# *Chapter 4*

# International co-operation on green growth

*International co-operation can help to enable and provide incentives for developing countries to implement green growth national policies. This chapter outlines an international agenda for action to support green growth in developing countries. It identifies and discusses three pillars of international action: (1) green finance and investment, supported by international development co-operation and private sector engagement; (2) international technology co-operation; and (3) free trade in green goods and services. Success in these areas depends on the enforcement of international agreements, support for capacity development, policy coherence, and effective partnerships to share knowledge and know-how. International support may be particularly important to help in tackling short-term trade-offs and ensuring a smooth transition to green growth.*

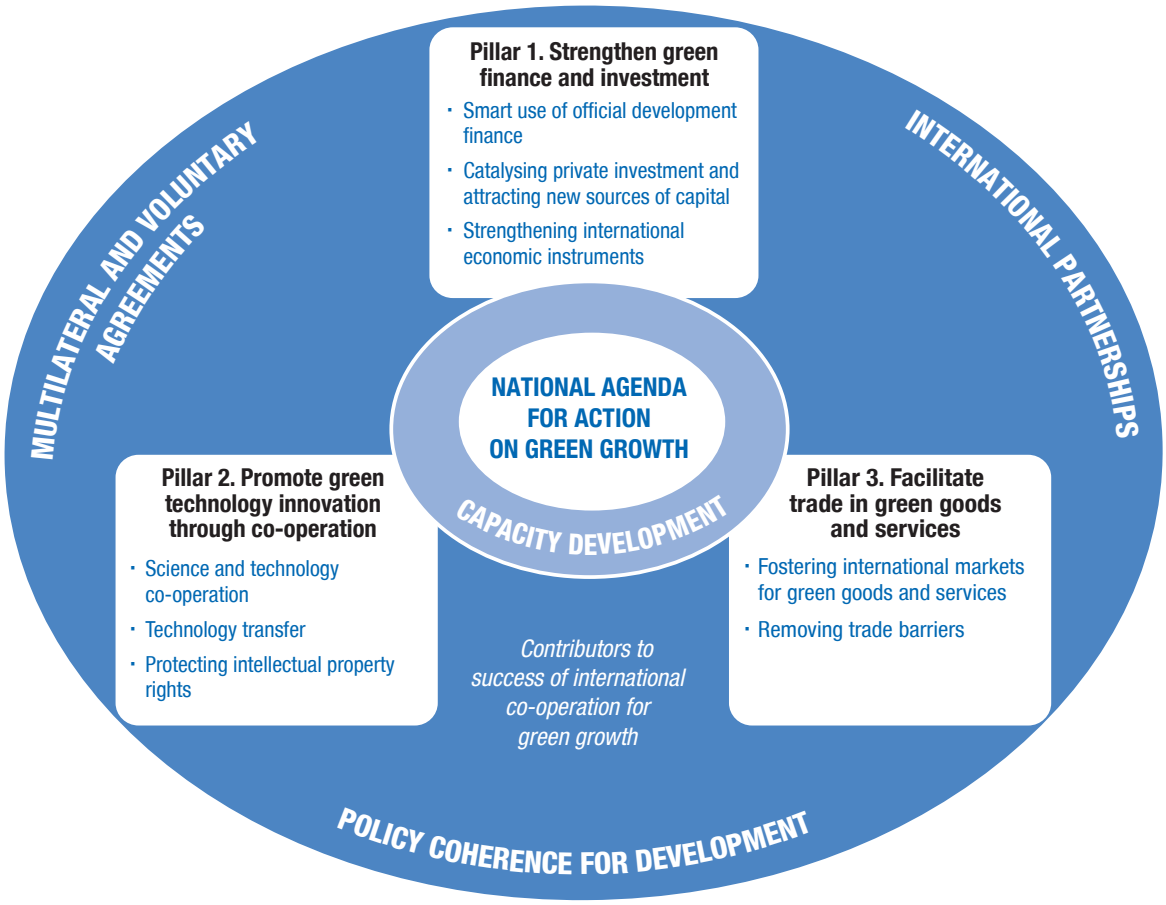
The previous chapter outlined the national policy agenda for shifting towards green growth. Although there is an increasing number of examples and emerging lessons in developing countries from their pursuit of green growth, these efforts are still recent and limited in scope. Such efforts will need to be scaled up and broadened significantly to improve economic and environmental outcomes across the developing world. This chapter presents key elements of an international co-operation agenda to support developing countries greening their growth. The chapter is particularly relevant for policy makers and government officials in developed countries who shape development co-operation policies and the delivery of other international co-operation programmes.

## 4.1. International co-operation on green growth: An agenda for action

International co-operation on green growth rests on three pillars, all of which support the national agenda for action on green growth (Figure 4.1):

1. green finance and investment supported by international development co-operation and private sector activities;
2. international technology co-operation; and
3. free trade in green goods and services.

Figure 4.1. **An agenda for international co-operation on green growth in developing countries**



As shown in Figure 4.1, these pillars will have greatest success when built within the context of:

- efforts to develop human and institutional capacities for pursuing green growth;
- coherent policy choices both in developed and developing countries, which together contribute to a strong international enabling environment for green growth;
- the implementation of multilateral environmental agreements and voluntary initiatives; and
- supportive and informative international partnerships that share experiences and knowledge.

This chapter discusses each of these elements in turn, drawing on examples from developing countries and international co-operation efforts. Some international support mechanisms are already in place, some can be found within broader efforts to support developing country's growth, and some will require new efforts. International co-ordination will also be essential to facilitate learning among developing countries on successful strategies for pursuing green growth.

## 4.2. Pillar 1: Strengthening green finance and investment

Pursuing green growth in developing countries will require substantial investment – in infrastructure, natural resource management, capacity and skill development. Some developing countries will be able to mobilise domestic resources to pay for these costs, and ideally over the long term most countries will be able to fund any costs associated with transitioning to green growth from public and private domestic resources. In the short and medium term, however, many developing countries will require external financial resources. Relevant international sources include official development assistance (ODA), other forms of official development finance (ODF) (e.g. non-concessional or non-ODA development finance), foreign direct investment (FDI) and other international private or public-private finance options. Developed countries have committed to increase their financial support to environmental action in developing countries drawing on public and private sources over the next decade under the UN agreements described in Section 4.5 (see also Box 4.1). Here we outline steps that the providers of these financial resources can take to ensure they maximise their contribution to green growth by working with government and civil society stakeholders in developing countries.

### Box 4.1. **Scaling up international climate finance**

Climate change finance is set to increase substantially throughout the next decade as developed countries scale up resources to meet their pledges under the UN Framework Convention on Climate Change (UNFCCC). Over the next eight years, funding for climate change adaptation and mitigation will have to increase significantly. USD 30 billion was pledged in fast start financing for the three years up to 2012. This will need to increase to meet the target of USD 100 billion annually by 2020, and will come from both public and private sources. The potential scale of this funding makes the effectiveness of its delivery and use critical, not only for the impact of mitigation and adaptation measures, but also for development and poverty reduction.

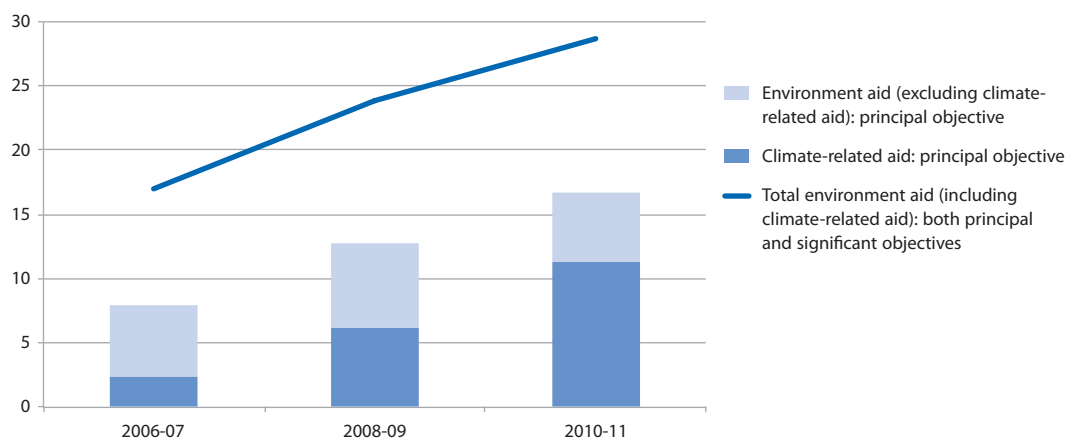
### *Bilateral official development finance*

Smart use of bilateral ODF can be a key instrument to support green growth in developing countries. A starting point is to consider how ODA is currently supporting green growth and development. Available data indicate that today, bilateral ODA is a relatively large channel for green development finance. For example, in an assessment of multilateral and bilateral flows of ODA for climate change, it is typically estimated that bilateral flows of commitments are equivalent to or even greater than those flowing through multilateral channels (Buchner et al., 2011). The OECD Creditor Reporting System (CRS), which tracks the ODA from donor countries who are members of the OECD Development Assistance Committee,[1] identifies aid that is provided for environmental purposes (Box 4.2). The amount of bilateral ODA to support environmental sustainability has been increasing. Annual average bilateral aid commitments from DAC members targeting environment as a "principal objective" have more than doubled since 2006/07 reaching USD 17 billion in 2010/11. Annual average bilateral aid commitments targeting climate change as a "principal objective" have quadrupled since 2006/07, reaching almost USD 12 billion in 2010/11 (Figure 4.2). Despite these increases, the scope for further increases in the near term may be somewhat limited. Indicative forward spending surveys suggest that ODA as a whole will grow slowly at best over the coming years in the face of the current financial crisis and large fiscal constraints in donor countries (OECD, 2012a); environmental aid is also likely to level off in the near future.

Bilateral non-concessional development finance is another source of funding to support green growth in developing countries. While comprehensive data for DAC members on non-concessional flows targeting climate change are not yet available, a report led by the United Nations Environment Programme (UNEP) for selected agencies suggests that in 2009 it was about one-third of the magnitude of ODA targeting climate change (UNEP, 2010; and see Atteridge et al., 2009). DAC members have committed to begin to track

Figure 4.2. **Trends in environment aid (including climate-related aid), 2006-11**

Bilateral commitments by OECD Development Assistance Committee members, USD billion, constant 2010 prices




*Notes:* 1. A number of activities fall under "climate-related" aid, and are thus included here; however, a sub-set of these activities are not recorded as "environment" aid amounting to USD 2.7 billion in 2010/11; this might for example include a large hydro-electric facility.

2. Since 2010, "climate-related" aid includes both adaptation and mitigation (see Box 4.2).

*Source:* OECD/DAC Creditor Reporting System (CRS).

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### Box 4.2. **Tracking bilateral aid allocated to the environment and sustainable development**

The Creditor Reporting System is the OECD DAC's aid activity database, containing statistics on individual aid activities, including those for environmental purposes. The aid activity data come from donors, including the 23 member countries of the DAC, EU Institutions and other international organisations and private donors. The data are part of DAC members' official statistical reporting to the OECD and benefit the broader international community working in this area. A network of statistical correspondents collects data continually from aid agencies and government departments (central, state and local). They also ensure that reporting conforms to the definitions and classifications agreed by the DAC. The reporting system distinguishes between activities that target environmental sustainability as:

- a "principal objective": environmental sustainability is an explicit objective of the activity and fundamental in its design (i.e. the activity would not have been undertaken without this objective, such as a sustainable forest management programme);
- a "significant objective": environmental sustainability is an important, but secondary, objective of the activity (i.e. not one of the principal reasons for undertaking the activity).

This marker system enables analyses of environment-oriented aid in all economic sectors. However, figures can only be considered as estimates (data for activities with the score "significant" are less precise than those with the score "principal").* In general, analyses should take into consideration both categories, but should present each separately.**

Developed countries that signed the three Rio Conventions (the conventions on biological diversity, desertification and climate change)*** in 1992 committed themselves to helping developing countries to implement these conventions. Since 1998 the DAC has monitored aid targeting the objectives of the Rio Conventions using the so called "Rio markers". Every aid activity reported to the CRS is screened and marked as either (1) targeting the conventions as a "principal objective" or a "significant objective"; or (2) not targeting the objective. Rio markers distinguish between four categories of aid which contribute to sustainable development:

**Biodiversity-related aid**: activities that promote at least one of the three objectives of the Convention on Biological Diversity: the conservation of biodiversity, sustainable use of its components (ecosystems, species or genetic resources), or fair and equitable sharing of the benefits of the utilisation of genetic resources.

**Desertification-related aid**: activities that combat desertification or mitigate the effects of drought in arid, semi-arid and dry sub-humid areas through prevention and/or reduction of land degradation, rehabilitation of partly degraded land, or reclamation of desertified land.

**Climate change mitigation-related aid**: activities that contribute to the objective of stabilising greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, by promoting efforts to reduce or limit greenhouse gas emissions or to enhance greenhouse gas sequestration (Figures 4.3 and 4.4).

**Climate change adaptation-related aid:** this new marker was approved by DAC members in December 2009. It tracks aid that supports climate change adaptation. This new marker will complement the existing climate change mitigation marker, and thus allow presentation of a more complete picture of aid to developing countries' efforts to address climate change (Figure 4.4).

* In some cases, only a proportion of an activity scored "significant" targets environmental sustainability, whereas the amount recorded in the database relates to the entire activity.

** When examining the share of a donor's aid that targets environmental sustainability, it is necessary to also take into account the score "not targeted" which means that the activity has been screened against, but was found not to be targeted to, environmental sustainability (activities not screened against the objective should be excluded from the total amount).

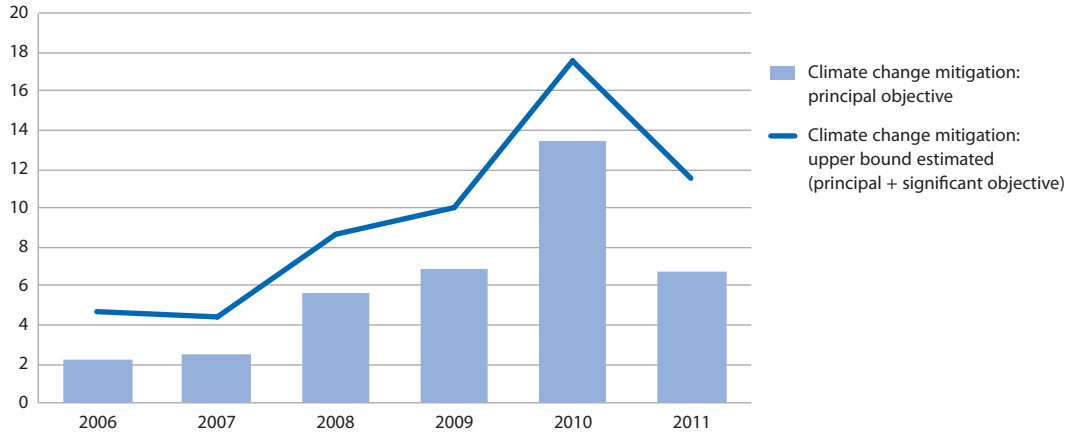
*** The United Nations Convention on Biological Diversity (UNCBD), United Nations Convention to Combat Desertification (UNCCD) and the United Nations Framework Convention on Climate Change (UNFCCC).

*Source:* OECD User's Guide to the Creditor Reporting System (CRS) Aid Activities database, available at *www.oecd.org/dac/stats/crsguide*.

non-concessional ODF that targets climate change action and data should be available in the near future. Non-concessional funding is potentially powerful because it is often used to attract and mobilise private investment. In turn, where private investment yields good returns, it can be a motor for change, operating at a scale that is neither attainable nor sustainable through public funding alone.

Figure 4.3. **Trends in aid for climate change mitigation, 2006-11**

Bilateral commitments by OECD Development Assistance Committee members, USD billion, constant 2010 prices




*Source:* OECD/DAC Creditor Reporting System (CRS).

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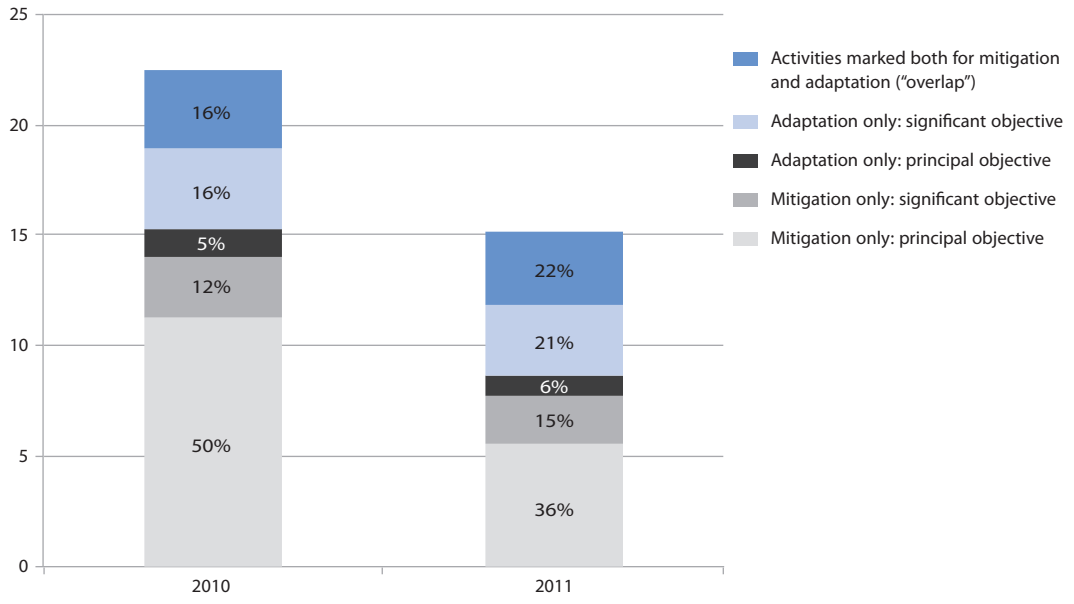
Figure 4.4. **Total climate-related aid, 2010 and 2011**

Bilateral commitments by OECD Development Assistance Committee members, USD billion, constant 2010 prices




*Note:* Some ODA targets activities achieving both adaptation and mitigation objectives. 2010 is the first year of available data for the new "adaptation" Rio Marker (Box 4.2).

*Source:* OECD/DAC Creditor Reporting System (CRS).

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### *Multilateral official development finance*

Multilateral development banks, agencies and programmes are another key means of disbursing ODA and other forms of ODF targeting green growth in developing countries. Global programmes such as the Global Environment Facility and the UN Programme on Reducing Emissions from Deforestation and Forest Degradation (REDD) (Box 4.3) are already providing significant funding to green growth. International financial institutions, such as the World Bank and the International Finance Corporation, as well as regional development banks (African Development Bank, Asian Development Bank, Inter-American Development Bank, the European Bank for Reconstruction and Development and the European Investment Bank) also channel ODF that can be used to support green growth. Beyond provision of ODA, multilateral channels have been shown to be particularly powerful in their ability to direct and use non-concessional ODF to partner with and catalyse private investment.

#### Box 4.3. **Multilateral channels for green growth development co-operation**

- **The Global Environment Facility (GEF)** is an independent financial organisation that serves as the main financial mechanism for several multilateral environmental agreements, including the UNFCCC and the CBD. It involves 182 countries working in partnership with international institutions, civil society organisations and the private sector. Its aim is to address global environmental issues while supporting national sustainable development initiatives, and it provides grants for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. Since 1991, the GEF has provided USD 10.5 billion in grants and leveraged USD 51 billion in co-financing for over 2 700 projects in over 165 countries. Through its Small Grants Programme, the GEF has also made more than 14 000 small grants directly to civil society and community-based organisations, totalling USD 634 million. The most recent replenishment period (2007-10) saw a total of USD 2.87 billion provided in grants to address the most urgent environmental challenges worldwide (GEF, 2011). The flow of ODA financing for green growth channeled through the GEF is approximately USD 800-900 million per year (2009-11; GEF, 2011).
- **Reducing Emissions from Deforestation and Forest Degradation (REDD) and REDD+** may represent one potential form of an international system of payments for ecosystem services (see Section 3.2 in Chapter 3). REDD is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. REDD+ goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. While international climate negotiations continue, considerable resources have already been mobilised outside the formal negotiations to support action in developing countries. In June 2010, 69 governments, including all major forest-rich developing countries, joined efforts to create the REDD+ Partnership (www.reddpluspartnership.org/en/). This partnership serves as an interim platform to co-ordinate REDD+ activities, and is currently facilitating the flow of USD 4 billion fast-start climate finance pledged for REDD+ efforts by both bilateral and multilateral donors, particularly for readiness and capacity building (UNEP, 2011). This partnership demonstrates the high level of interest from developing countries to work together with the international community to advance REDD and REDD+ programmes.

Box 4.3. **Multilateral channels for green growth development co-operation** *(continued)*

- **The Climate Investment Funds (CIFs)** comprise four financial facilities operating under two trust funds (the Clean Technology Fund and Strategic Climate Fund) to support developing countries in catalysing investment and transformation towards low-carbon climate resilient development. The Clean Technology Fund promotes investments in clean energy technologies. The Strategic Climate Fund is channelled through three financing windows to support targeted programmes for reducing emissions from deforestation and forest degradation, integrating consideration of climate risk and resilience into core development planning and implementation, and increasing energy access by scaling up renewable energy deployment in low-income countries. Having received their mandate from the UNFCCC, 14 developed countries pledged over USD 6.5 billion in 2008 in the form of grants, concessional or non-concessional loans and/or risk mitigating instruments. CIFs are disbursed through the multilateral development banks to support effective and flexible implementation of country-led programmes and investments. Civil society groups, indigenous people and the private sector sit as observers at the CIF governance table at the country level.

*Source:* GEF (Global Environment Facility) (2011), *GEF Annual Report 2010*, GEF, Washington, DC, available at *www.thegef.org/gef/sites/thegef.org/files/publication/WBAnnualReportText.revised.pdf*; UNEP (United Nations Environment Programme) (2011), *REDDy, Set, Grow – Opportunities and Roles for Financial Institutions in Forest Carbon Markets*, UNEP, Geneva; CIF website *www.climateinvestmentfunds.org/cif.*

The lack of a harmonised reporting system working across bilateral and multilateral development finance means that it is difficult to know how much aid and other ODF is flowing to developing countries for green growth or even for climate change issues, or to understand its effectiveness. Early indications from a first round of reporting on climate finance from multilateral development banks, and from the DAC Creditor Reporting System on bilateral finance, suggest that the amounts of finance flowing annually to developing countries through multilateral agencies is roughly the same as that flowing from bilateral institutions (Joint-MDB, 2012a and b). It will be essential for the development co-operation community to work closely together to develop and use a harmonised reporting system (Buchner et al., 2011; Corfee-Morlot et al., 2009).[2] Building such a system will be a multi-year effort and require the engagement and strong commitment of bilateral donor agencies, multilateral donor agencies and partner countries. A harmonised reporting system may be worth the effort however, as it would provide a reliable means for the international community to track progress on developed country commitments to support developing countries to green their growth pathways and achieve sustainable development.

### *Integrating green growth into development co-operation*

While ODF already plays a significant role in promoting green growth, both financially and technically, much work remains to fully integrate green growth objectives into development co-operation practice. Members of the OECD DAC endorsed a Policy Statement for the Rio+20 Conference in April 2012, which reiterates their commitment to supporting developing countries' efforts towards green growth.[3]

Development co-operation partners have decades of experience in working together with partner countries, and are now doing more to harmonise their activities in order to promote the mainstreaming of green growth. High-level dialogue can be useful to raise the profile of green growth with senior officials in key ministries in partner countries, and provides

a means for better harmonisation among key donors on these topics. Another approach is to contribute to a horizontal fund for climate change or for green growth, managed by a central government body from which sectoral ministries can draw to stimulate and promote sustainable development (OECD, 2009a; Irawan et al., 2012). For example, the Six Banks Group[4] operating in Vietnam is a USD 200 million multilateral initiative that harmonises donor support towards the National Target Programme to Respond to Climate Change; the programme works in close consultation with the Vietnamese national government. Funded activities include the Support Program to Respond to Climate Change (SPRCC), which is currently helping the Vietnamese government to streamline strategies on green growth, as well as policies on energy efficiency and disaster management; to align these strategies and policies with Vietnam's own Socioeconomic Development Plan; and to monitor and reflect impacts of these changes in the SPRCC (Korea Eximbank, 2012).

One challenge for mainstreaming green growth into development co-operation is that countries that receive aid face a wide range of development challenges and specific obstacles; support efforts need to be tailored to these specific needs. These range from frequent food insecurity or water stress in rural regions of the Sahel, to negative consequences of massive urbanisation and extreme weather events in peri-urban, coastal areas of Indonesia. Countries need to review the range of opportunities and challenges for green growth and prioritise areas for co-operation. Ideally this planning effort will be based on a country-driven assessment or routine diagnostic process that considers the costs and benefits of different types of greening policies. This in turn can support dialogue with national stakeholders and with development co-operation partners on how to incorporate green growth thinking into aid programme design and delivery, both in terms of targets of support, but also choice of aid instruments and modalities for aid delivery.

There is an essential role for ODA and other ODF to enable green growth in many developing countries (OECD, 2011a). The following are key areas where ODF can add particular value, discussed in more detail below (see more examples in Box 4.4):

1. Funding or co-funding of green infrastructure, as this tends to receive only limited private funds (OECD, 2011a). For example, ODF may be used to finance major projects in sustainable agriculture, renewable energy and low-carbon transportation networks (OECD, 2011a). ODF can be used to encourage private investment in green growth activities and business practice in developing countries by helping to create the right conditions and mitigate certain investment risks (e.g. financial risks associated with uncertainty about the performance of new green technologies).
2. Building resilience to climate and natural disasters. Since 2008, development co-operation providers and developing country partner governments have widely agreed that climate-proofing and disaster risk reduction approaches should be mainstreamed into development co-operation programmes and particularly into aid-funded public investment projects (OECD, 2012b).

### *Supporting green infrastructure by blending sources of financing*

As discussed above (and in Chapter 3), an essential way ODF can help support green growth is to finance or co-finance green infrastructure in a number of relevant sectors such as transportation, water, energy and agriculture. Many developing countries are constrained by weak infrastructure in these sectors, in part because of their limited access to public finance and capital markets. Deficient infrastructure can hamper economic activity and weaken human development efforts. A massive shortfall in funding for African infrastructure projects is costing the continent up to 3% of GDP a year. For example, poor

### Box 4.4. **ODA and development co-operation for green growth: some examples**

- *Low carbon transportation networks.* The Climate Investment Funds (Box 4.3) are supporting developing countries to build public transportation systems that reduce emissions while also providing a variety of other public goods. Other donors are supporting a range of low-carbon transport options, particularly urban public transport, and mostly in middle-income countries. For example, France has provided USD 63 million to Morocco to partly finance a tramway in Rabat; and in 2009, Japan supported mass rapid transport in New Delhi (USD 816 million), Jakarta (USD 496 billion), and Bangkok (USD 648 million).
- *Renewable energy and energy access.* Bilateral ODA for power generation has been increasing, and in 2009 stood at almost USD 3 billion. Over 40% of this funded power generation from renewable sources. One area of interest is the role of biofuels (where they do not compete with food production). For example, Brazil is working in partnership with the UK to transfer its bio-ethanol technology to Mozambique. Such technologies can help developing countries reduce their oil imports. A number of feasibility studies and research ventures in solar and wind technologies are also currently being funded by ODA. In 2010, Spain lent USD 139 million to Morocco to construct a solar-thermal plant at Ain Beni. Spain provided almost USD 300 million to Tunisia for wind energy parks in the region of Bizerte. Energy access agenda is another key focus of bilateral support. Through the ACP-EU Energy Facility the EU has been involved in more than 130 projects in African, Caribbean and Pacific countries. Using its resources of about EUR 340 million, the facility has leveraged about the same amount from other public and private sources. Overall, the countries involved have been able to bring modern energy services to between 12 and 13 million people (OECD, 2012b).
- *Sustainable agriculture.* The World Bank has provided loans of USD 30 million in Uzbekistan to increase the productivity, financial and environmental sustainability of agriculture and the profitability of agribusiness. These loans aim to strengthen water user associations, provide investments in demonstration plots in the districts for applied modern irrigation techniques and provide rural training and advisory services. In 2009, Norway provided USD 6.3 million in ODA to Malawi for sustainable agricultural development. The programme aims to improve the capacity of rural communities to use their natural resource base effectively and sustainably to produce sufficient food, generate income and employment and to influence the socio-economic policies that affect their livelihoods. In another example, the same year Korea provided USD 21 million to assist the government of Mali contribute to sustainable growth of agro-pastoral and fish production by maximising the use of irrigated areas through increased control of water and flood areas.
- *Forestry.* The Netherlands fund a programme on Fostering Environmental Stewardship, Social Responsibility and Good Governance in Africa's Heartland. Many donors also contribute to the Forest Carbon Partnership Facility (FCPF) housed by the World Bank. The FCPF has two objectives: to build capacity for REDD in developing countries (see Box 4.3) and to test programmes for performance-based incentive payments for ecosystem services in some pilot countries. More generally, the FCPF is helping developing countries to establish credible estimates of national forest carbon stocks, identify sources of forest emissions and develop incentives for conserving forests and investing in sustainable forest management. As just one example, Finland provided USD 10 million to the FCPF in 2009.
- *Ecotourism.* In 2009, USD 146 million was channeled through bilateral donors to the tourism sector in developing countries, some of which targets ecotourism. More than 20% of aid projects in the tourism sector have a principal environmental objective, which amounts to approximately USD 36 million. Donors who themselves have large tourism industries, such as Spain and Italy, provided a substantial share of this support. The largest project by the US's Millennium Challenge Corporation in Namibia is a tourism project: "Ecotourism Development for Communal Conservancies Activity". It represents a transfer of USD 17 million.

*Source:* All project details are from the OECD/DAC Creditor Reporting System, available at *http://stats.oecd.org/Index.aspx?datasetcode=CRS1*; OECD (2012b), *Development Co-operation Report (2012), Lessons in Linking Sustainability and Development,* OECD, Paris.

infrastructure quality is undermining the productivity of manufacturing firms, especially in low-income countries in central Africa (OECD, 2012c). This infrastructure gap is a key opportunity to invest in new or renovated infrastructure that is low-carbon, resource-efficient and more resilient to climate change risks (OECD, 2009a; Corfee-Morlot et al., 2012; Kennedy and Corfee-Morlot, 2012; OECD, World Bank and the UN, 2012). Any other approach would be shortsighted and risk locking developing countries into a high-carbon, resource-intensive, vulnerable, or "brown" development pathway with huge dangers and costs for future development.

A variety of different types of ODF are available to support infrastructure investments in developing countries. ODA instruments include grants, concessional and technical support; these are currently used in efforts to help sub-Saharan Africa to boost the current 12% electrification rate to allow more economic growth (OECD, 2012b). However it is typically through non-concessional or innovative development finance that development co-operation programmes successfully catalyse private investment.

Table 4.1 lists innovative financial mechanisms that can successfully boost investment in the water sector (OECD, 2010a). These instruments, along with export credit agency instruments, are increasingly found in development co-operation programmes in other sectors, such as energy and transport (OECD, 2010a; Corfee-Morlot et al., 2012; CPI, 2012). For example, in Thailand a blending of ODA and non-concessional ODF has successfully been used to leverage private sector investment in renewable energy and energy efficiency to avoid locking the country into a high carbon intensive and polluting development pathway (OECD, 2012b). Blending of innovative development finance with ODA and domestic funding is increasingly observed in development co-operation efforts targeting clean energy, with the aim of accelerating the delivery of climate change and local development benefits by combining public and private investment (Trabachi et al., 2012; Falconer and Frisari, 2012). A test of success for some of these green investments, particularly in higher income developing countries, will be whether over time they become fully commercial and less dependent on the infusion of public funding.

Table 4.1. **Innovative financial mechanisms for increasing investment in the water sector**

| | Required for increased access to private financing and investment | | | |
|---|---|---|---|---|
| Public financial mechanism or supporting action | Commercial banks | Bond markets | Project finance | Equity finance |
| 1. Blending commercial grants and repayable financing | X | | | |
| 2. Extending the range of potential borrowers via micro-finance | X | | | X |
| 3. Alleviating affordability constraints with output-based aid | X | | X | |
| 4. Mitigating risks with loan guarantees and insurance | X | | X | |
| 5. Creating grouped financing vehicles to increase access to finance | X | X | | |
| 6. Increasing lending to sub-sovereigns via innovation | X | | X | |
| 7. Strengthening the balance sheet via equity injections | X | | | |
| 8. Increasing transparency in the sector via credit ratings | X | X | | X |
| 9. Developing "bankable" projects through project preparation facilities | X | | X | |
| 10. Developing local equity markets | | | | X |

*Source:* Kennedy, C. and J. Corfee-Morlot (2012), "Mobilising Private Investment in Low-Carbon Climate-Resilient Infrastructure", *OECD Environment Working Paper,* OECD, Paris; based on OECD (2010a), *Innovative Financing Mechanisms for the Water Sector,* OECD, Paris.

Despite a large potential for private investment to fill the financing gap for infrastructure in developing countries, the ability to access capital markets differs greatly between low and high-income countries. Accessing capital markets in higher-income developing countries will be aided by the maturity of bank and non-banking financial services, as well as broader legal, regulatory and institutional capacity (Kennedy and Corfee-Morlot, 2012). High and upper middle-income developing countries have universal banks and non-banking financial services, including government and corporate bonds and market equity, as well as alternative services such as private equity and venture capital. In these contexts, interest rates are fully market-based and risk management is robust. There is full availability of long-term funding, as is typically necessary for infrastructure investments. Low-income countries, by contrast, typically have only basic banking services, and lack non-banking financial services. The capacity to undertake risk management is weak. The availability of long-term funding is typically limited to up to a year. Better access to long-term funding may be available in middle-income countries, through full range banks, government bonds and equity, meaning that long-term financing may be partially achieved (Kennedy and Corfee-Morlot, 2012).

### *Building resilience to climate change and other "external" shocks*

As discussed earlier, green growth can only occur if livelihoods are resilient to external "shocks", including climate change and natural resource scarcity. Provision of adequate infrastructure and basic services to the poorest populations in developing countries will be an essential step to protect these communities and to build resilience to external stressors. A look at the water sector illustrates the challenges. The global demands for water infrastructure are estimated to be huge, around 1% of world GDP today or more than USD 1 trillion per year in new investment required by 2020, with particularly high needs in developing countries (Kennedy and Corfee-Morlot, 2012; OECD, 2006).

The financing challenges for infrastructure in developing countries are also large, as noted above. Several recent studies suggest high potential to use repayable market-based finance for water infrastructure investment, i.e. finance and investment provided by private actors through markets, including private loans, bonds and equity. However, these sources of private capital and finance will need to be catalysed by public finance (OECD, 2010a; Table 4.1). Filling the financing gap for water infrastructure in lower income developing countries will rely to a great extent upon the availability of ODF or other public funding sources (e.g. domestic funding) but the private sector may also have a role to play.

Beyond infrastructure, there is growing recognition of the potential role of social protection as a key instrument to respond to the multiple risks and short and long-term shocks and stresses associated with climate change (Davies et al., 2009; IPCC, 2012). The integration of social and environmental concerns into development co-operation practice has already delivered tremendous benefits. Examples include disaster risk management measures, such as cash transfers to ensure that vulnerable children are not withdrawn from school or that they can access healthcare following an extreme weather event. Other examples include safety net programmes to provide seasonal employment in public works in exchange for cash or food transfer to protect household assets and smooth a shift away from emergency food aid towards more predictable and targeted safety net measures. Finally, in the agriculture sector weather-indexed crop insurance is one innovative financial mechanism that can be supported by development co-operation. This provides protection against crop failure caused by drought or excess rain and enables farmers to access credit in order to purchase quality seeds and fertilisers (UN, 2007).

*Encouraging private sector engagement in green growth activities*

As noted above, ODA and other ODF can play an important role in mobilising private investment in developing countries through the use of innovative instruments to make green investment more attractive. Development co-operation programmes that help to build local financial capacity and that partner both with developing country governments and engage with the private sector can offer innovative models for the use of limited public funds to mitigate financial risks and mobilise private investment (Box 4.5). Innovative development finance and modalities could be particularly useful in sectors where investment has been limited by concerns over the performance of new, green technology, or of regulatory and other market risks, which raise the cost of private financing.

Partnerships with the private sector may also take the form of "public-private partnerships" (PPP). PPPs offer a more formal type of contractual arrangement in which investment risks are shared between public and private sector actors. However, PPPs' uneven track record, even in developed and upper-income developing countries, suggests that they may only be successful when the government has strong administrative and financial capacity to negotiate, design and manage the contracts (Kennedy and Corfee-Morlot, 2012; OECD, 2012b).

Box 4.5. **Examples of public-private collaboration to finance green growth**

- **Public-private stakeholder platform for water management in Jordan.** A pilot public-private stakeholder platform, the Jordan Business Alliance on Water, has been formed with initial USD 100 000 funding from the US Agency for International Development (USAID). One project involves establishing a plant at a cost of USD 910 000. Approximately 60% will be financed by the public sector and 40% secured from private sector funds. A similar model was agreed for another slightly smaller scale project, costing USD 380 000. The initial USD 100 000 investment in this partnership thus brought in total project finance of approximately USD 1.3 million, a leverage ratio of 1:13 (World Economic Forum, 2011).
- **Climate public private partnership for developing countries**. The UK Government, in collaboration with the International Finance Cooperation and Asian Development Bank, launched the Climate Public Private Partnership in 2012. For every pound provided by the UK taxpayer, this initiative will leverage up to 30 times the amount in private capital using two new commercial funds. This initiative will help support projects to deliver clean, renewable and efficient energy, new technology and protect natural resources in emerging and developing countries. It is estimated that the initiative could generate more than 7GW of clean, reliable energy – equivalent to 66% of current UK renewable energy capacity – and create 40 000 jobs (DFID, 2012).

*Source:* World Economic Forum (2011), *Financing Green Growth in a Resource-Constrained World: Partnerships for Triggering Private Finance at Scale,* WEF, Geneva; DFID (Department for International Development) (2012), "Mitchell: Private Sector to Tackle Climate Change", Press Release, DFID, London.

## *Foreign direct investment and other private engagement to support development*

FDI has greatly exceeded ODA in the last decade in economic sectors that strongly contribute to greenhouse gas emissions and other forms of environmental pollution (agriculture, forestry, mining, manufacturing, energy, transport, and construction). It is therefore important to understand how FDI flows and why, and the extent to which FDI supports investments that lower emissions or pollution levels (Corfee-Morlot et al., 2009; Golub et al., 2011). One goal of green growth policy reform is to catalyse a shift from "brown"

to "green" investment across all private sources (domestic and foreign). Private investment and FDI in particular have the potential to not only stimulate development, but also technological innovation, in developing countries. This is because they often operate through the channels of multinational enterprises, which are normally equipped with better skill development opportunities and large capital for R&D as compared to domestic companies in developing countries (Popp, 2009).

"Green FDI" can involve transferring green technologies and management processes to enterprises operating in developing countries, which in turn can directly translate into environmental and economic benefits (UNCTAD, 2010). Furthermore, FDI in developing countries is typically at least as environmentally-friendly as domestic private investment (Golub et al., 2011; Haščič et al., 2010). This is especially true in the agricultural, manufacturing and mining sectors (Golub et al., 2011). Green FDI can also have positive spillover effects for domestic firms. For example, domestic competitors or other suppliers may adopt the clean technologies that are originally introduced through FDI, thus extending the direct effects of such investment to other companies (Gallagher and Zarsky, 2007).

FDI is driven through the private sector and where it flows depends upon the availability of human capital and institutional infrastructure to support (and protect) private investment, as well as a country's locational advantages, such as market access, resource availability or production costs (UNCTAD, 2010). As such, FDI will likely flow to relatively wealthier developing countries with good governance, including a strong rule of law. This means it may inadvertently have limited influence or relevance in the poorest countries. OECD research suggests that foreign investors favour countries with transparent and well-enforced environmental regulations, such as on greenhouse gas emissions or other types of pollution (Kauffmann and Tébar Less, 2010). Similarly, Dean et al. (2004) found that Chinese foreign joint ventures were attracted to areas with more stringent environmental regulations. In Chile, foreign investors convinced the government to impose clear regulations in the mining sector (OECD, 2002). As a result, developing country governments interested in attracting FDI as part of a broad green development strategy may choose to strengthen and above all clarify environmental regulations and policies.

ODA can work in partnership with developing country governments to strengthen policy and governance conditions to attract FDI. Lasting national policy reforms will be needed in many developing countries to attract foreign private investment and institutional investors – development co-operation programmes can help to set in motion, enable and strengthen these reform processes. For instance, the United States and United Kingdom have provided significant amounts of aid to help improve general public sector policy and administrative management, decentralisation, financial sector development, privatisation and so on in Africa. Others, like Japan, have undertaken projects such as the Triangle of Hope, which works with the Government of Zambia to improve the overall business climate, particularly laws and regulations conducive for investment, by helping develop the capacity of the relevant government bodies. Portugal has been working with partner countries such as Angola to strengthen their capacity in statistics, land-use planning, and general investment policies, which is expected to have a positive impact on attracting investment (OECD, 2012c).

A number of international initiatives lay the groundwork for green FDI. The *OECD Guidelines for Multinational Enterprises* recommend that enterprises operating in foreign countries establish and maintain an environmental management system to: (1) collect and evaluate information on the environmental impact of firm activities; (2) establish measurable

objectives; and (3) monitor and verify progress towards environmental safety objectives (OECD, 2011b). The evidence tells us that the presence of an environmental management system does encourage good environmental performance and innovation (Johnstone, 2007; Dasgupta et al., 2000). Other international standards promoting responsible environmental behaviour by private firms include the International Organization for Standardization's ISO 14000 family, which addresses various aspects of environmental management,[5] the European Union's Eco-management and Audit Scheme (EMAS),[6] the International Council on Chemical Associations' Responsible Care programme,[7] and the United Nations Global Compact.[8]

In addition, pension funds, insurance companies and sovereign wealth funds can also potentially be a new source of capital to support green growth initiatives. In 2011, institutional investors managed USD 30 trillion in assets with annual inflows of USD 850 billion in OECD countries. However, today less than 1% of OECD pension fund assets are allocated directly to infrastructure projects and an even smaller slice goes to green infrastructure (Della Croce et al., 2011). Since the financial crisis, interest from these institutional investors in direct investment is picking up. Given the prevailing low interest rates and weak economic growth prospects in many developed countries, institutional investors are increasingly looking for different asset classes which can deliver more stable income streams. Beyond developed countries' sources of institutional capital are those in developing countries themselves, which are growing at a much faster pace given the younger and more rapidly growing work forces in these countries. Thus institutional investors in both developed and developing countries may be able to help supply capital for green infrastructure investment in developing countries.

Green infrastructure projects can potentially fulfil the desirable characteristics required by institutional investors, and investors are redefining their investment and risk allocation strategies accordingly (OECD, 2012d; Kaminker and Stewart, 2012). In late 2012 four regional climate change institutional investor groups announced the formation of the Global Investor Coalition on Climate Change (GIC) to represent the international investment community on climate change policy and investment issues at a global level. The GIC represents 285 investors with more than USD 20 trillion in assets and stresses the urgent need for policy action which stimulates private sector investment in climate change solutions and creates jobs. It stresses that this is essential for ensuring the long-term sustainability and stability of the world economic system.[9] PensionDanmark is another good example: they have a dedicated research team working on renewable energy and infrastructure investments and are planning to place up to 10% of their investments in tackling climate change; many of these activities will be taking place in developing countries. South Africa has also taken the innovative step in a decision to set aside 5% of its Government Employees' Pension Fund to invest in development projects, most of which will be infrastructure; some share of this will go to support those with explicit social and environmental policy objectives (Box 4.6; see also Box 4.13 on Norway's pension fund).

Moving from the current "short-term returns" mindset to a longer-term investment environment requires a change in investor behaviour. The market is unlikely to deliver such a change on its own. Major policy initiatives at the national level, as discussed in Chapter 3, are needed in a variety of areas to create the conditions for a shift in investment to "go green". As part of the necessary transformation in investor behaviour, institutional investors need to be brought into the debate with policy makers (OECD, 2012d).

### Box 4.6. **South Africa: The Government Employees' Pension Fund and green infrastructure**

The Government Employees Pension Fund (GEPF) is Africa's largest pension fund, with over USD 138 billion in assets under management. The GEPF is also the single largest investor in the Johannesburg Stock Exchange listed companies. The GEPF has recently launched its Developmental Investment Policy, which outlines its approach to developmental infrastructure investments through the Isibaya Fund, managed by the Public Investment Corporation. The GEPF has set aside 5% of the fund's portfolio for investing in developmental projects – mostly infrastructure projects – in South Africa.

The Isibaya Fund provides finance for projects capable of generating good financial returns, while supporting positive economic, social and environmental outcomes for South Africa over the long term. The focus on developmental investments demonstrates the GEPF's commitment to its obligations as a signatory to the UN backed Principles of Responsible Investment. During 2010/11, the Isibaya Fund accelerated investments in developmental projects in the following areas:

- economic infrastructure, including projects in energy, telecommunications, logistics, commuter transport and water infrastructure;
- social infrastructure, including projects in education, affordable housing and healthcare;
- economic growth and transformation, investments in sectors that foster growth, job creation and broad based black economic empowerment, particularly in priority sectors identified by government's Industrial Policy Action Plan, including agriculture, agro-processing, alternative energy and environmental projects;
- environmental sustainability, with a focus on renewable energy generation and clean technology, as well as firms, funds and projects active in the environmental goods and services sector.

In each area, the Isibaya Fund will maintain a balance between social impact and financial returns. The GEPF has developed an environmental, social and corporate governance framework to measure the impact of Isibaya's unlisted investments on issues such as job creation, job retention, poverty alleviation, black economic empowerment and regional development.

*Source:* OECD (2012e), *G20/OECD Policy Note on Pension Fund Financing for Green Infrastructure and Initiatives*, OECD, Paris, *www.oecd.org/finance/private-pensions*, accessed 28 March 2013, citing the GEPF Annual Report 2011.

## *Strengthening international economic instruments*

Green growth in developing countries can also be financed in part through the use of international economic instruments. These include use of the carbon market created under the Kyoto Protocol and now continuing under the UN Framework Convention on Climate Change. In particular, substantial private finance from developed countries is flowing to developing countries through Clean Development Mechanism projects as a means to purchase carbon offsets (Box 4.7).[10] To date most CDM projects have been implemented in the largest developing countries, such as China and India. There are few CDM projects in Africa, largely due to a lack of technical and institutional capacity; limited project pipelines, financing, experience and technical skills; and monitoring challenges (Wang, 2010; Desanker, 2005; Ellis and Kamal, 2007). The complexity of CDM rules also hinders engagement and participation by many developing countries and raises transaction costs.

### Box 4.7. **The Clean Development Mechanism**

The Clean Development Mechanism (CDM) was established under the Kyoto Protocol. It has two objectives: (1) to assist developing countries achieve sustainable development and contribute to the ultimate objectives of the UNFCCC; and (2) to help industralised countries comply with their qualified emissions limitation and reduction commitments under the Kyoto Protocol. The second objective is achieved by allowing industrialised countries to meet part of their emissions caps using certified emissions reduction (CER) credits through CDM projects in developing countries. To date, more than 80% of CDM projects have been carried out in the Asia Pacific region, with less than 3% taking place in Africa. About 80% of the CDM projects are focusing on renewable energy and energy efficiency technologies (UNEP Risoe Centre, 2012). Most CDM projects claim several sustainable development benefits such as employment creation, the reduction of noise and pollution, and the protection of natural resources (UNFCCC, 2011).

*Source:* UNEP Risoe Centre (2012), "CDM Projects by Host Region", UNEP Risoe website, *www.cdmpipeline.org/cdm-projects-region.htm*; UNFCCC (2011), *Benefits of the Clean Development Mechanism 2011*, UNFCCC, Bonn.

Payment for ecosystem service programmes (PES, Section 3.2 in Chapter 3) are a form of economic instrument that are now more widely used in the global context to raise finance for sustainable natural resource management. PES programmes give cash and/or in-kind payments to farmers and other land managers as an incentive to conserve and enhance ecosystem services that derive from sustainable land management. Such programmes can cross national borders by providing international investors with the opportunity to co-finance activities that enhance the environment (OECD, 2010b). The recently established PES programme in the Los Negros Valley in Bolivia illustrates how ecosystem services in developing countries can meet both domestic and international demand. Downstream irrigators in the Municipality of Pamagrande, Bolivia pay for watershed services, while the US Fish and Wildlife Service pays for the protection of habitat for migratory bird species (Asquith et al., 2008). The REDD mechanism (Box 4.3) is another example of international PES. Under REDD, financial incentives are provided at the international level to developing countries to reduce greenhouse gas emissions from deforestation and forest degradation. Rough estimates suggest that as many as 25-50 million low-income households in developing countries could benefit from REDD by 2030 (Milder et al., 2010). However an international system to pay for REDD has not yet been agreed so this scale has yet to be achieved.

Further deploying international economic instruments for financing sustainable management of ecosystem services in developing countries will require action on at least three fronts. First, it requires fostering demand in developed countries for developing countries' ecosystem services. Second, it requires creating institutional and financial arrangements in developing countries to ensure supply is adequate and of sufficient quality (i.e. delivers the services it claims). Finally, transparent and standardised monitoring and accounting of ecosystem services will be essential for ensuring adequate and good quality supply (Karousakis and Corfee-Morlot, 2007).

## *Lessons for moving forward*

Through development co-operation, foreign investment, public-private collaboration and other channels of finance, developed countries have begun to provide substantial financial and technical support to developing countries to enable and to boost investment

to support green growth. Several lessons have emerged from this experience that can help developed countries to make more effective use of their finance in providing support to developing countries:

- *Mainstream green growth thinking into all areas of development policy and planning.* This will help to provide more timely and targeted development co-operation through a range of aid instruments and modalities that meets the needs of different developing countries on their own terms and for their own priorities.
- *Work with partner countries to support domestic policy reform processes* designed to attract and boost private investment in green growth.
- *Use ODF to engage the private sector more effectively at early stages of development*. This includes working with domestic and multinational firms in developing countries. This can be achieved by using more lending (concessional and non-concessional), guarantees and other de-risking instruments; it may also include combining grants with non-concessional lending and technical assistance to attract private engagement and eventually investment. Public-private collaboration is another way for private sector players to mitigate risks faced in project investment.
- *Strengthen initiatives to support and attract FDI, especially green FDI,* in part by integrating clear environmental regulations into national policy reforms and working with businesses to report, track and manage environmental performance as part of their corporate policy and decision making.
- *Mobilise new sources of private and public capital for development,* such as through pension funds and other institutional investors, to support green growth infrastructure investment. Raise and channel new sources of public revenues into the greening of development co-operation activities (e.g. from auctioning emission permits in developed countries). Create and use targeted funds to assist donors to harmonise their activities in individual developing countries.

## 4.3. Pillar 2: Promoting green technology innovation through co-operation

Today's technology and consumer behaviour can only do so much to achieve green growth. Significantly more innovation – both the creation of new products, processes and technologies, as well as their diffusion and application – will be required to ensure that further growth does not increase environmental pressures (OECD, 2011c). Insufficient skills, funds, access to information and institutional frameworks all impede science and co-operation on green innovation and limit innovative capacity in developing countries. In terms of the share of professionals engaged in relevant research, even advanced developing countries have been found to be far behind high-income countries (OECD, 2011a). To address these problems, there is a need for policies, frameworks, and governance mechanisms for international co-operation to support rapid scientific progress, technological innovation and diffusion (OECD, 2011d). The international community can help developing countries push forward the technology frontier for green growth through support for education, science and research collaboration, technology co-operation and transfer, and support to regulatory frameworks for the protection of intellectual property rights (Figure 4.1).

### *Science and research collaboration*

International science and research co-operation between developed countries and developing countries is a key element in a strong international enabling environment for green growth. It can:

- Enhance knowledge development and diffusion to promote green growth and innovation (OECD, 2011d).
- Help to realise economies of scale, create common pools of knowledge, expertise and funding to carry out relevant research. One important approach to share information, for example, is to develop common datasets for monitoring and forecasting green growth processes.
- Accelerate the building of local technical capacity to spur technology innovation and diffusion tailored to the needs of developing countries (Haščič et al., 2010).
- Help governments to design and implement policy frameworks that support investment in resource-efficient and clean production technologies (see Chapter 3).

Such collaboration can be achieved through academic partnerships and cross-border higher education exchange programmes. These can facilitate technology transfers, with positive knock-on effects for the local innovation system (OECD, 2011d). Support to training (for researchers and scholars) increases the capacity of developing countries to adopt new technologies. As noted, engaging the private sector is also critical because of its immense potential to lead and finance R&D activities and to disseminate new technologies. There is nevertheless a need to strike a balance between nurturing scientific and technological excellence while taking into account complex social and environmental problems. To be successful in developing countries there is a need for international science and research collaboration to remain focused, while also accommodating a large number of stakeholder viewpoints (see examples in Box 4.8). For example, it is crucial to ensure close involvement of developing country experts and government officials in setting priorities. Broad agreement also exists on the need for strong involvement of the private sector, non-governmental organisations, philanthropic organisations, and other stakeholders in the prioritisation and delivery of science and green innovation.

#### Box 4.8. **How the international community can promote green technology co-operation**

Various actors in the international community are facilitating collaboration between researchers in developed and developing countries to jointly develop intellectual property as part of efforts to conduct advanced research and deploy newly developed technologies for green growth.

The government of Japan collaborates on technology with developing countries through its Science and Technology Agency (JST). For example, through its co-operation programme on Low Carbon Society Scenarios for Asian Regions, it is working with the Government of Malaysia to develop relevant research and a policy roadmap for a low carbon society. It is also collaborating with the Indian Government to research and develop a Down-flow Hanging Sponge (DHS) reactor, which is a low-energy sewage treatment technology.

### Box 4.8. **How the international community can promote green technology co-operation** *(continued)*

Another prominent example of international green technology collaboration is the use of implementing agreements by the International Energy Agency (IEA) to conduct joint research amongst developed and developing countries and public and private partners. IEA implementing agreements guide international science and technology co-operation with developing country participation in the following areas:

- SolarPACES is a technology agreement focused on concentrated solar power stations. Participants include the governments of China, Morocco and the United Arab Emirates, as well as the United States, European Commission and Mitsubishi Corporation.
- Ocean Energy Systems facilitates international co-operation to deploy and commercialise sustainable, efficient and reliable ocean energy technologies (e.g. tidal power) among coastal countries. Participants include the governments of Mexico, South Africa, United Kingdom and Canada.

Empirical work at the OECD indicates that being part of an IEA implementing agreement increases the rate of international co-invention significantly and at a lower cost, by cost sharing and task sharing among participating countries. Collaboration brings benefits of scale, permitting research in instances where the scale or scope is too large for a national project alone. Experience and results from the agreements are accessible to all participants and hence create a shared knowledge pool (Haščič et al., 2012).

The Consultative Group on International Agricultural Research is another example of a successful international research partnership that has had a large and positive influence on innovation in developing countries. It focuses on developing high-yielding crop varieties – a key area of innovation for green growth in agriculture (Gagnon-Lebrun, 2004).

*Sources:* Japanese Science and Technology Agency website, *www.jst.go.jp/global/english/kadai/index.html*; International Energy Agency website, *www.iea.org/techno/index.asp*; Haščič, I., N. Johnstone and N. Kahrobaie (2012), "International Technology Agreements for Climate Change: Analysis Based on Co-Invention Data", *OECD Environment Working Papers*, No. 42, OECD Publishing, Paris; Gagnon-Lebrun, F. (2004), "Case Study 2: Cooperation in Agriculture: R&D on High-Yielding Crop Varieties", *International Energy Technology Collaboration and Climate Change Mitigation,* OECD, Paris.

## *Technology transfer*

Technology transfer is another effective way to support developing countries in adopting green technologies (Box 4.9). As mentioned in Chapter 3, and taking climate change as the example, the number of green patents in climate change mitigation and adaptation technologies still remains very small in developing countries. Between 1980 and 2011 there were over 200 000 patent applications in OECD economies for climate mitigation innovations, while for emerging economies the figure was just over 40 000 and for the rest of the world approximately 20 000. For climate adaptation the relevant figures are approximately 16 000 (OECD), 6 000 (emerging economies) and 1 000 (rest of the world) (OECD, forthcoming). The existence of endogenous or local capacity for innovation is a key driver of green technology transfer and co-invention in this area (OECD, 2011d). A key action for the international community might thus be to support programmes that build endogenous capacity for environmental science and green innovation, for instance through building or strengthening developing countries' policies that form "national innovation systems" in order to build the linkages among the actors involved in innovation and to encourage the flow of information and ideas (OECD, 1997; see also Chapter 3).

Developed countries also support developing countries to map out their climate research and technology needs – such as through UNFCCC's Technology Needs Assessment – which is a means to target further international technology co-operation for green growth.

### Box 4.9. **Transferring technology for more effective building insulation in Senegal**

In 2012, the GEF initiated a USD 2.3 million project to facilitate the technology transfer of innovative thermal insulation materials using typha (a reed) in Senegal. The project was co-financed with USD 2.2 million from the United Nations Industrial Development Organisation and the Senegalese government. Typha is an invasive species in the Senegalese ecosystem, and proliferated in the Senegal River due to ecosystem changes caused by the construction of an upstream hydropower dam and a salt-wedge dam in the 1980s. To increase energy efficiency in the building sector, Senegal is in need of low cost building materials to insulate buildings. Research undertaken by European countries has shown that the combination of typha and cement offers a wide range of construction products. The project is specifically designed to tailor such technology to local circumstances, and will be demonstrated through retrofitting a government building. Certification and patenting, as well as the establishment of a local production chain, were part of the project, increasing the local profitability of the technology. The private sector has also participated in this project by committing USD 1.4 million to co-finance various related activities, which ensures the sustainability of this innovative local construction product under market conditions. As a result, the Senegalese economy is expected to benefit from (1) the establishment of a new market for building materials with related economic and local employment benefits; (2) greenhouse gas emission reductions from more efficient building insulations; and (3) biodiversity co-benefits from reduced typha dominance in the local ecosystem.

*Source:* GEF (Global Environment Facility) (2012), *Implementing the Poznan Strategic and Long-term Programs on Technology Transfer*, GEF, Washington, DC.

### *Protecting intellectual property rights*

Well-functioning systems for protecting and enforcing intellectual property rights (IPRs) provide incentives for investment in innovation and establish the framework for IPR protection and diffusion. Ways that international community can provide technologies and know-how to developing countries include creating voluntary patent pools and other collaborative mechanisms for leveraging intellectual property, covering licensing fees or even buying out patents on key technologies. These mechanisms can reduce the cost of green technologies for developing countries. The use of public-private partnerships to support green technology research initiatives can boost the level of support for innovation and patenting in the face of limited resources (OECD, 2011d).

### *Lessons for moving forward*

Technology innovation, development and diffusion is a major pillar for international co-operation for green growth in developing countries. Developed countries with advanced research capacity, innovation policies and technology dissemination experience can better target their technological support to developing countries by:

- *Working with developing countries to define their science and technology research agenda and priorities for international co-operation*. Developing countries need to pursue green growth based on their particular natural assets and development

challenges. Supporting developing countries to define their own research agenda is crucial for innovation that is most relevant to their economies and key challenges for greening growth.

- *Focusing on building innovation capacity within developing countries*. Ways to strengthen developing countries' own capacities to innovate, diffuse and use technologies include: (1) providing training to technical staff; (2) developing the research capacity of skilled workers, working in part through strengthened educational curricula; and (3) establishing joint research projects with universities and national research institutes.
- *Promoting IPR systems and encouraging knowledge sharing.* A strengthened IPR system can create local knowledge spillovers, promote innovation, increase trade and investment, and boost economic activities. Developed countries can help by creating voluntary patent pools and other collaborative mechanisms for leveraging intellectual property, covering licensing fees or even buying out patents on key technologies.

## 4.4. Pillar 3: Facilitating trade in green goods and services

The pursuit of green growth in many developing countries will require learning how to generate value in international markets from environmental or natural resource assets. For example, ecotourism in Costa Rica, organic farm products from Kenya and sustainable forest management in Guyana and Congo are all a means to provide marketable green goods and services. However the mechanisms and markets for maximising their value are still poorly developed. Some developing countries are concerned that trade could be affected if the green growth policy agenda is captured by protectionist interests. For example, trade rules for green products may lead to products from developing countries being excluded from the international market if they are not considered "green", and this could further encumber the Doha round of trade negotiations under the World Trade Organization (WTO). A related concern is the potential for eco-certification and eco-labelling to also act as non-tariff trade barriers to uncertified products. While trade protectionism encouraged by green growth policies has not been a major problem to date, continued efforts to facilitate international trade in green goods and services need to be further encouraged by fostering international markets for green goods and services and removing tariff and non-tariff trade barriers.

### *Fostering international markets for green goods and services*

Developing countries can benefit from being both exporters and importers of green goods and services. The share of environmental goods and services[11] in global exports is rising in both developed and developing countries. As a subset of what might be considered "green", it is possible to estimate trade across a list of well-defined environmental goods and services. Such estimates show indicative trends. In 2004, trade in environmental goods and services was estimated to be worth USD 580 billion worldwide (Blazejczak et al., 2009). Since then, there has been a tremendous increase in global trade flows of such goods and services, despite the financial crisis of 2008. The OECD has estimated that global trade in environmental goods alone amounted to about USD 883 billion in 2011.[12] Data from 2007 to 2011 further indicate that the growth rate in export value of environmental goods from developing countries has been faster in recent years than from many developed countries. As developing countries have significant natural assets, this trend could indicate potential opportunities to profit from an expansion of the environmental goods and services

export market. Capacity to access and benefit from such markets can be enhanced by aid-for-trade programmes (Box 4.10). At the same time, developing countries could also benefit from importing environmental goods and services from developed countries. Specialist providers of environmental services,[13] such as those who clean up spills or dispose of household waste, typically have access to the latest know-how and technology. This is not only good for local communities but also encourages the transfer of knowledge, such as on pollution control, into the importing country. OECD research on exports of environmental services to developing countries suggests that when the environmental service provider establishes a commercial presence in a foreign country, it usually hires most of its staff locally, thus creating new job opportunities in developing countries (OECD, 2005).

Strengthening and extending regional trade agreements can help foster green growth, and by extension, markets for green goods and services. About 250 regional trade agreements were in effect worldwide in 2010 (WTO Regional Trade Agreements Information System, 2013). Environmental concerns are increasingly being incorporated into these agreements, either in the form of an assessment of the environmental impact of regional trade liberalisation, or in the form of better enforced environmental laws and standards. The evidence suggests that regional trade agreements with an environmental component can deliver environmental benefits that include mutual support of trade and environment policies; strengthening national action, such as the enforcement of environmental laws; raising the level of environmental standards; establishing or reinforcing environmental co-operation; and enhancing public participation in environmental matters (George and Serret, 2011). In some cases, the negotiation of a regional trade agreement incorporating environmental dimensions has driven reform and accelerated national environmental policy processes (e.g. the harmonisation of scattered environmental legislation) (OECD, 2007).

Demand-side policies, such as public procurement and campaigns to educate consumers, can also help foster markets for new products and services, including green goods and services (see Section 3.2 in Chapter 3). This can be achieved through demonstrating the ecological footprint of the products being consumed by developed countries from developing countries (see Section 5.2 in Chapter 5), and addressing gaps in the support of finance at the early stage (OECD, 2011a).

### Box 4.10. **The role of Aid-for-Trade in fostering markets for green goods and services**

Motivated by the role of trade as an engine of economic growth and poverty reduction, the Aid-for-Trade Initiative was launched by a group of development co-operation agencies to reduce transaction costs and strengthen the capacity of developing countries for trade. It provides assistance for enhancing capacities in trade policy and regulations, and addressing adjustment costs incurred by trade reforms. It also provides support through trade infrastructure development and production capacity development projects, and through assistance in implementing trade agreements. The donor community increasingly considers the Aid-for-Trade Initiative as a mechanism for mitigating climate change and stimulating green growth in developing countries, in part because of the stringent environmental conditions attached to the trade agreements, but also because such support often targets capacities for trading green goods and services. Recently these programmes have helped developing countries adopt organic standards, enhance value chain development, train officials in trade policy for green goods and services and environmental protection measures, and participate in regional and multilateral trade and environmental negotiations (OECD, 2012f).

*Source:* OECD (2012f), *Aid for Trade and Green Growth: State of Play*, OECD, Paris.

### *Removing trade barriers*

Liberalising trade and removing trade barriers can help to promote trade by developing countries in green goods and services. A number of tariff and non-tariff barriers impede trade between developed and developing countries and among developing countries themselves in key areas relevant to green growth. For example, recent data show that import tariffs imposed by developing countries on renewable energy technologies are significantly higher than those imposed by OECD countries, i.e. Indonesia applies a 10% import tariff to wind powered generating sets as oppose to 0% import tariff by Japan and Canada (Market Access Database).[14] However, given the higher technical standards and quality control of many of the developed countries' markets, some developing country exporters find it challenging to participate in the global value chains of green goods and services. Subsidies for fossil fuels also tend to limit trade and technology transfer to a larger extent than patent protection (or lack of it), for example (Hall and Helmers, 2010). There is evidence that eliminating tariff and non-tariff trade barriers in the top 18 greenhouse gas-emitting developing countries would increase imports into those countries of energy-efficient lighting products by 63%, wind power generation equipment and components by 23%, solar power generation equipment and components by 14%, and clean coal technologies by 4.6% (World Bank, 2007). Reforming environmentally-harmful subsidies and removing trade barriers would also foster more efficient competition, particularly in new green industrial sub-sectors, and help to bring about green growth on a global basis (OECD, 2011a).

Non-tariff trade barriers are in some cases more constraining to green growth in developing countries than tariffs (Golub et al., 2011). For example, if technical regulations applied by the importing country differ from international standards, this can add to manufacturing costs and often requires additional testing to demonstrate conformity to the standards. Evidence of these variations in technical regulations has been found in some sectors with high greenhouse gas emissions including energy, construction and manufacturing (Steenblik and Kim, 2009). Other restrictions to trade in environmental or green goods include poor IPRs in some major importing countries (often developing countries), restrictions on visas for expatriate technical staff and overly stringent customs procedures. Removing those constraints will create opportunities for green growth in environmental services, such as ecotourism (Steenblik and Kim, 2009). Eco-certification schemes for green products or carbon footprints can also become non-tariff barriers to trade, especially if they are overly stringent (Richards, 2004). This is because participating in certification programmes incurs significant costs which may not be recovered by the resulting price premiums on the certified product. For example, Ponte (2008) argues that certification according to the standards of the Marine Stewardship Council (MSC) marginalises small-scale fisheries in developing countries. This finding is echoed by evidence from South Africa (Standing, 2009). Resolving non-tariff trade barriers is even more important when considering the evidence presented in Section 3.2 of Chapter 3, which shows that eco-certification can be designed to both benefit the environment and increase the welfare of local farmers (and see Blackmore and Keeley, 2012).

A key to ensuring that certification programmes are both effective and fair to exporters in developing countries is to design them with the involvement of both developed and developing country interest groups (Box 4.11) (Kasterine and Vanzetti, 2010; Brenton et al., 2009). For example, Brenton et al. (2009) found that developing countries are more likely to be adversely affected by carbon certification if they: (1) export air-freighted (as opposed to marine-transported) agricultural goods; or (2) produce agricultural goods with only a seasonally favourable carbon footprint (e.g. apples imported from Latin America to Europe). These effects are larger for crops for which substitutes usually exist (e.g. green beans from

Kenya), but they are smaller for cash crops (e.g. coffee, cocoa, tea or bananas) for which substitutes do not exist. However, carbon certification does not necessarily reduce the scope for international trade of air-freighted agricultural goods altogether. For instance, the carbon footprint of cut flowers exported from Kenya to the United Kingdom is lower than for flowers cultivated in glasshouses in the Netherlands, even after taking into account the emissions from air transport. This result is explained by the large energy-intensity of flower production in the Netherlands and the relatively lower greenhouse gas intensity of flower production in Kenya (Williams, 2007).

### Box 4.11. **Some initiatives to promote trade in green goods and services**

- UNEP, the International Centre for Trade and Sustainable Development and the International Trade Centre are currently identifying international trade opportunities that will promote green growth. They are analysing how countries, especially developing countries, can respond to growing international demand for environmentally-friendly food, products and services.
- The International Organization for Standardization and several international NGOs, such as the Marine Stewardship Council, Forest Stewardship Council, and the Fair Trade Labelling Organization, have made efforts to harmonise standards with the consent of the international community to avoid such schemes becoming barriers to international trade or risking green protectionism.
- The European Commission has adopted new legislation to counter the trade in illegally harvested timber. In an effort to tackle the problem of illegal logging across the world in order to mitigate deforestation and climate change, it prohibits the placing of such timber on the European market. The new law affects both imported and domestically produced timber and timber products and the aim is to put in place due-diligence and other procedures to minimise the risk of illegal wood being traded (European Timber Regulation, 2013).
- Unilever has been working closely with its large network of suppliers of raw materials to explore how to do business with smallholders in a way that it improves their livelihoods. To give one example, in 2011 Unilever's Magnum ice cream brand partnered with the Rainforest Alliance to work with farmers in key cocoa-producing countries such as Ghana, Ecuador and Côte d'Ivoire on sustainable agricultural practices. After just one year, over 10 000 farmers had achieved Rainforest Alliance certification. Buyers benefit a guaranteed supply of higher quality beans, which helps the brand image, and local farmers benefit from better harvests and higher incomes (Unilever website, n.d.).

*Source:* European Timber Regulation (2013), *www.ec.europa.eu/environment/eutr2013/index_en.htm*; Unilever (n.d.), Helping Smallholder Farmers, *www.unilever.com/sustainable-living/betterlivelihoods/farmers/.*

## *Lessons for moving forward*

Supporting global trade in green goods and services is an important part of international co-operation for green growth. Given that developed and developing countries are closely connected by trade, developed countries could take the following three actions to bring green growth benefits:

- *Support open markets for green goods and services*. Developed countries can collaborate with developing countries through existing international treaties on trade and environment to set up clearer conditions and stronger international markets to promote trade of green goods and services. Attention should be given to ensure that policies that support renewable energy-based power generation also support open

trade and public procurement and that they do not include provisions favouring local producers, such as local content requirements. Such "localisation policies" increase costs and keep producers of renewable energy equipment from fully participating in and benefiting from global value chains.

- *Step up demand-side policies*. Consumers in developed countries (public and private sectors) have begun to take responsibility for managing their ecological footprints. Demand-side policies, such as sustainable public and private procurement policies and consumer education programmes, can be effective tools to help foster trade and grow markets for green goods and services in developing countries and inform consumers in developed countries about the pros and cons of different kinds of products.
- *Build capacity for developing countries to negotiate the removal of non-tariff trade barriers*. The rapidly evolving and wide variety of eco-labelling, certification and standard regimes entails high transaction costs for developing country producers and as such can be considered non-tariff barriers to trade. Governments in developed countries can provide support to build the capacity of developing country producers to follow and participate in international decision making to standardise eco-labelling, certification and environmental standard programmes. This would ensure that their concerns are raised and addressed, and would reduce the transaction costs of entering the international market.

## 4.5. Factors for success in international co-operation on green growth

Having discussed the three pillars of an international co-operation agenda for green growth, we now turn our attention to the four enabling factors that play a large role in determining its success (Figure 4.1):

1. capacity development;
2. multilateral conventions and voluntary agreements;
3. policy coherence for development; and
4. international partnerships.

### *Enhancing capacity for green growth*

Capacity development can strengthen developing countries' ability to benefit from external finance and technology flows, and to make the most of international trade and the global market for green goods and services. The international community (bilateral and multilateral donor agencies and other civil society groups) could enhance capacities for greening growth in developing countries through:

- awareness-raising and educational programmes on the benefits of and skills for green growth;
- training and sharing experience with developing country policy makers on ways to implement specific green growth policy tools, enforce environmental laws and regulations, monitor and evaluate policy effectiveness over time, and green existing national plans and programmes;
- collaborating with technical institutions, universities and research organisations, vocational training centres and relevant government bodies in developing countries on green growth issues, notably on green innovation, green research and development, and the use and maintenance of specific green technologies;

- working with financial institutions, local financial communities and private sector associations to build up their understanding and interest in providing finance and directing investment to sectors related to green growth;
- empowering civil society and developing their capacities for engaging in green growth decision making; and
- building capacity across institutions relevant to green growth, rather than on a project-by-project basis (Box 4.12).

### Box 4.12. **The holistic approach to capacity development in Mozambique**

In Mozambique, more than 70% of public investment comes from international development assistance. Development co-operation agencies therefore have an important role to play in greening national processes. This includes the recent consultation process facilitated by the African Development Bank and the UNDP in developing Mozambique's national Green Growth Action Plan. Support to capacity building in environmental governance has been provided through a number of projects. For example, the Netherlands and Denmark have provided capacity support to the Ministry of Co-ordination of Environmental Action, while the World Bank has helped create environmental units in various line ministries. However, there is still evidence that institutional capacity remains weak and core environmental functions are not yet fully effective. One of the problems is institutional complexity at the sector level. Another may be related to the fact that capacity-building initiatives funded by development co-operation agencies tend to be geared towards the delivery of project outputs rather than focused on the performance of core or programmatic environmental functions of the government. This has often resulted in duplication of work and poor co-ordination by the Ministry of Co-ordination of Environmental Action. A lesson from the Mozambique case is to target core environmental functions across multiple government domains rather than directing them towards a project's specific objectives and activities (OECD, 2012g).

*Source:* OECD (2012g), *Greening Development: Enhancing Capacity for Environmental Management and Governance*, OECD, Paris; Cabral, L. and D. Francisco (2008), *Environmental Institutions, Public Expenditure and the Role of Development Partners: Mozambique case study*, Final Report, DFID, London.

Capacity development for green growth requires setting specific priorities around a set of fundamental questions: capacity for what, by whom, why and how? Prioritisation can best be achieved through discussion with developing countries to develop a joint approach. These discussions can be guided by the following elements (OECD, 2012g):

- *Seek collaboration:* it is essential to have a shared understanding of objectives and priorities between the international donor community and developing countries. This allows the international community to gain a better insight into local activities, while ensuring developing country ownership and leadership of the change process.
- *Be transparent and talk with key stakeholders:* capacity development for green growth is a dynamic process and requires regular consultation and dialogue. Transparency requires the participation of key stakeholders (civil society groups, parliament, the media and others) wherever possible.
- *Start small, learn and adapt:* countries often tend to set overly ambitious targets but underestimate timeframes. Capacity development often responds well to more humble beginnings, more gradual learning and scaling-up.

- *Target "pockets of energy" and opportunities for "win-wins":* the most effective initial priorities for support are often those where readiness for change already exists and where win-win arrangements are possible for both developing countries and providers of the capacity development programmes.

While green growth is a relatively new concept, many development co-operation agencies and the broader international community have been providing capacity development support for environmental management and governance for several decades, sometimes under the label of "sustainable development". They have accumulated a wealth of experience and lessons on this critical agenda (OECD, 2012g). These include viewing capacity development for the environment as underpinning all development support and focusing on results. Experience also points to the importance of collaborating across agencies to maximise complementarities and harmonising approaches among providers of capacity development in each location.

A recent study estimated that development co-operation agencies alone spent more than USD 20 billion a year on capacity development for national planning and budgetary processes in developing countries (Otoo et al., 2009). To ensure that such large volumes of international support build real capacity for change, it is crucial to measure outcomes and long-term impact. Once capacity-building activities are clearly defined, it is easier to set targets for outcomes, prioritise resources, evaluate progress and build subsequent activities on lessons learned (OECD, 2012g).

### *Multilateral environmental conventions and voluntary agreements*

Many natural assets – forests, coastal waters, rivers, etc. – cross national borders. In these cases, multilateral agreements are essential to co-ordinate country efforts to pursue green growth. They are also widely recognised as efficient instruments for securing global public goods and protecting the global commons (e.g. marine fisheries and the atmosphere) (Haas et al. 1993; Biermann and Dingwerth 2004; Vogler 2003). There is some evidence that the authority of state actors is considerably weaker today than in the past on issues of public concern, including on global environmental issues (Levy and Newell, 2005; Paterson et al., 2003), so both formal multilateral government-centric and more informal forms of civil society action are relevant for green growth. Many developing countries are already party to multilateral agreements with environmental implications, and implementing their commitments can help them pursue green growth. Multilateral environmental co-operation can take many forms, such as legally-binding agreements, which are negotiated and enforced at the level of the nation-state; and voluntary intergovernmental or non-state actor efforts to reduce human impacts on the environment. In this section we discuss some of the most relevant multilateral agreements for green growth.

#### *UN Framework Convention on Climate Change*

The UNFCCC and its Kyoto Protocol create an international architecture for climate change action. The convention involves a comprehensive package of measures that includes: (1) the use of financial transfers to encourage broad engagement by developing countries; (2) strengthened international co-operation for low-carbon technology development and transfer; and (3) institutional capacity building to support action in developing countries. It also recognises that international co-operation on climate change will need to ensure equity and fairness. These issues are addressed through the "burden sharing" elements of the international regime (OECD, 2012h). The importance of helping developing countries adapt to climate change is receiving increasing attention in the international negotiation process.

International financial support is a central part of the climate change process. The Global Environment Facility is the convention's main financial mechanism (Box 4.3). In addition, parties to the UNFCCC have established three new funds dealing with adaptation: the Least Developed Countries Fund, the Special Climate Change Fund and the Adaptation Fund. The Cancun Agreements established a Cancun Adaptation Framework with an associated Adaptation Committee to oversee progress.[15] The Green Climate Fund is also being set up by the parties to the convention to support projects, programmes, policies and other activities in developing countries. This fund in particular recognises the need for a balanced treatment of adaptation and mitigation (OECD, 2012g). Climate change finance is set to increase substantially throughout the next decade as developed countries scale up resources to meet their pledges under the UNFCCC (Box 4.1).

The UNFCCC process and the Kyoto Protocol have also established a framework for global emissions trading. By making progress towards putting an international price on carbon emissions, this offers another means for public and private financial transfers from developed to developing countries. Individual systems, whether trading on a regional, national or provincial basis, can also connect to an international market through the inclusion of greenhouse gas offsets under the CDM. As discussed above (Box 4.7), the CDM has benefited many developing countries by supporting clean energy and other low emission investments while also delivering steady income and many other local benefits (e.g. air quality and better health).

### *Convention on Biological Diversity*

Like climate change, reducing biodiversity loss and the degradation of ecosystems services is a global environmental challenge. The Convention on Biological Diversity (CBD) is the main multilateral agreement to balance the benefits of conserving biodiversity – which accrue at local, regional and global scales – with the costs, which often fall largely on developing countries. In 2002 the CBD set a target to "significantly reduce the rate of biodiversity loss" by 2010. This target has not been met. However, there have been some areas of progress (OECD, 2012h). At the national level, 177 parties of the CBD, including many developing countries have made progress in establishing National Biodiversity Strategies and Action Plans[16] to bring together plans and activities for all sectors with an impact (positive and negative) on biodiversity. At the international level, the CBD Parties at the 10th Conference of the Parties in 2010 agreed a new package of measures that includes the Strategic Plan for Biodiversity 2011-2020, the Aichi Biodiversity Targets and a Strategy for Resource Mobilisation.

### *Voluntary initiatives to promote transparency*

Along with the various legally binding multilateral environmental agreements described above, global voluntary initiatives are also helping in the transition to green growth. The Extractive Industry Transparency Initiative (EITI) is one of the most well known of this kind, ensuring that the billions of people who live in countries rich in natural resources can benefit from the revenues earned from extracting them. The EITI aims to strengthen governance by improving transparency and accountability in the extractive sector. Similarly the OECD has worked with the UN, local governments, the private sector, and civil society organisations, to formulate the Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas (OECD, 2011e). Multinational companies, along with their local suppliers and service providers throughout the mineral supply chain, are the main target audience for this guidance. They are expected to adapt their internal procedures to avoid contributing to conflict and maximise opportunities for

sustainable growth through responsible mineral sourcing. The Forest Law Enforcement, Governance and Trade Action Plan is another voluntary scheme which aims to ensure that only legally-harvested timber is imported into the EU from participating countries.

Several initiatives target corporate behaviour and good practice in environmentally responsible investment. They offer potential to strengthen the international enabling environment for green growth. One prominent example in the area of climate change is the Carbon Disclosure Project, which is used by thousands of companies and cities across the world to report and disclose their greenhouse gas emissions (Kauffmann and Tébar Less, 2010; Kauffmann et al., 2012). The project has also begun to cover corporate disclosure of climate change risk and water strategies to provide transparency about corporate environmental performance and companies' possible environmental "liabilities". Another recent example is the Natural Capital Declaration – a voluntary business-led initiative to guide the financial sector to mainstream natural capital value into corporate accounting and reporting procedures; this example indicates the importance that the business community already attaches to what have been to date "invisible assets" (Mulder et al., 2012).

National efforts to promote transparent reporting of natural resources can also have international implications. For example, Section 1504 of the US Dodd-Frank Act, made law in July 2010, requires oil and mining companies registered with the US Securities and Exchange Commission to publicly report how much they pay foreign governments for natural resources. This information will shed light on critical sources of income for resource-rich countries around the world, helping governments to collect what they are owed and citizens to realise the full benefits of their natural resource wealth.[17]

Voluntary initiatives to promote transparent reporting of environmental and social consequences of business operations are increasingly becoming mainstreamed in the business community, including in developing countries. Many companies now see sustainability as a corporate goal alongside profitability. This trend in corporate behaviour could improve both efficiency in the reporting process and environmental and social outcomes. Companies that effectively measure and report their environmental performance can identify opportunities to reduce emissions and save energy, and to increase awareness about potential and future environment and climate change-related risks in order to achieve sustainability throughout the supply chain (Kaufmann et al., 2012). It is likely that more reporting frameworks will be developed over time, raising the risk of fragmentation. This should be avoided through designing mechanisms to streamline reporting information.

### *Promoting policy coherence for development*

The world economy is increasingly interdependent and the economic and environmental challenges we face are often global. Green growth in this context requires inclusive, collective, and coherent action by the international community. This will be vital for ensuring that developed country policies are coherent with development objectives in the areas of agriculture, trade, environment, labour, health and finance.

Policy coherence for development (PCD) is an approach that aims to ensure that a country's domestic policies are consistent with and support international development goals. Economic processes, investment, consumer behaviour and development can all be framed and influenced by national policies and international agreements, such as fair-trade schemes, standards, economic incentives, norms, and producer and consumer education. A PCD approach can serve as a unifying tool, joining the dots for a coherent international enabling environment. This is particularly useful in the context of green growth when many unprecedented changes are taking place in parallel.

Developed countries' green growth policies will affect both the pace of economic growth, development and poverty reduction in developing countries and the prospects for these countries' transition to green growth. This is because developed countries' public policies – regulation, taxation and incentive structures – will promote changes in the pattern of demand and production of goods and services that in turn have an impact on natural resources and the environment. Developed and developing countries' firms alike will seek to adjust their technologies, assets and market positions in response to policy changes and changing markets. Changes in trade patterns, technology demand, financial and investment flows, as already discussed earlier in the chapter, will provide both opportunities and risks for developing countries and their citizens, and hence will lead to both positive and negative impacts on development in developing countries.

The area of biofuels illustrates the policy coherence issue nicely. Driven by concerns over climate change, energy security and rural development, over the last decade many developed countries have adopted ambitious targets for the use of biofuels, often accompanied by policies designed to promote domestic production of these fuels through agricultural subsidies to raw materials, subsidies for producers and fuel-tax reductions or exemptions on sales of the fuels themselves. These policies are expected to drive a threefold increase in the consumption of biofuels in developed countries by 2030 (IEA, 2012).

However, depending on how they are designed and implemented, developed countries' biofuel policies can have both positive and negative implications for green growth in developing countries. They can create job opportunities and increase incomes on the one hand, but can also threaten food security. For instance, widespread incentives in developed countries for increasing the use of biofuels in transport have led to the diversion of arable land in developing countries from the production of food or animal feed to the production of biofuel feedstock such as maize or soybeans. This also drives up international prices for food commodities. This was one cause of the surge in food prices in 2007, which paralleled the rapid, policy-driven increase in biofuel demand from developed countries during that period (FAO, 2008a and 2008b; Headey and Fan, 2008). Other factors also contributed to the rise in food commodity prices, but the rising demand for biofuel crops helped to exacerbate supply and demand that in previous years could be more easily accommodated by the market. Net food-importing countries and net consuming households in poorer developing countries are made worse off by higher food prices because a larger percentage of their income is spent on food as an essential good. This case reflects clear policy inconsistencies for development, particularly when taking into account the fact that more than USD 8 billion in international aid were provided in 2007 to support food security objectives in developing countries (OECD, 2012i).

With the right design and management, policies to promote biofuels can become green growth opportunities for developing countries. The European Commission has set a target to limit to 5% the amount of food-based biofuels that can be counted towards the EU's biofuel target for 2020. This is a significant first step towards promoting more sustainable biofuel production. The measure is expected to stimulate the development of alternative biofuels from non-food materials, such as forest residues and straw. These emit substantially less greenhouse gas than fossil fuels and do not directly interfere with global food production. Certification schemes for biofuel imports from developing countries also offer the potential to help prevent ecologically important land, such as forests and wetlands, from being converted to biofuels production. Schemes to certify biofuels produced by small landholders may also create income opportunities to reduce poverty. However, these environmental, economic and poverty benefits can only be realised if strict rules are applied on the type

of biomass that can be used and the type of producers involved. Otherwise, certification to strict sustainability standards only serves to benefit those large landowners who can afford to participate in certification. Development co-operation programmes will also need to build sufficient financial and technical capacity in developing countries to actively participate in these emerging markets for biofuels (and other certified products) in such a way that they are beneficial rather than harmful to local economic development.

Coherent green growth policies in OECD countries can also help harness development objectives. New and improved technologies for the production of electricity from renewable energy sources – such as solar, wind, geothermal heat, biomass and small hydro – linked with new approaches to electricity generation and distribution, could play an important role in expanding energy access in poor developing countries and in reducing the costs of energy for the economy and for households in remote communities. OECD policies can promote the transfer of and investment in these technologies, as discussed in the earlier section, to bring more profound development outcomes. Some OECD countries have already begun to align their foreign investment policies with domestic investment policies in developing countries to ensure they are "doubly green" – i.e. that their investments in firms operating abroad and other investments in developing countries do not lead to environmental and natural resource degradation and are synergistic with their development support (Box 4.13).

### Box 4.13. **Coherent policies for global forest conservation: the case of Norway**

Norway's USD 664 billion pension fund is thought to be the world's largest sovereign wealth fund (SWF Institute, 2013). It is funded through surplus wealth produced by Norwegian petroleum income. For decades, the fund has been used to invest in companies worldwide to promote economic growth. Until recently, the environment and natural resource implications of these companies' production and supply chain were not the key focus of investment selection criteria. In September 2012, the fund launched new investment criteria. These require companies in which the fund invests to disclose their impacts on tropical forests, as part of a broad Norwegian policy to reduce global deforestation.

The move could usher in broader reporting on the forest footprint of company operations and boost eco-certification in forestry initiatives. The new information disclosure policy initially targets companies "with operations or value chains in sectors and regions materially exposed to deforestation risk". The move came after several campaigners targeted the fund for continuing to invest in companies associated with deforestation, especially those engaged in timber, palm oil, mineral, or wood pulp production. They highlighted the fact that this was inconsistent with the recent Norwegian government commitment to spend roughly USD 522 million on protecting global forests for mitigation and adapting to climate change, making it the world's biggest patron of rainforest conservation (Rainforest Foundation Norway and Friends of the Earth Norway, 2012).

Some specific questions used in the new reporting policy include (Norges Bank Investment Management, 2012):

- Does the company disclose information on its tropical forest footprint? How does it monitor its impact on tropical forests over time, and assess whether this impact poses a risk to its business operations?
- Has the company, or its suppliers, committed to comply with international standards for sustainable production of agricultural commodities, or sustainable forest management?
- Does the company report on the implementation of its commitments to reduce tropical deforestation?

Box 4.13. **Coherent policies for global forest conservation: the case of Norway** *(continued)*

The new policy does not specify sanctions for non-compliance, but in recent years the fund has divested from six companies involved in especially egregious deforestation. To do even more for development and poverty reduction, the Norwegian initiative could integrate criteria such as community-based forest management and land tenure for small landholders into their reporting system, so to ensure their investments reach more poor people and their communities.

*Source:* SWF Institute (2013), "Norway Government Pension Fund Global", available at *www.swfinstitute.org/swfs/norway-government-pension-fund-global*; Rainforest Foundation Norway and Friends of the Earth Norway (2012), *Beauty and the Beast: Norway's Investments in Rainforest Protection and Rainforest Destruction*, Rainforest Foundation Norway and Friends of the Earth Norway Oslo; Norges Bank Investment Management (2012), *NBIM Investor Expectations: Climate Change Risk Management*, NBIM, Oslo.

These examples show how ignoring PCD could undermine the potential of green growth policies and diminish their long-term impact to protect the environment, preserve natural resources and deliver local and global public goods (e.g. development, human security and health benefits, and climate protection). However, the practice of PCD is complicated precisely by the challenge of quantifying causal chains from OECD policy implementation to impacts in developing countries. The analytical challenges are multiple and include:

- Trade-offs between development and environmental objectives, which mean it is not always obvious how to value the relative contribution of an OECD policy to industrialisation and development versus its impact on air or water pollution, or carbon emissions for example, or between agricultural production and biodiversity protection.
- Heterogeneity between and within developing countries, creating both winners and losers from changes in OECD policies. The same subsidy, tariff or certification system is likely to have different effects depending on the economic structure of the country, the level of incomes of the affected producer or consumer groups and their capabilities to adapt to these policy changes.
- Even "coherent" green growth policies may have negative effects on development when developing country institutions fail to successfully manage opportunities or to have sufficient safeguards in place to protect the poor or the environment (Barry et al., 2009).

### *Lessons for moving forward*

The OECD has proposed a three-phased approach to guide its member countries in ensuring policy coherence for development (OECD, 2009b):

- *Setting objectives and creating awareness:* ideally the highest levels of government in OECD countries should have an overview across multiple policy objectives (linking environment, trade, finance, technology and development goals) to help balance the policy agenda and come up with creative solutions to possible problems.
- *Implementing ministerial and policy co-ordination mechanisms:* high-level authority also needs to acknowledge a wide range of actors involved in the policy process and ensure consistent dialogue between relevant stakeholders.

- *Enhancing monitoring and early engagement:* OECD countries need to review *ex ante* and *ex post* trends in the environment and social and poverty arenas. It is particularly important for OECD countries to build capacities in developing countries to collect data and gain relevant expertise in order to assess the degree of impacts that OECD policies may have on their development. It will also be essential for developing countries to have the capacity and resources to participate early and fairly in relevant international processes (e.g. setting international product certification standards).

### *Partnerships for green growth and development*

Successful national green growth policies in developing countries are multidimensional: they involve different parts of government, non-government actors such as the private sector and civil society, individual consumers and producers and are supported by the international community. With such diversity, good harmonisation across national and international actors is essential. A number of partnership initiatives are already underway involving civil society, business, policy makers and academics:

- The Green Growth Knowledge Platform (GGKP) is a joint initiative of the OECD, UNEP, World Bank and the Global Green Growth Institute. It seeks to improve and strengthen the design and implementation of green growth policies by identifying and addressing knowledge gaps in research and practice through the exchange of experience, knowledge and information among researchers and development experts. The research results are intended to guide practitioners and policy makers in their choice of economic growth and sustainable development.
- The Green Growth Best Practice Initiative (GGBP) comprises 15 leading environmental and development co-operation organisations, including the OECD. The initiative is designed to help governments, particularly developing countries, strengthen the quality of green growth planning and implementation through analysis and peer-to-peer learning. It will provide insights into best practice at all levels of the policy-making process.
- The Green Economy Coalition was established in 2009 and is composed of a diverse set of organisations and sectors, ranging from NGOs, research institutes, UN organisations, business and trade unions. It is another initiative to facilitate knowledge sharing and international co-operation. It aims to (1) mobilise a civil society movement around green economy issues, ensuring that multi-sector perspectives and voices from the developing world are integrated into all discussions; (2) build and share knowledge on the green economy; and (3) influence policy discussions at the international level and jointly communicate policy messages to key audiences.
- The Green Growth Action Alliance (G2A2) was formed jointly by leading companies from the finance, infrastructure, energy and agriculture sectors along with public finance institutions following the 2012 G20 summit in Mexico. The G2A2 is promoting country pilots and unlocking financing for key technologies like renewable energy, energy efficiency, water infrastructure, sustainable agriculture and aviation biofuels. It intends to inform the global agenda on climate and sustainable financing by sharing results with key platforms such as the G20, the United Nations Climate Change process, and the International Development Finance Club of development finance banks. The World Economic Forum serves as the G2A2 secretariat.
- The Green Jobs Initiative was created in 2008 as a partnership between the United Nations Environment Programme, the International Labour Organization,

the International Organisation of Employers and the International Trade Union Confederation. Through its members, the initiative offers research, policy advice and technical assistance on decent work opportunities and the social implications of moving towards a greener growth pathway.

The catalytic role of these initiatives – in stimulating green growth research, investment, technology identification, capacity development and knowledge sharing – will help to maximise the positive outcomes for developing countries.

## Notes

1. The OECD DAC has 24 members to date: Australia, Austria, Belgium, Canada, Denmark, European Union, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Luxembourg, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States. See *www.oecd.org/dac/dacmembersdatesofmembershipandwebsites.htm*.
2. See discussion on efforts in the climate change area in Clapp et al., 2012; and Buchner et al., 2011.
3. The policy statement is available at *www.oecd.org/dataoecd/52/29/50141822.pdf*.
4. World Bank, Asian Development Bank, French Development Agency, German Development Bank, Japan International Cooperation Agency and Korea Eximbank.
5. See *www.iso.org/iso/home/standards/management-standards/iso14000*.
6. See *www.ec.europa.eu/environment/emas*.
7. See *www.icca-chem.org/en/Home/Responsible-care*.
8. See *www.unglobalcompact.org*.
9. See *www.globalinvestorcoalition.org*.
10. Still, the exact share of private sector investment attributable to CDM projects is unclear partly because of methodological issues. For example: (1) some CDM projects are "unilateral" and thus developed on the basis of domestic investment only and not accounted for internationally; and (2) private finance flows may be purchasing the carbon offsets after the projects are up and running, rather than supporting up-front capital investment in the projects themselves (Corfee-Morlot et al., 2009).
11. In this report, the terms "green goods and services" and "environmental goods and services" are used inter-changeably. In 1999, the OECD and EUROSTAT produced a classification of environmental goods and services that divides them into three broad groups:

    1. The pollution management group: goods or services used for air pollution control, the management of wastewater and solid waste, the remediation and clean-up of soil and water, the reduction of noise and vibrations; and for environmental monitoring, analysis and assessment.
    2. The cleaner technologies and products group: goods that are intrinsically cleaner or more resource-efficient than available alternatives, and services related to the improvement, reduction, or elimination of the environmental impact of technologies, production processes or products. This group includes so-called environmentally preferable products, defined by the United Nations Conference on Trade and Development (UNCTAD) as "products that cause significantly less environmental harm at some stage of their life cycle than alternative products that serve the same purpose". Examples include improved solid-fuel cooking stoves and reusable shopping bags made of canvas or jute rather than plastic or paper.

3. Goods under the category of resource management are used to control indoor pollution, treat and purify potable water, or to help manage farms, forests or fisheries more sustainably. This group also includes goods used to conserve energy (such as double-glazed windows), and goods that help prevent or reduce the environmental impacts of natural disasters, such as fire-fighting equipment.

12. The estimation was calculated based on a list of 153 environmental goods that was submitted a few years ago to the WTO's Committee on Trade and Environment by a group of countries known as the "Friends Group".

13. The WTO's classification of environmental services, which dates from 1991, is considered by many experts to be overly narrow and out of date. Moreover, many of the services used to promote green growth fall under services categories, such as business services or construction and related engineering services (Steenblik and Geloso Grosso, 2011).

14. See *www.madb.europa.eu/madb/indexPubli.htm*.

15. See the Cancun Adaptation Framework webpage: *www.unfccc.int/adaptation/cancun_adaptation_framework/items/5852.php.*

16. See the CBD webpage *www.cbd.int/nbsap.*

17. For more information, see *www.sec.gov/spotlight/dodd-frank.shtml.*

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