP Risoe Centre on Energy, Climate and Sustainable Development, *CDM/JI Pipeline Analysis and Database* (<http://cdmpipeline.org/index.htm>) (accessed 1 March 2010).

Note: Sample of 16 LDCs.

make a significant contribution towards the development of a productive knowledge economy based on research, development and innovation in LDCs. This would reduce the reliance of some LDCs (especially SIDS) on energy imports, and promote the sustainable development of industry through investment in “green” technologies (e.g. wind, geothermal, hydro and solar power). Similarly, the development of bio-energy provides the potential both for reducing GHGs and the substitution of fossil fuels.

There is also an urgent need to develop effective forestry management and land-use change policies in LDCs to assist them in meeting the twin challenges of mitigation and adaptation in this context. Deforestation and the associated loss of biodiversity in LDCs are likely to continue until there is a globally recognized approach to measuring the impact of deforestation through the delivery of significant resources such as those disbursed by the Global Environment Facility (GEF) e.g. Reducing Emissions from Deforestation and forest Degradation (REDD) (see item below). This will probably necessitate moving beyond traditional project-based approaches to deforestation (e.g. protected area schemes), which have not significantly reduced the rate of commercially driven deforestation or sufficiently incorporated the needs of forest-dependent communities.

4. A CONSTRUCTIVE APPROACH TO REDD

(a) Systemic issues

The utility of forests as key weapons in the fight against climate change is increasingly recognized by Governments, and REDD has become an important element in negotiations under the multilateral climate change regime. In LDCs, deforestation and forest degradation account for 65 per cent of carbon emissions (UN-DESA, 2009: 42). During the period 1990 to 2007, forested area in LDCs declined from an average of 30 per cent to 27 per cent of their total land area. Curbing deforestation and forest degradation is therefore seen as “a highly cost-effective and relatively quick way of reducing greenhouse gas emissions” (UN-DESA, 2009: 164). Providing financing to developing countries, especially LDCs, for REDD is viewed as important for achieving the three objectives of: (i) supporting global mitigation efforts; (ii) supporting climate change adaptation in LDCs and ODCs, as well as poverty reduction in general; and (iii) promoting biodiversity through forest conservation (UN-DESA, 2009; Myers Madeira, 2008: 9).

Under REDD approaches countries and/or actors would be financially rewarded for undertaking measurable, verifiable and reportable REDD activities aimed at maintaining their forests and switching to more sustainable land-use policies. Several recent multilateral initiatives, most notably the World Bank’s Forest Carbon Partnership Facility (FCPF), assist countries in developing national REDD strategies in addition to testing incentive structures for REDD projects (FAO, UNDP and UNEP, 2009). At least four LDCs are involved in UN-REDD: Cambodia, the Democratic Republic of the Congo, the United Republic of Tanzania and Zambia. REDD+ actions comprise measures which extend to the agricultural and the bio-energy sectors, insofar as they impact forests.

Different incentive structures have been proposed for financing REDD activities, involving public and market-based financing and national, sectoral or project-based approaches. Public financing could involve

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Public financing could involve financial commitments from developed countries to an international fund for disbursement to REDD participants.

financial commitments from developed countries to an international fund for disbursement to REDD participants. Integrating REDD activities into carbon markets would involve incorporating REDD activities in offsetting schemes and crediting developed countries with emissions reductions in compliance with their mitigation targets under the Kyoto Protocol. A project-based system would generate credits in a local area, while national approaches would involve payments to national authorities for nationally-based REDD operations (Myers Madeira, 2008).

Although, in principle, REDD has the potential to serve as a key source of income for mitigation measures in LDCs and reducing GHG emissions, LDCs need to be cautious in committing to specific REDD arrangements for the reasons discussed below.

Arresting deforestation and forest degradation has the potential to provide an additional source of finance to LDCs through REDD...

First, there remains methodological uncertainty about both the calculation of costs and monitoring the effects of REDD. REDD activities were notably excluded from offset mechanisms under the Kyoto Protocol because of uncertainty surrounding the “magnitude of deforestation emissions and the ability to monitor deforestation” (Myers Madeira, 2008: 9). There is also difficulty in costing lost revenue streams to national Governments and local communities as a result of REDD and in determining the appropriate level of compensation (FOEI, 2008: 12). The inclusion of plantations and other agricultural sectors in the definition of forests also skews the real carbon-reduction impacts of REDD, as plantations’ capacity for carbon storage is only 20 per cent that of natural forests (FOEI, 2008: 23). Further, basing costs on historical baselines may disadvantage LDCs, as they have lower rates of deforestation than middle-income rainforest countries, such as Brazil and Indonesia, and are thus able to generate more resources from REDD activities (Myers Madeira, 2008: 29).

Second, it has been argued that REDD activities do not address the key drivers of deforestation, particularly the demand for timber, agricultural commodities and unsustainable land-use policies (FOEI, 2008: 24–26). For example, without a reduction in demand for timber and other forestry products, a reduction in supply could lead to an increase in timber, livestock and crop prices, thus creating an incentive for deforestation, both nationally or abroad (FOEI, 2008: 24; Myers Madeira, 2008: 11). This “market leakage” results in deforestation becoming more profitable in areas outside the REDD framework. REDD activities do not address other drivers of deforestation such as weak governance, corruption and illegal logging, and may, under some circumstances, reward those responsible for deforestation by creating perverse incentives. The increase in the value of forests as a result of REDD without a corresponding framework for protecting the land tenure of forest dwellers and indigenous communities in LDCs may also adversely affect communities that are dependent on forests for their livelihoods (FOEI, 2008: 16–17). If REDD is to succeed, these complex political and social issues need to be addressed (Horta, 2009).

... but without a focus on governance, rights and security of resource tenure, REDD is likely to fail.

Third, REDD activities do not address the structural reasons underlying the high dependence on the forestry sector as a source of external revenue for LDCs and the high carbon emissions from unsustainable land-use largely due to their lack of economic diversification and technological capacity. Providing payments for REDD activities may be an option for meeting the twin objectives of mitigation and adaptation. However, unless REDD approaches

are embedded within a broader, integrated strategy that encompasses building resilience to climate change, a strong regulatory framework and secure land-tenure rights, its climate-related funding activities may not be sustainable.⁶

Arresting deforestation and forest degradation has the potential to provide an additional source of finance to LDCs through REDD, even if a global REDD mechanism does not materialize or fails for other reasons, as forest-based products annually generate billions of dollars of revenue internationally. The World Bank (2006) has estimated annual losses from global illegal deforestation at \$15 billion per annum.

(b) International support mechanisms for LDCs

Since 2000, international REDD negotiations at the UNFCCC's COP have been largely confined to discussions about measuring forest carbon stocks in order to trade carbon credits. For LDCs in particular, but also developing countries in general, this fails to address the underlying drivers of deforestation and degradation. Without a focus on governance, rights and security of resource tenure, REDD is likely to fail. Recognizing this, the 2008 Tuvalu REDD submission (FCCC/AWGLCA/2008/MISC.5/Add.2 (Part I)), on behalf of the Alliance of Small Island States (AOSIS), called for "options for exploring demand side measures relating to drivers of deforestation (e.g. export of timber and forest products)". More explicitly, Tuvalu maintained that carbon stocks included in wood products not certified as "sustainable" and imported by an Annex I Party from a non-Annex I Party should count as an emission by the Annex I Party. To date, however, other Parties have not supported this proposal. Therefore REDD must measure more than carbon; it should also ensure wide stakeholder participation in policy development, secure land-tenure and resource rights, and encourage strong forest protection laws and enforcement. For LDCs, these would be key elements of their engagement in the REDD process as it evolves, whether or not a global mechanism is introduced. Some of these elements are elaborated below.

For LDCs national REDD strategies should be informed by on-the-ground realities and practical lessons from early REDD implementation. While REDD will need to reflect diverse national circumstances, LDCs will need to ensure that the key building blocks of the future REDD+, such as safeguards, reference levels, baselines, and measurement, reporting and verification (MRV) reflect their needs, but also their current capacities.

If the expected reduction of emissions from REDD are to be realized, LDCs will need assistance in developing their capacities to enforce their environmental and forest management legislation. At present, timber production that violates LDCs' environmental and forest management legislation not only acts as a barrier to REDD, but also costs these countries billions of dollars per annum (Daviet, 2009). Thus it may be necessary to develop special programmes or measures/ requirements for LDCs so as to increase their participation in the REDD scheme. LDCs should ensure that these special measures or requirements feature in forthcoming climate change COP conferences. Significant funding in the form of grants is needed for the initial stages of REDD+ to enhance LDC participation.

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The acceleration of economic growth in several developing countries and their expanding international linkages have made the South an increasingly important partner of the LDCs over the past 20 years.

B. South-south economic relations involving LDCs

In order to realize the potential gains from the closer integration of LDCs with their RTA partners and MDTPs, a positive agenda is needed, comprising strategies, initiatives and ISMs as part of the proposed NIDA.

The acceleration of economic growth in several developing countries and their expanding international linkages have made the South an increasingly important partner of the LDCs over the past 20 years. As chapter 4 of this Report shows, linkages of the LDCs with other developing countries (ODCs) through trade, FDI, official finance, people and knowledge have grown rapidly, so that these flows have become comparable to — and in some cases even larger than — those with the traditional, major developed-country partners of LDCs. Among developing countries, two groups have the most extensive linkages with LDCs: their major developing trade partners (MDTPs) and their partners in regional trade agreements (RTAs). The LDCs' economic and political linkages with these two major developing-country partner groups are quite different, due to differences between the MDTPs and RTA partners (box 15).

The shift of LDC economies away from their previous focus on linkages mainly with the North diversifies their pattern of international integration.

Box 15. Differences among developing-country partners of LDCs

LDCs differ from other groups of countries in several respects, such as income, technology, knowledge, size of the economy, productive and financial resources, human resources and institutional capabilities. Obviously, such gaps are the widest between LDCs and developed countries (UNCTAD, 2006: 137–140 and 193–200; UNCTAD, 2007: 1–5), but there are also considerable differences between LDCs and ODCs. Among the ODC subgroups, LDCs display the largest differences vis-à-vis the MDTPs and the smallest vis-à-vis their RTA partners. Per capita GDP — the broadest indicator of development — is six times higher in MDTPs than in LDCs, while it is just three times higher in RTA partners (box table 2). Moreover, the income gap between MDTPs and LDCs has been widening. The technological gap is even wider, as evident by indicators such as gross domestic expenditure on R&D per capita and the share of medium- and high-technology-intensive and skill-intensive exports in total exports. In both cases, the level in MDTPs is some 21 times higher than in LDCs, while the gap with RTA partners is much narrower (box table 2).

Box table 2

Differences between LDCs and their main developing country partner groups, 2007–2008

Country groups	Indicators	Economic size	Income		Technology
		GDP (\$ billions)	GDP per capita (\$)	GERD per capita* (PPP \$)	Share of exports of medium- and high-tech manufactures in total exports (Per cent)
LDCs		460	569	2	2
RTA partners		2 048	1 902	11	24
MDTPs		9 321	3 218	49	45

Source: UNCTAD secretariat calculations, based on data from the UN-DESA Statistics Division, UNESCO and UNCTAD's *GlobStat* database.

* GERD: Gross domestic expenditure on research and development. Data for 2005–2007 for a sample of seven LDCs, 13 RTA partners and 7 MDTPs.

There is also a huge contrast in the size of the economies of LDCs and MDTPs. The economy of the latter as a group is 20 times larger than that of the LDCs as a group. China's economy alone is eight times bigger than the economies of all LDCs combined. By contrast the combined economies of RTA partners as a group are just four times bigger (box table 2).

These contrasts imply asymmetries in negotiating powers and in the benefits that may be expected from closer economic integration. The smaller asymmetries between LDCs and their RTA partners, as well as the greater similarities in their economic, social and ecological conditions largely explain why such RTAs can have positive development effects on them. The larger gap separating LDCs from MDTPs implies that policy actions and initiatives are necessary in order to counter the adverse effects of integration with very diverse partners.

Potentially, it can have positive impacts on the development of productive capacities in LDCs, thus representing an opportunity for development and poverty reduction. At the same time, however, it also carries the risk of locking LDCs into their traditional position at the lower rung of the ladder in the international division of labour.⁷ These risks derive mainly from closer economic integration with economies that are relatively more developed and/or much larger (box 15).

In order to realize the potential gains from the closer integration of LDCs with their RTA partners and MDTPs, a positive agenda is needed, comprising strategies, initiatives and ISMs as part of the proposed NIDA. These elements of the NIDA agenda should strengthen those aspects of the economic relations of LDCs with ODCs that are opportunities for the development of productive capacities in the LDCs. At the same time, they should aim at tackling the challenges brought by those relations. So far, LDCs' participation in the present, so-called "second wave of globalization" has resulted in an increase in their flows of trade, investment, development cooperation and knowledge with developing countries. Yet most LDCs have not made an assessment of the impact of these strengthening linkages on their development outlook, nor have they formulated a clear and coherent strategy to deal with ODC economic agents (e.g. firms, Governments and agencies).

In order to reap the developmental benefits of growing economic relations with ODCs, LDC Governments need to adopt a proactive approach to South-South trade, investment, development assistance and technology (Kaplinsky and Farooki, 2009). In formulating a positive agenda for South-South linkages involving LDCs, the following elements should be included:

- Undertaking an analysis of the current and potential benefits and shortcomings resulting from LDCs' ties with other developing countries;
- Formulating a clear policy and strategy for negotiating with economic agents, both public and private, from ODCs;
- Mainstreaming South-South economic linkages in LDCs' national development strategies and policies; and
- Articulating the South-South and North-South dimensions of LDCs' international relations, so that they become mutually supportive.

LDCs will reap greater developmental benefits from South-South linkages if they adopt a proactive stance towards development cooperation, ensuring that it has positive impacts on trade, foreign investment, knowledge transfer and migration. Regional institutions (e.g. United Nations Regional Commissions, RTAs, regional development banks, the Planning and Coordinating Agency of the New Partnership for Africa's Development – NEPAD) can be instrumental in assisting LDCs formulate and negotiate clear strategies. The major orientations and elements of such a positive agenda are outlined in the next sections according to the five pillars of the NIDA.

1. FINANCE

(a) Scaling up and improving South-South official financial flows

General measures and principles

Guiding principles. South-South cooperation and development assistance should continue to be guided by the principles of non-exploitative and

LDCs need to formulate a clear policy and strategy for negotiating with economic agents, both public and private, from ODCs.

LDCs should articulate the South-South and North-South dimensions of their international relations, so that they become mutually supportive.

South-South cooperation and development assistance should continue to be guided by the principles of non-exploitative and horizontal relationships between the more advanced developing countries and LDCs.

horizontal relationships between the more advanced developing countries and LDCs. At the same time, they should respect certain basic principles, such as national ownership of development strategies and policies, donor alignment with recipient-country priorities, demand-driven projects, and not attaching policy conditionalities to the disbursement of official finance.

Scaling up South-South official financial flows. Given the very large needs and structural shortcomings of LDCs and the positive aspects of South-South development cooperation, such cooperation should be strengthened in order to leverage its developmental impacts. Different forms and sources should be combined to finance this increase, including the following:

- *Increasing development cooperation budgets.* Since 2006, donors such as Brazil, China and India have significantly augmented their development cooperation budgets, a trend which should continue and be adopted by other developing-country donors;
- *Joint financing by developing countries,* such as the projects financed by the India-Brazil-South Africa Partnership (IBSA) in Burundi and Guinea-Bissau;
- *Multilateral and regional financing.* An example of this mode of financing is the joint project of the Chinese Government and the World Bank on capacity development for poverty reduction, in which China is sharing its strategy and policies on poverty reduction with 35 African countries, mostly LDCs.⁸ Another example is a cluster of regional projects that include a South-South cooperation component, such as those covering the Greater Mekong subregion, supported by the Asian Development Bank, with resources from China, India, Japan and Thailand among others. The Greater Mekong subregion comprises Asian LDCs (Cambodia, Myanmar and the Lao People's Democratic Republic), and China, Thailand and Viet Nam;⁹
- *Triangular cooperation.* This mode of development cooperation typically combines knowledge transfer between developing countries with financing from developed countries, so as to partly solve the problem of chronic underfunding of South-South cooperation projects (Fordelone, 2009);¹⁰
- *Private sector funding.* Foundations are a largely unexploited source of finance for South-South development cooperation, which should be exploited by the main actors involved.

New negotiating modes. LDCs' development partners — especially the largest among them — should start to negotiate a more significant part of their development cooperation policies and projects with blocs of recipient countries. These blocs can be RTAs, regional economic communities or wider structures like the African Union or the NEPAD Planning and Coordinating Agency. This contrasts with the present bilateral and project-based delivery of South-South development cooperation and has two main advantages. First, it rebalances the asymmetries of power, technical capacities and resources that currently exist between individual LDCs and major developing-country donors. Individual LDCs will benefit from increasing their bargaining power by pooling their voices through regional and multilateral entities.¹¹ Second, development cooperation negotiations involving LDC groupings increase the scope for creating synergies, for example when discussing projects that have regional impacts, such as regional development corridors, cross-border infrastructures and joint regional initiatives (e.g. technological research centres).¹²

South-South development cooperation should be strengthened in order to leverage its developmental impacts.

Development cooperation negotiations involving LDC groupings increase the scope for creating synergies, for example when discussing projects that have regional impacts.

Strengthening synergies between South-South and North-South development cooperation. South-South cooperation is sometimes presented as an alternative to North-South cooperation. This is a misconception; the former cannot replace the latter. Indeed, despite the growing weight of economic linkages of LDCs with ODCs, traditional donors from the North remain their most important sources of external financing. An international environment that is conducive to the development of LDCs is one that combines North-South partnerships and South-South linkages, and creates synergies between them.

More broadly, synergies between South-South and North-South economic relations also stem from other mechanisms. First, having a number of alternative economic partners (e.g. from the South) provides LDC Governments and businesses with more bargaining power vis-à-vis other foreign agents (e.g. from the North), not only with regard to aid, but also for investment and trade. Second, some financing modes imply cooperative arrangements such as triangular and multilateral financing of South-South cooperation, given that multilateral institutions typically receive most of their financing from developed countries. Third, South-South official financial flows can complement North-South aid. For example, southern partners are much more focused on infrastructure development than traditional donors.

Measures ensuring better domestic coordination of fragmented initiatives by LDCs will help avoid duplication, increase the effectiveness of both North-South and South-South development cooperation and make them more supportive of domestic priorities and national development strategies (Davies, 2008). Coordination of official financial flows is especially important because the emergence of new sources of finance further complicates LDCs' management of ODA. At present, such management is hampered by the multiplicity of donors which frequently are not well coordinated and have different aid disbursement and reporting systems. Such complexity strains the limited management capacities of LDCs. Donor coordination is best undertaken at the national level to ensure donor alignment with national priorities and development strategies. Some LDCs have set up aid management systems for such coordination and for using their scarce institutional capabilities more efficiently (UNCTAD, 2008: 121–126). North-South and South-South coordination of official financial flows can also be achieved through the recently established United Nations Development Cooperation Forum.

Measures ensuring better domestic coordination of fragmented initiatives by LDCs will help avoid duplication and increase the effectiveness of both North-South and South-South development cooperation.

(b) International support mechanisms for LDCs within South-South cooperation

Developing countries should take into account the specific vulnerabilities and deficiencies of LDCs when designing and implementing their development cooperation policies. Source countries of official financial flows could consider adopting the support mechanisms described below.

Set aside minimum shares for LDCs. Developing countries in a position to do so might consider establishing targets to set aside a minimum share of their total budget of official financial flows for the benefit of LDCs. This share should be higher than LDCs' share in the population or GDP of all development cooperation recipient countries, so as to accelerate economic growth in the LDCs.

Specific mechanisms within existing forums. Some developing countries have established forums for discussing and coordinating their development

assistance, such as the Forum for China-Africa Cooperation (FOCAC) launched in 2000, which has already held four ministerial conferences, the India-Africa Summit (the first of which was held in 2008); the Africa-South America Summit (started in 2006) and the Turkey-Africa Cooperation Summit, which was held in 2008. These initiatives do not include any LDC-specific mechanisms or institutions, and therefore they do not take into account the specific problems or challenges facing LDCs. This needs to be rectified by donors from the South and LDCs devising some LDC-specific institutional mechanisms within the existing forums to address the particular problems of the LDCs. They should promote discussion and negotiation of development assistance policies and projects that would specifically consider the structural deficiencies of LDCs and devise solutions to help overcome them.

Governments of developing countries that invest in LDCs should strongly encourage their firms to reach agreements with LDC economic agents and adopt mechanisms that will promote the development of productive capacities in LDCs.

(c) Increasing the development impact of FDI from the South

In principle, FDI flows from developing countries to LDCs can provide a number of development benefits, as mentioned in chapter 4 of this Report. However, those positive effects are not automatic; they generally require a number of policy actions, as discussed below.

Direct action by home-country Governments. Governments of developing countries that invest in LDCs should strongly encourage their firms to reach agreements with LDC economic agents (i.e. Governments, firms and workers) and adopt mechanisms that will promote the development of productive capacities in LDCs, as outlined in chapter 4 of this Report. The home-country Governments can directly influence their outward investors, especially if these are State-owned companies, financed by official institutions or funded by sovereign funds. These State-backed companies are responsible for a significant share of investments in oil, mining and agriculture in LDCs.

Incentives by home-country Governments. Home-country Governments can also adopt policy measures to influence the behaviour of their private firms dealing with LDCs. They can grant preferences (e.g. financial and fiscal incentives) to those national transnational corporations (TNCs) investing in LDCs which manage to promote development through their FDI, for example by creating more domestic linkages in the host LDC economies, effectively transferring knowledge to LDC persons and firms, developing innovative activities and generating more fiscal revenues for the host countries. Other home-country instruments that can help developing-country FDI in LDCs achieve developmental aims are the provision of information and technical assistance and investment insurance (UNCTAD, 2001).

Several measures for improving the development impact of FDI can be included in LDC host-country legislation or in the terms of agreements between the recipient LDC Governments and investors.

Agreements between developing-country investors and host-country Governments. Many of the conditions and objectives that determine the development impact of FDI are contained in agreements between foreign investors and host-country Governments. The terms of operation of developing-country TNCs in the area of natural resources is discussed below in the subsection on commodities. In addition to the fair appropriation of natural resource rents by national agents, several other measures for improving the development impact of FDI can be included in LDC host-country legislation or in the terms of agreements between the recipient LDC Governments and investors (UNCTAD, 2001 and 2003). The following are examples of such measures:

Box 16. Increasing the development impact of FDI in agriculture

In order to ensure that FDI in LDCs' agriculture has a positive development impact and avoids the adverse impacts usually associated with "land grabs" (UNCTAD, 2009b), inclusive business models should be adopted that promote local participation in economic activities (including outgrower schemes), joint equity with local communities and local content requirements for both inputs and outputs (Cotula et al., 2009).

These inclusive models have the following advantages:

- They create backward linkages by bringing together domestic smallholders and large-scale international investors, which in turn ensures the long-term sustainability of a project;
- They create and preserve jobs of the local workforce;
- They allow smallholders to continue growing other products besides those that are outcontracted;
- They can facilitate transfer of knowledge to smallholders if foreign investors invest in their training;
- They do not impose unnecessary restrictions on host-country policymaking (for instance, requiring host countries to commit not to restrict food exports even in the event of a food crisis);
- They adhere to international codes of conduct that are being elaborated, particularly their provisions relating to local food security, transparency and respect for local patterns of land use and property rights (Meinzen-Dick and Markelova, 2009).

UNCTAD, the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the World Bank Group and some national governments have collaborated since 2009 to develop the Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources (UNCTAD, 2010b). They should eventually be translated into toolkits of best practices, guidelines, governance frameworks, and possibly codes of practice by the major sets of actors involved in investment in agriculture in developing countries, including LDCs.

- Requiring TNCs to provide training and knowledge transfer to their local employees, as well as subcontracting farms and firms with which they establish backward linkages;
- Modalities that result in a greater development impact of FDI on LDC agriculture (box 16);
- Targets for sourcing a certain proportion of inputs domestically;
- Targets for introducing a level of processing of raw materials in the host country, where this is technically feasible;¹³
- Conducting some research and development (R&D) activities in the LDC host country.

LDC host-country Governments should formulate an FDI policy that provides incentives for foreign investment in sectors and areas that would help resolve supply and delivery bottlenecks as well as structural deficiencies in their countries. These policies and objectives should be reflected in the terms of establishment negotiated with the foreign direct investors. A similar policy stance should apply to the LDC countries that are likely to host Chinese preferential trade and industrial zones for Chinese business entry (e.g. Ethiopia and Zambia) and other similar projects.

Multilateral financing for diversification. Multilateral and regional financing institutions can also facilitate FDI from developing countries that is conducive to LDCs' long-term development and diversification. Such institutions should favour those sectors/investment projects that are the most likely to foster local employment creation, transfer of knowledge and the building of linkages with the domestic economy. The World Bank, for example, has some joint projects with Chinese firms to invest in lower value added manufacturing in some African LDCs.

LDC Governments should formulate an FDI policy that provides incentives for foreign investment in sectors and areas that would help resolve their structural deficiencies.

Multilateral and regional financing institutions can also facilitate FDI from developing countries that is conducive to LDCs' long-term development and diversification.

Most of the policy measures mentioned above are applicable not only to FDI in LDCs originating from the South, but also to that originating from the North.

2. TRADE

(a) Deepening regional integration

In order to realize the potential contribution of RTAs to the development of LDCs, deeper and more efficient regional integration initiatives are needed, supported by those RTAs' development partners in the South and the North.

Structural features are more similar between LDC economies and those of other members of the same RTAs than between LDCs and any other major partner group (box 15). Thus, close regional economic integration can potentially contribute significantly to the development of productive capacities of LDCs. However, in spite of stated policy intentions, the degree of regional integration is low or even declining in most RTAs of which LDCs are members, due to factors discussed in chapter 4 of this Report.

In order to realize the potential contribution of RTAs to the development of LDCs, deeper and more efficient regional integration initiatives are needed, supported by those RTAs' development partners in the South and the North. The main measures required to achieve deeper and more efficient integration are discussed below.

For LDCs to reap the potential benefits from regional integration, the plans and discourses within RTAs need to be implemented by all the RTA members, including the LDCs. As mentioned in chapter 4 of this Report, one of the main obstacles to closer regional integration is the gap between the stated goals and plans and inadequate implementation, even of some non-ambitious measures. The following are some of the main measures that should be considered as top priority for implementation

RTAs could also consider adopting mechanisms and instruments of deeper integration, such as integration of services, capital and labour markets, as well as harmonization of policies.

Rationalize African RTAs. The RTAs in Africa need to avoid the problems generated by overlaps and multiple membership. This can be done in various ways, ranging from a minimalist one of coordinating and harmonizing strategies, programmes and cooperation instruments of existing RTAs, to a more ambitious one of merging existing RTAs so that there is only one per region (North, West, Central, East and Southern Africa) (UNECA, 2006).¹⁴ Such rationalization should contribute significantly to strengthening the regional integration of African RTAs, including their respective LDCs.

Widen and deepen regional integration in South Asia. In order to increase intraregional flows of trade, investment, technology, knowledge and people, the member countries of the SAARC (South Asian Association for Regional Cooperation) Preferential Trade Arrangement (SAPTA) may consider implementing much more ambitious measures for regional integration and commit financial, political, human and institutional resources to achieve this goal.

Extend the scope of integration. Those RTAs that restrict themselves to the most basic forms of integration (e.g. preferential market access for goods) should make efforts to extend that integration through the stronger liberalization of trade in goods. They could also consider adopting other mechanisms and instruments of deeper integration, such as integration of services, capital and labour markets, as well as harmonization of policies.

Regional integration can advance even further through other instruments that directly affect members' productive capacities. These could include

joint investment projects (e.g. for improving transboundary infrastructure of transport and communications, as mentioned below), pooling resources to establish joint scientific and technological research centres and projects (also more on this below), and favouring the establishment of regional value chains that deepen the regional division of labour. Such joint initiatives leverage scarce resources of members and strengthen synergies between their economies.

An important step towards deeper regional integration is monetary and financial cooperation, which may include establishing regional development banks and funds (such as the FonPlata of the Southern Common Market — Mercosur — in South America). Regional and subregional banks could provide financial support for greater cooperation among developing countries (Griffith-Jones, Griffith-Jones and Hertova, 2008). The already existing regional institutions of this type in Asia, Africa and the Americas have already been active in financing a number of South-South cooperation projects.

Develop regional development corridors and infrastructure. Developing cross-border infrastructure would overcome one of the main obstacles to regional integration, especially in Africa (UNCTAD, 2009a). Building transnational structures such as roads, railways, waterways, air transport links, telecoms and energy supply lines (development corridors) has an even stronger impact on the development of productive capacities of neighbouring countries if it is accompanied by local development projects in different sectors (e.g. agriculture, industry). One example of this combination of projects is the Spatial Development Initiatives (SDIs) launched by South Africa. Its main project is the Maputo Development Corridor involving the Maputo Corridor Toll road, the railway from Ressano Garcia to Maputo and the Maputo Port and Harbour, as well as projects in agriculture, mining and tourism. NEPAD also plans to help establish Pan-African corridors and networks. Since these are large-scale and long-term projects, their financing requires a combination of funding from national budgets, donors (from the North and South) and regional and multilateral financing institutions. Foreign donors should therefore increase their financing of such types of projects.

Coordinate resources regionally for more effective international negotiations. LDCs and their RTA partners can combine their political, human and institutional resources to negotiate with international partners not only for development cooperation assistance and ODA (as discussed earlier), but also in the fields of trade, investment and migration. Joint action enhances their negotiating power vis-à-vis foreign partners (both bilateral and multilateral), makes more efficient use of their scarce resources, and helps avoid a race to the bottom in competition for FDI, trade deals and development cooperation projects.

Improve information on regional supply capacities. Better knowledge of goods and services available within the same region (e.g. through virtual information platforms and more trade fairs) can obviate the need for imports from distant suppliers (be they developed or developing) and strengthen intra-RTA trade. It can thereby increase demand for some of the goods and services that can be competitively supplied by LDCs. Improvements in this type of information flow would foster the establishment of regional value chains.

Trade facilitation. In the case of LDCs, the scope for expanding trade by reducing trade costs is greater in intra-RTA trade because these costs are relatively higher than in trade flows with other partners (e.g. developed

An important step towards deeper regional integration is monetary and financial cooperation, which may include establishing regional development banks and funds.

LDCs and their RTA partners can combine their political, human and institutional resources to negotiate with international partners development cooperation assistance, ODA, but also in the fields of trade, investment and migration.

countries and MDTPs) (Kowalski and Shepherd, 2006). There is considerable evidence to show that trade could be expanded within existing regional integration schemes by just simplifying and reducing documentation requirements across borders, enhancing transparency, expediting the release of goods from customs, standardizing trade-related regulations and improving border agency coordination within and among members of a common RTA (Milner, Morrissey and Zgovu, 2008; UNECA, 2010: 193–240).

South-South RTAs should acknowledge the existing variations between their members, and provide special and differential treatment for their LDC members.

International support mechanisms for LDCs

While the variations in levels of income, development and influence among members of the same RTA are narrower than between LDCs and MDTPs, they are not negligible. South-South RTAs should acknowledge the existing variations between their members, and provide special and differential treatment for their LDC members. Favourable treatment could include the following:

- Redistribution of common resources in favour of LDCs. RTAs could allocate to LDCs a proportion of the resources that they mobilize (e.g. import duties, common budget, resources for fixed investment) that is superior to LDC member countries' share in imports, population or GDP, thereby supporting the catch-up of LDCs with other RTA members;¹⁵
- Preferential and non-reciprocal treatment for LDCs. This is already in place in the South Asian Free Trade Area (SAFTA), where non-LDC members (i.e. India, Pakistan and Sri Lanka) grant additional non-reciprocal preferences to SAFTA's LDC members;
- Grant differential and longer delays to LDCs for trade liberalization;
- More favourable criteria for LDCs in calculating contributions to the common budget;
- Assistance by the more advanced members to develop other members' productive capacities.¹⁶

The MDTPs and other large and/or more advanced developing countries in a position to do so should offer non-reciprocal duty-free and quota-free market access to the goods of all LDCs.

(b) Broadening market access for LDC exports

LDC's developing-country trade partners should expand preferential market access for LDC goods and services. The MDTPs and other large and/or more advanced developing countries in a position to do so should offer non-reciprocal duty-free and quota-free (DFQF) market access to the goods of all LDCs. Research results indicate that the elasticity of trade to trade barriers (e.g. tariffs) is higher in South-South trade than in other trade flows (e.g. Kowalski and Shepherd, 2006). A simulation of the impact on LDCs members of the WTO (32 countries) of an increase in DFQF coverage from 97 per cent to 100 per cent of tariff lines by Brazil, China and India showed that this would lead to \$5.6 billion worth of additional exports by those LDCs. This is almost triple the estimated gains resulting from an analogous policy change in OECD countries (\$2.1 billion additional exports) (Elliott, 2009). Moreover, in both cases, since most of the additional exports would originate mainly from non-oil exporting LDCs, such market access measures offer the potential for trade diversification.

Another way of expanding market access is by offering preferential treatment in the context of the Global System of Trade Preferences (GSTP) for South-South trade. Recent GSTP commitments by developing countries should be implemented without delay, particularly with regard to those

products with higher externalities for LDCs. Efforts should be made to ensure that preferences are within the supply capacity of LDCs, and that they promote forward and backward linkages with the rest of the economy, thereby enabling the development of local suppliers and technology transfer.

The limitations of preferential market access in fostering exports and output diversification and growth are well known. Therefore, for the above-mentioned preferential schemes to be effective, they should be well designed and be complemented by other measures and policies, as discussed below.

First, the following elements should be included in the design of an effective DFQF scheme for LDCs:

- Full (100 per cent) coverage of tariff lines;
- Extension to all LDCs;
- Flexible rules of origin that allow production to take place also in smaller economies. This can be achieved typically by permitting cumulation¹⁷ (e.g. on a regional basis or across LDCs);¹⁸
- Stability and predictability. Preferences should be permanent and have a stable legal basis in the preference-giving developing countries;
- Transparency on coverage, coverage extension schedule and graduation conditions;
- Absence of conditionalities (political or otherwise, such as reciprocity requirements).

Preferences negotiated by other developing countries in the context of the GSTP should follow similar principles.

Second, preferential market access should be accompanied by the ISMs proposed in the previous subsections that foster the productive capacities of the preference-receiving LDCs. This will not only result in a more effective use of the preferences, but also prevent them from having an anti-diversification effect.¹⁹ Support for LDCs' trade should encompass the upgrading of small and medium-sized enterprises (SMEs) through the provision of training for managers, improving marketing and product quality, helping the country's facilities and quality control mechanisms conform to world sanitary and phytosanitary (SPS) standards and through trade facilitation.

3. COMMODITIES

Some of the elements of the positive agenda for South-South FDI (outlined above) aim to improve forward and backward linkages with TNCs, as well as learning externalities. Yet in the case of natural resources (e.g. petroleum and hard rock mining, agriculture, fishing and forestry), often it is the fiscal linkages that are the major channel for promoting the developmental impacts of FDI in LDCs, provided national Governments can capture a reasonable share of the rents and use them for financing development. Thus the rules that determine the sharing of the rents between TNCs and national Governments have a bearing on the extent of the development impacts of FDI in natural resources.

It is therefore important for LDC Governments to negotiate with their foreign investors in natural resources for reasonable royalties, levies and taxes.

For preferential schemes to be effective, they should be well designed and be complemented by other measures and policies.

Preferential market access should be accompanied by the ISMs that foster the productive capacities of the preference-receiving LDCs.

In the case of natural resources, often it is the fiscal linkages that are the major channel for promoting the developmental impacts of FDI in LDCs, provided national Governments can capture a reasonable share of the rents and use them for financing development.

Where fiscal linkages have been minimal, the terms of agreements between TNCs and LDC Governments should be renegotiated. A more equitable sharing of resource rents can be achieved if natural-resource-rich developing countries collectively formulate some generally agreed principles concerning the fiscal treatment of foreign investors (UNCTAD, 2005: 108–115) in order to avoid the temptation to engage in a race to the bottom to attract FDI.

The similarity of economic, social and ecological conditions between developing countries and of the development challenges that confront them create strong potential for knowledge-sharing and transfer between MDTPs and RTA partners and LDCs.

4. KNOWLEDGE-SHARING AND TECHNOLOGY TRANSFER

The similarity of economic, social and ecological conditions between developing countries and of the development challenges that confront them (currently or in the recent past) create strong potential for knowledge-sharing and transfer between MDTPs and RTA partners, on the one hand, and LDCs on the other. The smaller technological distance between LDCs and their developing-country partners (be they MDTPs or RTA partners) and the greater suitability of technologies developed in these countries also facilitates knowledge transfer from ODC partners to LDCs.

The catch-up experiences of ODCs are relatively recent and highly relevant to LDCs, especially given that several ODCs are also struggling with similar development challenges, including widening income disparities, climate change, food insecurity and lack of technical expertise. South-South cooperation between LDCs and ODCs offers important possibilities for technology transfer, knowledge-sharing and the sharing of experiences with policies covering a range of sectors/activities, including agriculture, health, social security, formulation and implementation of an effective industrial policy, trade facilitation and local capacity-building, and energy, including renewable energy technologies.

Although knowledge-sharing and transfer are present in many development cooperation projects, it can be strengthened not only in development cooperation operations, but also in commercial transactions, as discussed below.

(a) Sharing knowledge of development strategies

Knowledge transfer and technical cooperation already are an important component of South-South development cooperation, but projects tend to focus on specific areas/technologies, such as agriculture, health, information and communication technologies (ICTs), and education. Largely missing is the broader picture of accumulated knowledge and experience of development strategies and policies. Through a combination of policy and market mechanisms, together with concerted actions by State-owned and private enterprises, the more advanced developing countries have been able to build technical competence and create domestic conditions for technology transfer. In most cases, successful developing countries have followed their own development strategies, which differ from the conventional policy framework advocated by traditional donors, both multilateral and bilateral (Amsden, 2003).

It is this knowledge and experience gained from trial-and-error problem-solving that successful developing countries could fruitfully transmit to LDCs through knowledge- and experience-sharing, training, and other forms of knowledge transfer. So far, developing countries that have been successful in achieving rapid development (particularly the East Asian newly

LDC policymakers could benefit immensely from the insights into alternative development strategies to the conventional ones proposed by many donors.

industrializing economies) seem not to have engaged very actively in sharing the broader elements of their development strategies and policies through their development cooperation (Wade, as quoted in Gallagher, 2009). This attitude contrasts with their readiness to provide technical assistance to lower income countries in specific areas. Yet it is knowledge-sharing about how they overcame many of the problems currently faced by LDC that could be most useful to LDC policymakers. These policymakers could benefit immensely from the insights into alternative development strategies to the conventional ones proposed by many donors.

There are several ways in which developing countries can share experiences and knowledge with LDCs, including the organizing of seminars and round tables; sponsoring internships of LDC officials in their key strategic development planning institutions and ministries; and enabling greater academic exchange on development policies and strategies between research institutions and universities in donor developing countries and LDCs. The latter mechanism can also comprise joint research projects comparing alternative development strategies and their outcomes.²⁰

Beyond these broader elements of development strategies and policies, South-South development cooperation should also incorporate or strengthen components relating to new and emerging issues (e.g. climate change) and regional integration (see below).

(b) Regional research and development hubs

For the development and acquisition of some technologies, especially those of immense public interest such as pharmaceuticals and agriculture, enterprises need a supportive industrial infrastructure. The relevant facilities are often technology-intensive and costly. For instance, in the case of pharmaceuticals, enterprises seeking to produce good quality generic drugs require testing laboratories, bioequivalence laboratories as well as active pharmaceutical industrial parks to be able to produce in a cost-effective manner. Similarly for R&D in biotechnology, most public research institutes in sub-Saharan Africa, for example, are unable to move beyond tissue culture owing to lack of funding and infrastructure (Oyelaran-Oyeyinka and Gehl Sampath, 2010). Regional R&D facilities to create and sustain R&D within firms or to provide R&D services on a pay-and-go basis could offer a very important solution to these problems faced by LDCs' public and private sectors in the short and medium term. Some regional initiatives are already under way, a good example being the Engineering Capacity Building Programme by the Germany Technical Cooperation Agency (GTZ). As part of this programme, a bioequivalence facility for the East African region is being set up in collaboration with two pharmaceutical companies from Kenya, one from the United Republic of Tanzania and one from Ethiopia, as well as the School of Pharmacy of the University of Addis Ababa.

Similar regional R&D facilities could be created by LDC Governments and supported through the international community or through South-South collaboration, or even through a triangular facility between the LDCs, ODCs (offering technical know-how and training) and developed countries (offering financial support). A series of pay-and-go industrial facilities could be established in this way for sectors in which individual firms face difficulties in raising capital for infrastructure expansion. Such facilities have been a core component of industrial sector policies in several economies, including China, India, the Republic of Korea and Taiwan Province of China (Noland

Regional R&D facilities to create and sustain R&D within firms or to provide R&D services on a pay-and-go basis could offer a very important solution to the problems faced by LDCs' public and private sectors.

The more advanced developing countries should broaden and increase their current initiatives for establishing joint scientific and technological research centres in LDCs.

Regional venture capital funding is one means of promoting emerging enterprises in LDCs that show promise in key sectors, especially pharmaceuticals, agro-processing and ICTs.

Technology-sharing between developing countries offers a promising means of building capacity, but it may require co-investment ventures involving the Government, private enterprises in LDCs and other developing countries.

Whenever possible, South-South development cooperation projects should incorporate an element of capacity-building so that these projects become a means of knowledge transfer to LDCs.

and Pack, 2003). The regional R&D funds could also set research priorities for technological expansion of firms in particular sectors that are especially important from a regional or international perspective, such as “green” technologies, medicines and regionally suited crop varieties, among others.

The more advanced developing countries should broaden and increase their current initiatives for establishing joint scientific and technological research centres in LDCs, such as Chinese and Brazilian research centres for agriculture in African countries. Another initiative that should be strengthened is the Consortium on Science, Technology and Innovation for the South, which resulted from the transformation of the Third World Network of Scientific Organizations by the Group of 77 and China in 2008, in order to promote science-based sustainable economic development of Southern countries.

(c) Other forms of joint South-South knowledge development and sharing

South-South cooperation and regional integration for technology and R&D could take other important forms as well (Gehl Sampath, 2010; Gehl Sampath and Kozul-Wright, 2010), such as the ones discussed below.

Venture capital funding at the regional level

Venture capital funding is one means of promoting emerging enterprises in LDCs that show promise in key sectors, especially select sectors of regional importance, such as pharmaceuticals, agro-processing and ICTs. Firms from the region could be invited to compete for funding awards (Gallini and Scotchmer, 2002).

Co-investment with private investors in innovative enterprises

Regional schemes for the development of early-stage, innovative technologies by local firms through the sharing of technological know-how can be supported through various public-private South-South partnerships. A good example is the technology-sharing arrangement between Quality Chemicals Uganda and Cipla Pharmaceuticals India for the production of anti-retroviral drugs (box 17). As the case demonstrates, technology-sharing between developing countries offers a promising means of building capacity, but it may require co-investment ventures involving the Government, private enterprises in LDCs and other developing countries.

Financing for collaboration between private and public sector enterprises

This scheme is a means of overcoming the lack of incentives at the national/sectoral levels in countries to establish collaborative linkages. A good example is the Millennium Science and Technology Initiative in Uganda, a project sponsored by the World Bank that has specific funds earmarked for collaborative initiatives between private and public sector enterprises.

Knowledge aid

Whenever possible, South-South development cooperation projects should incorporate an element of capacity-building by skilled nationals (e.g. engineers, professionals and technicians) from the more advanced developing countries that are associated with each project, so that these projects become a means of knowledge transfer to LDCs (UNCTAD, 2007: 161–188; Bell, 2007).

Box 17. Quality Chemicals-Cipla Collaboration in Uganda: An example of South-South cooperation

The small and nascent pharmaceutical sector in Uganda has been expanding its local production capacity in recent years. One of its companies, Quality Chemicals, has been producing drugs for the treatment of HIV/AIDS and malaria since early 2009. As a result of its joint venture with the Indian company Cipla Pharmaceuticals, Quality Chemicals has transformed from a local distributor of imported drugs to the largest local producer of drugs of importance to public health.^a This venture and ongoing production is of particular local, regional and global significance for a variety of reasons. The production of good-quality antiretroviral drugs (ARVs) that could cater to growing local and regional demand is of immense local importance for Uganda. This is because, while the number of people requiring ARV treatment has been steadily rising, the proportion receiving treatment has not grown beyond 34 per cent since 2005 (UNAIDS/WHO, 2008). Regionally, Quality Chemicals has the potential to become an important supplier of first-line ARVs and anti-malarial medicines despite the presence of other firms in Kenya and the United Republic of Tanzania which produce similar product lines.^b Globally, the Quality Chemicals-Cipla venture presents a very interesting case of South-South technology transfer for improving local production capacity.

As part of the joint venture, initiated in 2007, the new plant based in Luzira (near Kampala) launched production of two ARV combinations (containing Zidovudine, Lamivudine, Stavudine and Nevaripine) and one anti-malarial drug (an artemisinin lumefantrin preparation) in February 2009. The plant has been constructed according to Cipla's design specifications and resembles its own production facility for generics in India. According to the terms of the joint venture, Cipla has a foreign equity share of 38.55 per cent and Quality Chemicals has a local equity share of the other 61.45 per cent. They have an equal share of the profits, despite their varying investments. The credit for facilitating the joint venture goes to the Government of Uganda, which not only played a significant role in attracting investment through a variety of incentives, but also agreed to take a 23 per cent stake in the venture to enable the plant to be completed as intended in 2008.

Investment incentives provided to Cipla by the Government of Uganda included free land to build the plant, setting up of the entire infrastructure free of charge, including the factory and its production facilities, roads, electricity and water, as well as remunerating Cipla's pharmaceutical experts for training local staff. In addition, the Government of Uganda signed a procurement agreement with Cipla to purchase ARVs worth \$30 million per year from the new plant in Kampala for seven years. In addition, the Government offered the joint venture a 10-year tax holiday.^c Cipla in turn, has provided a range of hardware technologies required for production. These include: manufacturing and testing technologies, information on sourcing of raw materials, packaging technologies and production plant design. Cipla also provides all the tacit know-how related to the day-to-day running of the plant, including quality assurance and quality control. Cipla officials also train Quality Chemicals staff on auditing requirements and the Good Manufacturing Practices procedures of the World Health Organization. Quality Chemicals is responsible for providing capital to finance the production plant and its future expansion, and for paying the salaries of local personnel and scientists (that are being trained by Cipla officials) to run the plant. It is also responsible for strategic direction and marketing.

This example shows how adjustments to the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights to enable poor countries to acquire certain medicines at affordable prices is resulting in local capacity-building in the pharmaceutical industry.

Source: Gehl Sampath and Spenneman, 2010.

- a Uganda's pharmaceutical sector is relatively small (10 local firms), and at present Quality Chemicals is the only producer of antiretroviral and anti-malarial drugs.
- b This includes Cosmos Pharmaceuticals and Universal Corporation (Kenya) and Tanzania Pharmaceutical Industries (United Republic of Tanzania).
- c Ugandan factory starts producing AIDS drugs. Press report. Available at: <http://www.iqpc.co.za/News.aspx?id=126790075&IQ=pharma> (accessed 25 February 2009).

(d) International support mechanisms for LDCs

The relatively more advanced developing countries can facilitate technological learning in LDCs by providing the latter with financing on concessional terms so as to facilitate their acquisition of technologies from the former (e.g. through Eximbank preferential loans for acquisition of capital goods and equipment). Financing can also be provided for the training of employees in LDC firms by the suppliers of technology from the more advanced developing countries. In addition, special programmes and initiatives for funding technology transfer and knowledge-sharing should be instituted.

Large developing countries have much to offer LDCs in terms of knowledge sharing on clean renewable energies, prevention and control of desertification and urban environmental protection.

5. CLIMATE CHANGE

Large developing countries, such as Brazil, China and India, but also other developing countries, have much to offer LDCs in terms of knowledge-sharing on clean renewable energies, prevention and control of desertification and urban environmental protection. Biofuels are already a promising area,

with more than 15 projects under consideration in the Sudan alone, many of which use Brazilian technology.²¹ Many projects are focusing particularly on the vulnerability of LDCs to climate change mitigation and adaptation. Ways and means will have to be found to improve the scientific capacity of LDCs to assess climate change vulnerabilities and adaptation, and generate and communicate information that is useful for adaptation planning and action. One example is the Capacity Strengthening of LDCs for Adaptation to Climate Change (CLACC) project initiated by the International Institute for Environment and Development (IIED) and the Regional and International Networking Group (RING) partner institutions, which aims to build the capacity of civil society organisations working in 12 selected poor and vulnerable LDCs (nine in Africa and three in South Asia), on issues relating to adaptation to climate change.²² More projects in these areas could be developed through public-private partnerships.

Notes

- 1 Parties to the UNFCCC are classified as: (a) Annex I countries: industrialized countries and former economies in transition; (b) Annex II countries: a sub-group of the Annex I countries comprising OECD members, excluding former transition economies; and (c) developing countries.
- 2 The CDM is one of a number of market-based mechanisms designed to address climate change through emissions trading (i.e. cap and trade). It aims to provide economic incentives for the reduction of GHGs. Through the CDM, developing countries could benefit from projects that result in “certified emission reductions” (CERs), thus aiding their mitigation efforts, while developed countries could use the CERs accruing from such projects to contribute towards their quantified emission targets under Article 3 of the Kyoto Protocol. At the same time, funds are generated to support adaptation activities in countries vulnerable to climate change impacts e.g. most of the Pacific island LDCs. CDM transactions have the potential to raise up to \$6 billion per annum for adaptation and mitigation purposes, while the primary CDM market has been valued at \$12 billion (Clifton, 2009: 19; Griffith-Jones, Hedger and Stokes, 2009: 12). However, the CDM faces an uncertain future because so far there has been no binding decision on international emission quotas or how to achieve them.
- 3 UN-DESA (2009a: 51) estimates that between 1.6 billion and 2 billion people worldwide, mainly in rural areas, lack access to affordable energy services.
- 4 UNCTAD secretariat calculations, based on Total Renewable Electricity Net Generation data from the US Energy Information Administration (EIA), *International Energy Statistics* (<http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=6&pid=29&aid=12>) (accessed August 2010).
- 5 The relatively limited impact of the CDM in LDCs is due to their lack of technical capacity, a weak CDM-related institutional framework and high transaction costs associated with the implementation of a CDM project, which essentially limit the participation of LDCs in the initiative. The volume instability and price volatility of carbon markets may also limit the scaling up of the CDM as a means of generating sustainable resources for climate financing in LDCs, especially the large-scale investment necessary for meeting adaptation challenges and shifting towards a low-carbon economy (Clifton, 2009; Griffith-Jones, Hedger and Stokes 2009; UN-DESA, 2009a: 160–161).
- 6 In recognition of this problem, Tuvalu in 2007 proposed a Forest Retention Incentive Scheme (FRIS) based on funding community-based forestry projects. Communities seeking to set aside forest areas or to manage them sustainably would seek funding to establish a FRIS account which could be drawn upon to fund measures to combat emissions from deforestation and forest degradation. Communities would subsequently be awarded FRIS certificates, issued by national governments under the auspices of the COP, and redeem a proportion of these certificates at a specified time (UNFCCC, 2007). This scheme would be established under the UNFCCC and funded through the Special Climate Change Fund, bilateral ODA, NGO and governmental contributions.
- 7 For an overview of the main aspects of South-South economic linkages that present opportunities and challenges to the development of productive capacities in LDCs, see table 14 in chapter 4 of this Report.
- 8 See Impact Alliance, at: <http://www.impactalliance.org>, Case story 26.
- 9 In 1992, with the assistance of the Asian Development Bank, a programme of subregional economic cooperation covering the six countries was established, with the aim of increasing

economic relations among the countries. The programme has contributed to the improvement of infrastructure to enable the development of the resource base of all six countries (see <http://www.adb.oeg/GMS>; and Ministry of Foreign Affairs, Japan, “Major projects of Japan’s Initiative for the Mekong region development (Dec. 2004 – present)” at: <http://www.mofa.go.jp/region/asia-paci/clv/project0512.html>).

- 10 Triangular cooperation projects can also comprise elements of knowledge transfer from developed countries and partial financing from developing countries.
- 11 The Office of Trade Negotiations of the Caribbean Community (CARICOM) Secretariat — previously called Caribbean Regional Negotiating Machinery — is an example. It proved very successful in representing the interests of the small Caribbean States in their international trade negotiations at the bilateral, regional and multilateral level. It has the responsibility for the coordination, development and execution of negotiating strategies for all the Community’s external trade negotiations.
- 12 Pooling LDCs’ and low-income countries’ political and institutional resources can be fruitful not only in development cooperation negotiations, but also in those that deal with other areas such as trade, FDI, other capital flows and migration.
- 13 So far, resource-based manufactures such as aluminium, iron and steel, which are among Africa’s leading exports to China and India, are limited to non-LDCs in Africa, mostly Ghana, Nigeria and South Africa (Broadman, 2007).
- 14 The plan to merge the Southern African Development Community (SADC), the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC), announced in 2008, is one step towards the rationalization of African RTAs. The question remains if and how it will be implemented.
- 15 Redistribution of import duty is especially important when most revenues are collected by a larger economy within an RTA and the weaker members receive a larger share of revenues than their share in imports, as done in the Southern African Customs Union (SACU) and the West African Economic and Monetary Union (UEMOA).
- 16 The European Union (EU) provides an outstanding example of how asymmetries can be treated within an RTA (e.g. through its cohesion funds, and regional development programmes).
- 17 Intraregional or pan-regional cumulation enables sourcing of inputs from any members, thereby facilitating backward and forward linkages among RTA partners, or among LDCs.
- 18 It has been suggested that the excessively stringent rules of origin required in order to benefit from the EU’s Everything But Arms (EBA) initiative are a major reason why it did not have a substantial impact in boosting LDC exports (Brenton, 2003).
- 19 For an example of the anti-diversification effect of European preferential schemes, see Gamberoni, 2007.
- 20 For instance, the Institute of African Studies of the Zhejiang Normal University in China, founded in 2007, could serve as a platform for knowledge sharing on development policies and strategies between China and African LDCs.
- 21 There are already eight sugar plants in the Sudan, covering a total area of 100,000 hectares.
- 22 See: <http://www.clacc.net>. In 2006, the Convention on Biological Diversity began the process of formulating a four-year plan of action on South-South Cooperation for biodiversity conservation.

References

- Africa Partnership Forum (2009). Carbon finance in Africa. Paper presented at the Special Session on Climate Change hosted by the United Nations Economic Commission for Africa in Addis Ababa, 3 September.
- Amsden AH (2003). *The Rise of “The Rest”. Challenges to the West from Late-Industrializing Economies*. Oxford, Oxford University Press.
- Baer P, Athanasiou T and Kartha S (2008). The right to development in a climate constrained world: The Greenhouse Development Rights Framework. Available at: <http://www.ecoequity.org/GDRs>.
- Bell M (2007). Technological learning and the development of production and innovative capacities in the industry and infrastructure sectors of the least developed countries: What Roles for ODA? Study prepared for UNCTAD as a background document to *The Least Developed Countries Report 2007*. Geneva, United Nations Conference on Trade and Development. Available at: http://www.unctad.org/sections/lcdc/docs/lcdcr2007_Bell_en.pdf.
- Bredenkamp H and Pattillo C (2010). Financing the response to climate change. IMF Staff Position Note, SPN10/06, 25 March. Washington, DC, International Monetary Fund.
- Brenton P (2003). Integrating the least developed countries into the world trading system: The current impact of EU preferences under Everything but Arms. World Bank Policy Research Working Paper, No.3018, April. Washington, DC, World Bank.

- Broadman HG (2007). *Africa's Silk Road: China and India's New Economic Frontier*. Washington, DC, World Bank.
- Clifton S-J (2009). *Dangerous Obsession: The Evidence against Carbon Trading and for Real Solutions to Avoid a Climate Crunch. A Research Report*. London, Friends of the Earth. Available at: http://www.foe.co.uk/resource/reports/dangerous_obsession.pdf.
- Copenhagen Accord (2009). Draft decision -/CP.15 Proposal by the President, Copenhagen Accord. Conference of the Parties Fifteenth session, Copenhagen, 7–18 December 2009. Agenda item 9. High-level segment, UNFCCC 1F8C CDCec/CemP/b2e0r0 290/0L9.7. Available at: <http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf>.
- Cotula L, Vermeulen S, Leonard R and Keeley J (2009). *Land Grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa*. London and Rome, International Institute for Environment and Development, Food and Agriculture Organization of the United Nations and International Fund for Agricultural Development.
- DANIDA (2009): Joint external evaluation: Operation of the least developed countries fund for Adaptation to Climate Change. September, 2009. Published by the Evaluation Department, Ministry Of Foreign Affairs/DANIDA, Denmark. Available at: www.evaluation.dk.
- Davies M (2008). China's developmental model comes to Africa. *Review of African Political Economy*, 35(1), March: 134–137.
- Daviet F (2009). Legally REDD: Building readiness for REDD by supporting developing countries in the fight against illegal logging. WRI Working Paper. Washington, DC, World Resources Institute.
- Elliott KA (2009). Opening markets for poor countries: Are we there yet? Washington, DC, Center for Global Development, May.
- FAO, UNDP and UNEP (2009). UN collaborative programme on reducing emissions from deforestation and forest degradation in developing countries. UN-REDD: Framework Document, 20 June 2008. New York and Rome, Food and Agriculture Organization of the United Nations, United Nations Development Programme and United Nations Environment Programme.
- Fordelone, TY (2009). Triangular co-operation and aid effectiveness. Paper prepared for the Policy Dialogue on Development Co-operation in Mexico City, 28–29 September 2009. Paris, Organisation for Economic Co-operation and Development.
- FOEI (2008). *REDD Myths: A Critical Review of Proposed Mechanisms to Reduce Emissions from Deforestation and Degradation in Developing Countries*. Issue 114, December. Amsterdam, Friends of the Earth International.
- Gallagher K (2009). The economic crisis and the developing world: What next? Interview with Robert Wade and José Antonio Ocampo. *Challenge*, 52(1): 27–39.
- Gallini N and Scotchmer S (2002). Intellectual property: When is it the best incentive system? In: Jaffe AB, Lerner J and Stern S, eds., *Innovation Policy and the Economy*, vol.2. NBER Book Series Innovation Policy and the Economy. Cambridge, MA and London: MIT Press: 51–78.
- Gamberoni E (2007). Do unilateral trade preferences help export diversification? An investigation of the impact of European unilateral trade preferences on the extensive and intensive margin of trade. HEI Working Paper No: 17/2007. Geneva, Graduate Institute of International Studies.
- Gehl Sampath P and Kozul-Wright Z (2010). Addressing the growing technological divide: Urgent needs, urgent solutions. Globelics paper (unpublished).
- Gehl Sampath P (2010). *Reconfiguring Global Health Innovation*. London, Routledge.
- Gehl Sampath P and Spenneman C (2010). Local production and related technology transfer in the local pharmaceutical sector: The case of Uganda. A study by UNCTAD.
- Griffith-Jones S, Griffith-Jones D and Hertova D (2008). Enhancing the role of regional development banks. G-24 Discussion Paper Series, no.50, July. Geneva, United Nations Conference on Trade and Development.
- Griffith-Jones S, Hedger M and Stokes L (2009). The role of private investment in increasing climate friendly technologies in developing countries. Background paper for the *World Economic and Social Survey 2009: Promoting Development, Saving the Planet*. New York, United Nations Department of Economic and Social Affairs.
- Horta K (2009). Global climate change politics in the Congo Basin. Berlin, Heinrich Böll Stiftung. Available at: http://www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf.
- Kaplinsky R and Farooki M (2009). Africa's cooperation with new and emerging development partners: Options for Africa's development. New York, United Nations Office of the Special Adviser on Africa.
- Khor M (2008). Some key issues for the post-Bali climate process. TWN Climate Change Series 1, February. Penang, Third World Network.
- Kowalski P and Shepherd B (2006). South-South trade in goods. OECD Trade Policy Working Paper, no.40, October. Paris, Organisation for Economic Co-operation and Development.

- Landau J-P (2004). Landau report on innovative financing. Commissioned by the Government of France, December 2004. Available at: http://www.cttcampaigns.info/documents/fr/landau_en/Landau1.pdf/view?searchterm=landau.
- LEG (2005). Elements for implementation strategies for national adaptation programmes of action. UNFCCC/TP/2005/5, 2 August 2005. Bonn, LDC Expert Group.
- Meinzen-Dick R and Markelova H (2009). Necessary nuance: Toward a code of conduct in foreign land deals. In Kugelman M and Levenstein SL, eds., *Land Grab? The Race for the World's Farmland*. Washington, DC, Woodrow Wilson International Center for Scholars: 69–84.
- Milner C, Morrissey O and Zgova E (2008). Trade facilitation in developing countries. Credit Research Paper, No.08/05. Nottingham, Centre for Research in Economic Development and International Trade, University of Nottingham.
- Müller B (2008). International adaptation finance: The need for an innovative and strategic approach. Background Paper for the Climate Strategies Project on Energy and Climate: Opportunities for the G8 Toyako Summit, June 2008. Oxford, Oxford Institute for Energy Studies.
- Myers Madeira EC (2008). *Policies to Reduce Emissions from Deforestation and Degradation (REDD) in Developing Countries: An Examination of the Issues Facing the Incorporation of REDD into Market-based Climate Policies*. Washington, DC, Resources for the Future.
- Noland M and Pack H (2003). *Industrial Policy in an Era of Globalization*. Washington, Institute for International Economics.
- OECD (2009). *Policy Guidance: Integrating Climate Change into Development Co-operation*. Paris, Organisation for Economic Co-operation and Development.
- Oyelaran-Oyeyinka B and Gehl Sampath P (2010). *Latecomer Development: States, Knowledge and Economic Growth*. Routledge Studies in Development Economics. London, Routledge.
- Porter G, Bird N, Kaur N and Peskett L (2008). *New Finance for Climate Change and the Environment*. London and Berlin, Worldwide Fund for Nature (WWF) and Heinrich Böll Stiftung.
- Sanchez A and Poschen P (2009). The social and decent work dimensions of a new agreement on climate change: A technical brief. International Labour Office Policy Integration Department, June. Geneva, International Labour Office.
- Socolow R (2006). Stabilization wedges: Mitigation tools for the next half-century. Keynote address, World Bank Energy Week, World Bank, Washington, DC, 6 March 2006.
- South Centre (2009). Developed country initiatives weaken the UNFCCC. Analytical Note SC/GGDP/AN/ENV/7, January. Geneva, South Centre.
- Stern N, Romani M, Bohannon M, Bowen A, Zenghelis D and Kaminskaite-Salters G (2009). Meeting the climate challenge: Using public funds to leverage private investment in developing countries. London, Grantham Research Institute for Climate Change and the Environment, London School of Economics and Political Science.
- Tan C (2010). Towards a new international development architecture for meeting the financial challenges of the climate crisis in least developed countries. Study prepared for UNCTAD as a background document to *The Least Developed Countries Report 2010*. Geneva, United Nations Conference on Trade and Development.
- Third World Network (2010). Draft TWN analysis on the Copenhagen Accord. Penang, Third World Network, 3 January.
- UNCTAD (2001). *Home Country Measures*. UNCTAD Series on Issues in International Investment Agreements. New York and Geneva, United Nations Conference on Trade and Development.
- UNCTAD (2003). *Foreign Direct Investment and Performance Requirements: New Evidence from Selected Countries*. New York and Geneva, United Nations Conference on Trade and Development.
- UNCTAD (2005). *Trade and Development Report 2005: New Features of Global Interdependence*. United Nations publication, sales no. E.05.II.D.13. New York and Geneva, United Nations Conference on Trade and Development.
- UNCTAD (2006). *The Least Developed Countries Report, 2006: Global Partnership and National Strategies for Development*. United Nations publication, sales no. E.06.II.D.9. New York and Geneva, United Nations Conference on Trade and Development.
- UNCTAD (2007). *The Least Developed Countries Report 2007: Knowledge, Technological Learning and Innovation for Development*. United Nations publication, sales no. E.07.II.D.8. New York and Geneva, United Nations Conference on Trade and Development.
- UNCTAD (2008). *The Least Developed Countries Report, 2008: Growth, Poverty and the Terms of Development Partnership*. United Nations publication, sales no. E.08.II.D.20. New York and Geneva, United Nations Conference on Trade and Development.
- UNCTAD (2009a). *Economic Development in Africa Report 2009: Strengthening Regional Economic Integration for Africa's Development*. United Nations publication, sales no. E.09.II.D.7. New York and Geneva, United Nations Conference on Trade and Development.

- UNCTAD (2009b). *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*. United Nations publication, sales no. E.09.II.D.15. New York and Geneva, United Nations Conference on Trade and Development.
- UNCTAD (2010). Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources. A discussion note prepared by FAO, IFAD, the UNCTAD Secretariat and the World Bank Group to contribute to an ongoing global dialogue. (TD/B/C. II/CRP.3). Geneva, United Nations Conference on Trade and Development, 16 April. Available at: http://www.unctad.org/en/docs/ciicrp3_en.pdf.
- UN-DESA (2009). *World Economic and Social Survey 2009: Promoting Development, Saving the Planet*. United Nations publication, sales no. E.09.II.C.1. New York, United Nations.
- UNDP (2007). *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World*. New York, United Nations Development Programme.
- UNECA (2004). *Assessing Regional Integration in Africa (ARIA I)*. ECA Policy Research Report. Addis Ababa, Economic Commission for Africa.
- UNECA (2006). *Assessing Regional Integration in Africa II (ARIA II): Rationalizing Regional Economic Communities*. Addis Ababa, Economic Commission for Africa.
- UNECA (2010). *Assessing Regional Integration in Africa IV (ARIA IV): Enhancing Intra-African Trade*. Addis Ababa, Economic Commission for Africa.
- UNEP (2009). Financing a global deal on climate change. A green paper by the UNEP Finance Initiative Climate Change Working Group, June. New York, United Nations Environment Programme.
- UNFCCC (2007). Investment and financial flows to address climate change. Bonn, United Nations Framework Convention on Climate Change Secretariat.
- UNFCCC (2008). Investment and financial flows to address climate change: An update, FCCC/TP/2008/7, 26 November. Bonn, United Nations Framework Convention on Climate Change Secretariat.
- UNFCCC (2009). Financing climate action: Investment and financial flows for a strengthened response to climate change. Fact Sheet, June. Bonn, United Nations Framework Convention on Climate Change Secretariat.
- Water for Agriculture and Energy in Africa (2008). Hydropower resource assessment of Africa. Ministerial Conference on Water for Agriculture and Energy in Africa: the Challenges of Climate Change, held in Sirte, Libyan Arab Jamahiriya, 15–17 December 2008. Available at: http://www.sirtewaterandenergy.org/docs/2009/Sirte_2008_BAK_3.pdf.
- World Bank (2006). Strengthening forest law enforcement and governance: Addressing a systemic constraint to sustainable development. Report No. 36638-GLB, August. Washington, DC, World Bank.
- Worldwatch Institute (2009). *2009 State of the World: Into a Warming World*. Available at: www.worldwatch.org/node/5984.