Chapter 5

Trade Sustainability: Trade, Climate and Biodiversity Policy and Finance Inter-linkages

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5.1 Introduction

There is a wide literature on the inter-linkages between biodiversity and trade, as well as between climate change and trade and biodiversity and climate. An earlier paper by Worrall (2015) focused on the science of climate change and provided brief illustrations of its impacts in select tradable sectors in select Commonwealth countries. This chapter instead provides an introductory summary of the international policy and finance context and theoretical inter-linkages between climate, biodiversity and trade.

Except in the case of land capital, economic valuation has traditionally viewed the environment as an externality, or a provider of cost-free inputs and outputs, such as forests and water. Environmental degradation and climate change have the potential to reduce the availability of inputs for trade and impact trade processes, from depleting fishery stocks to shifting global patterns of production.

Small states and least developed countries (LDCs) are already facing challenges in participating effectively within the multilateral trading system. These economies are often highly reliant on natural resources (including agriculture and tourism) and therefore their trade livelihoods, processes and sectors will be vulnerable to the effects of climate change and environmental degradation. Small island developing states (SIDS) are vulnerable to sea level rise, and lack the financial and technical capital to address these challenges. In addition, SIDS alongside landlocked developing countries (LLDCs) face high transportation costs, which may be further exacerbated by climate mitigation agreements on maritime and aviation in the future (see Section 5.2). The presence of environmental degradation will reduce the ability of species and ecosystems to adapt to climate change, acting as an additional stressor, which means environmental conservation efforts will be required to support climate action.

At the international to domestic levels, trade policy-making remains largely siloed in focusing on trade, with little consideration of the environmental implications. The 2030 Agenda agreed in September 2015 by the UN General Assembly presents an exception through the Sustainable Development Goals (SDGs) to 2030, which consider to a greater extent the environmental (as well as economic) aspects of development when compared with the Millennium Development Goals (MDGs). Trade is included as a means of implementation (MOI) under SDG 17 for the achievement of other goals, including those related to climate and biodiversity. Much remains to be elaborated, and it falls to countries to develop synergistic approaches to reach the various SDGs set out.

The World Trade Organization (WTO) Ministerial Conference in December 2015 agreed the Nairobi Package. This includes Ministerial Decisions related to advancing work on small states, e-commerce, food security and LDC preferences, as well as reference to the need to 'discuss other issues for negotiation' without providing a definition of 'other issues' and creating opportunities for Member States to discuss other trade issues. The package presents both important opportunities and challenges for small states to advance their integration into the multilateral trading system. With the emerging trend of sustainable goods and services, there can be a comparative advantage in employing *sustainable* strategies for trade compared with industrialised nations, in reducing susceptibility to climate change and environmental degradation.

The International Institute for Environment and Development (IIED) (2002) provides the following definition of sustainable trade:

> Sustainable trade takes place when the international exchange of goods and services yields positive social, economic and environmental benefits, reflecting the four core criteria of sustainable development: 1. it generates economic value, 2. it reduces poverty and inequality, 3. it regenerates the environmental resource base, and 4. it is carried out within an open and accountable system of governance.

For the purposes of this chapter, the following definition will be adopted: *'Sustainable trade is the exchange of goods and services that yields positive economic and environmental benefits, internalising climate and biodiversity considerations.'* This includes trade resilience to climate change, weather-related shocks and efforts towards environmental sustainability. Trade resilience can in turn be defined as the extent to which trade flows, activities and livelihoods are susceptible to changing environmental conditions.

Potential conflicts between trade, climate and biodiversity are well noted, and the chapter focuses on enhancing synergies through joined-up thinking, in order to *reduce*, though not necessarily eliminate, these conflicts. The chapter briefly summarises recent global trade trends as a background to this chapter (Section 5.2) and provides an overview of the international policy context across the trade sustainability fields (Section 5.3). Section 5.4 provides analysis on the international public mechanisms for financing sustainable trade. Section 5.5 explores the inter-linkages between trade, climate and biodiversity and Section 5.6 concludes.

5.2 Global trade trends in brief

This section provides a brief overview of global trade trends. Trade liberalisation across borders and increased demand for transport logistics across fragmented global value chains (GVCs) have been implicated as contributing to the effects of climate change and environmental degradation. Despite this, the 2008 global economic crisis trends show global declines in trade growth—dropping from 7 per cent to 3 per cent—alongside a decoupling of gross domestic product (GDP) growth and trade (Commonwealth Secretariat, 2015). Deceleration in the fragmentation of GVCs and the rise of services may continue the trend.

The absolute value of global trade (in US dollar terms) dropped by 13.5 per cent in 2015 when compared with 2014 (ADB, 2016). Global contributions of agriculture and industry value-added to total GDP have declined, reflecting proportional increases in services value-added (percentages), a trend also reflected in Caribbean small states, Pacific island small states and Sub-Saharan Africa (excluding high-income countries) (2014 data, World Development Indicators (WDI), 2016). With liberalisation efforts to access regional and GVCs alongside fragmentation, there is increased emphasis on tackling non-tariff barriers and logistics to reduce trade costs and increase the efficiency of trade—particularly for SIDS and LLDCs.

Commonwealth countries have fared better on average compared with the global picture and experienced 4.3 per cent average growth in trade following the financial crisis: from 2000, Commonwealth countries' global exports of goods and services tripled to 14.6 per cent of global exports in 2013, dominated by a few large exporters (Commonwealth Secretariat, 2015). The contribution of Caribbean and Pacific regions has been small, however (ibid.).

Developing countries and small states have the potential to technologically leapfrog industrialised nations in creating policy and investment environments that encourage sustainable trade flows, activities and livelihoods through renewable energy deployment and prioritisation of 'green' sustainable products and services. Key obstacles remain for Africa, Caribbean and Pacific (ACP) countries in accessing GVCs and value chain upgrading, however, given their reliance on agriculture and natural resource extraction, high GDP contributions from primary production processes and steep transportation costs. Sectors reliant on natural resources will be those most vulnerable to the long-term impacts of climate change, disaster shocks and natural resource degradation. Strategies available to ACP countries include value addition in leveraging additional gains from natural resources (alongside policies to reduce incentives for overuse), servicification of economies (including climate mitigation considerations through the deployment of renewable energy systems) and regional integration (including infrastructure investment to boost sustainable transportation capabilities).

5.3 Trade sustainability in the international policy context

Multilateral policy-making is largely siloed across different intergovernmental bodies with trade, climate and environment responsibilities, with only select examples of inter-linkages, such as fisheries subsidies and food security. The SDGs are the exception in addressing trade and environmental considerations, with trade as a means of implementation for achieving the SDGs, including those on climate and biodiversity. Despite this, there is a clear synergistic discourse evolving in the literature and negotiations processes, with the international community increasingly raising the importance of environmental considerations in trade.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1973) is a legal framework that directly provides the 'strict regulation' of trade in species threatened with extinction (Appendix I) and species that may become under threat from extinction (Appendix II), with these categories

of species requiring permits for trade.[1] Despite the role of CITES, illicit trade in endangered species continues, given the high monetary reward in illicit markets. The CITES Conference of the Parties (COP) revises the categorisation of species wherever necessary.[2] This is complemented by the WTO Agreement on Sanitary and Phytosanitary Measures (the SPS Agreement), which allows members to offer environmental protection if there is a 'scientific justification' or protection that 'a Member determines to be appropriate' based on the 'the risks to human, animal or plant life or health' and avoiding 'arbitrary and unjustifiable discrimination' (WTO, 2016b).

With a remit to combat climate change, the UN Framework on Climate Change (UNFCCC) (1992) was founded on the principle of common but differentiated responsibility and aims to restrict atmospheric emissions to 450ppm, vaguely consistent with a 2°C change in global temperatures. UNFCCC Member States, with the noted exception of the USA, are currently bound by the Protocol to 2020. The Protocol includes reference to the fact that unilateral climate policies should not constitute 'arbitrary or unjustifiable discrimination' and not produce adverse effects on international trade. There are also three market mechanisms that permit the trading of emissions allowances between Parties.[3] (The trade implications of international climate policy are discussed further below in line with the Paris Agreement.)

The Convention on Biological Diversity (CBD) (1992) sets out the aim of promoting the conservation of biological diversity, its sustainable use and the equitable sharing of benefits. Negotiations on patenting typically follow a North–South divide, with advanced industrialised nations such as the USA and Japan unwilling to create uncertainty in the patenting process—whereby patenting can exclude the rights of countries that host the biological resources used in product development (Robinson, 2014). The WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), meanwhile, operates on the basis of 'national treatment' and the 'most-favoured nation (MFN) principle', requiring equal treatment of Member States regardless of their sovereignty—and raising questions for the sharing of benefits arising from genetic resources if these are patented. With regard to climate change implications, the literature has cited that genetic variants more capable of withstanding climatic effects may be patented, raising concerns in terms of access for poorer populations and economies.

The CBD has investigated the impacts of trade liberalisation on agricultural biological diversity, recognising that 'farming and the crucial benefits it yields – including food security, domestic employment and export-related economic growth – depends on agro-biodiversity' and provides ecosystem services such as nutrient recycling, soil health and regulation of pest populations (CBD, 2002, 2005). The intensification of agricultural systems, including excessive chemical inputs and unhealthy soil management, can tip soils into being carbon-emitting rather than carbon-absorbing. Agricultural subsidies that promote intensification can therefore result in both ecosystem degradation (through the degradation of ecosystem services) and increased sectoral emissions. More recently, the Export Competition Decision of the Nairobi Package aims to reduce export subsidies, particularly from developed

country Member States that account for some of the most intensive agricultural sectors in the world. (See further discussion below on the Nairobi Package.) For example, the EU Common Agricultural Policy has been under continued scrutiny for its environmental subsidies to Member States, which have been argued to equate to export subsidies in certain cases.

In linking the trade and environment, the Marrakesh Ministerial Decision on Trade and Environment agreed in 1994 established a Committee on Trade and Environment (CTE) whose mandate includes 'to make appropriate recommendations on whether any modifications of the provisions of the multilateral trading system are required, compatible with the open, equitable and non-discriminatory nature of the system'. The Committee convenes WTO Member States and other international organisations, including those with environmental remits. The Decision also notes that 'there should not be, nor need be, any policy contradiction between upholding and safeguarding an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment, and the promotion of sustainable development on the other'.

The reality, however, is that clashes often occur between environmental and trade considerations under WTO law, as outlined by arbitration cases under the General Agreement on Tariffs and Trade (GATT), Technical Barriers to Trade (TBT) and SPS Agreements.[4] The GATT (1994) Article XX outlines General Exceptions that can be applied, including environmental considerations, so long as 'such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination' or a 'disguised restriction' as 'necessary to protect human, animal or plant life or health' and 'relating to the conservation of exhaustible natural resources'. Though arbitrary rulings that have successfully used these exceptions are rare, there are some examples. For example, two cases under GATT Article XX have been successful: the France–Canada asbestos case, where France had banned imports on asbestos and asbestos-containing products, justified as 'necessary to protect animal, human, plant life or health'; and the European Commission (EC) (and others)-Brazil re-treaded tyres case, where Brazil banned imports on re-treaded tyres, ruling that alternatives to the ban were not 'reasonably available' (WTO, 2016b). The major impediment in many of the WTO arbitration cases has been that environmental measures under question often fail to demonstrate the 'arbitrary or unjustifiable' clause.

Environmental perspectives trade are embodied in the environmental provisions of the Doha Development Agenda that was launched under the Doha Development Round in 2001. This includes the liberalisation of environmental goods and services and the need to integrate environmental and trade rules, for example through annual meetings between the WTO and multilateral environmental agreement bodies. The Doha negotiations have since deteriorated, and plurilateral negotiations have developed between 17 WTO members since July 2014 on negotiations for an Environmental Goods Agreement (EGA) for the liberalisation of environment-related tariff lines. A session of the EGA Parties in August 2016 revised the list of environmental goods and services to 300 tariff lines and developed a roadmap to

secure an agreement by the end of 2016, which has since stalled (BioRes, 2016b). The 17 members taking part in the negotiations are Australia, Canada, China, Costa Rica, Chinese Taipei, the EU, Hong Kong (China), Iceland, Israel, Japan, Korea, New Zealand, Norway, Switzerland, Singapore, Turkey and the USA. The key success of the EGA will be in expanding coverage to facilitate technology transfer to developing country members.

Inter-linkages between the biodiversity and climate change themes in international policy processes are evidenced under the UN Reducing Emissions from Deforestation and Degradation (REDD+) Programme. Having first been placed on the agenda in 2005, the programme was agreed at the UNFCCC COP13 in 2007 and promotes climate mitigation and forest conservation through the national implementation of REDD+ activities—including engaging with forest trade supply chains to promote sustainable use of wood and wood products. Note that the UN-REDD Strategic Framework (2016–2020) includes the need to tackle perverse economic incentives arising from 'trade agreements [and] legal and illegal market demands'.

In addition, Member States to the CBD at COP12 in 2014 agreed the 'identification, elimination, phasing out or reform of harmful incentives, consistent and in harmony with the Convention and other relevant international obligations' and the need for the 'better application of data standards' across Parties. Beyond this, the outcome document set out the target to double biodiversity international public finance to developing countries, compared with the 2006–2010 baseline, for the period 2015–2020. Section 5.4 discusses international public financing for biodiversity in further detail. It is worth noting that healthy ecosystems are more resilient and likely to recover following weather shocks. In addition, conservation measures to reduce the pressures ecosystems are already facing will promote their resilience to climate change and hence the sustainability of ecosystem-dependent livelihoods and trade.[5]

More recently, 2015 was a major year for international policy landscape. The WTO Nairobi Package 2015 included opportunities to negotiate 'other issues', including through alternative 'architectures'. As a nod to the breakdown of the Doha Development Agenda, it provides an avenue to pursue new negotiations. The EGA itself is an example of new issues (environmental goods) and new architectures (plurilateral negotiations) already having been pursued. The agricultural provisions under the Package include the pursuit of negotiations for a Special Safeguard Mechanism for developing countries and public stock-holding for food security purposes, as well as renewed efforts in tackling trade distorting subsidies. If these provisions are agreed in future negotiations, they may permit countries to respond more effectively to climate and weather shocks. The servicification agenda, meanwhile, presents opportunities to move away from excessive reliance on natural resource-intensive sectors, especially in LDCs, which are the sectors most vulnerable to climate change impacts, as well as sectors with linkages to natural resource sectors. As noted, LDCs and small states are facing barriers from high trade costs and uncompetitive domestic sectors, and climate change will present additional challenges.

The 2015 Paris Agreement reached at the UNFCCC's COP21 set out the target to cap global emissions at 2°C above pre-industrial levels, with ambitions to increase to

1.5°C. The High Ambition Coalition, which comprised the African bloc, SIDS, the USA and EU, pushed for the inclusion of the higher ambition target of 1.5°C (Granoff, 2016).[6] The Paris Agreement, which came into force once 55 countries, representing 55 per cent of emissions, had formally joined, adopted a bottom-up approach that has permitted countries to submit Nationally Determined Contributions (NDCs). NDCs this stage are, however, not ambitious enough to reach the aforementioned targets—and the 'ratchet mechanism' of the Paris Agreement is also essential in allowing increased ambition every five years (ibid.). President Trump has also confirmed the withdrawal of the United States, with negative implications for the global emissions reduction target. Article 6 of the Paris Agreement recognises the development of new market mechanisms: (i) trade of emissions units between domestic emissions trading schemes and (ii) 'Internationally Transferred Mitigation *Outcomes*'—which, as Granoff (2016) outlines, indicates a wider recognition of climate activities beyond emissions credits. The potential relationship, if any, between the Paris Agreement and the Kyoto market mechanisms has yet to be clarified. The Paris Agreement also reaffirms commitments to achieving US$200 billion in climate finance a year by 2020 and climate mitigation through the REDD+ mechanism.

Successful implementation of the Paris Agreement would result in significant trade shifts globally, including through the deployment of climate adaptation and mitigation policies and the scale-up of green goods and services (Cosbey, 2016). Concerns over trade-distorting effects of unilateral climate policies raise important questions on the overlap of international agreements agreed through different international organisations. Climate policies could penalise fossil fuel domestic sectors and, unless matched by similar climate mitigation ambition, in other countries could result in carbon leakage, although bilateral and regional commitments could help ensure similar ambition. Domestic climate policy measures under the MFN principle may not be able to discriminate like products based on life cycle analyses of emissions content. As such, countries may not successfully be able to apply border adjustment tariffs to ensure imported products match domestic ambitions. The International Organization for Standardization (ISO), which develops and publishes international standards, includes a standard ISO 14067 that provides 'technical specification related to the requirements and guidelines for quantification and communication of greenhouse gas footprint of products' to guide producers (CTE, 2014).

It is worth noting that the Paris Agreement does not account for international aviation and shipping emissions, which are responsible for 5 per cent of global emissions (Jegou et al., 2016). Given the high logistic costs facing SIDS and LLDCs, it is pertinent these international agreements do not penalise trade to and from remote countries. The UN International Civil Aviation Organization agreed in 2016 the Carbon Offsetting and Reduction Scheme for International Aviation, a market mechanism of aviation emissions comprising a pilot phase from 2021 for countries that choose to take part; a second phase in 2027–2035 will be for all states (BioRes, 2016a, 2016c). The mechanism excludes SIDS, LDCs and LLDCs, as well as others with a minimal share of aviation emissions (BioRes, 2016a, 2016c). The International Maritime Organization also agreed in 2016 on a global data collection system on fuel oil consumption, with effect from 1 January 2018. This applies to all ships with an at least 5,000 tonnage, which

account for approximately 85 per cent of shipping-related emissions (BioRes, 2016a). In 2016, Member States to the Montreal Protocol controlling chlorofluorocarbons also agreed an amendment to tackle hydrofluorocarbons, which have a highly potent effect on the climate when compared with carbon dioxide (BioRes, 2016d).

The SDGs and sub-targets address, among others, trade, climate change and biodiversity to guide the international community to 2030. While the MDGs were a primarily social agenda, the SDGs present a more holistic approach, promoting economic and environment concerns in parallel. The 2030 Agenda preamble, goals and sub-targets—and in particular SDG 17 on MOI—put some emphasis on the need for cross-cutting consideration of development aims. Trade is considered a major MOI in SDG 17, with sub-targets on promoting an 'equitable' multilateral trading system; concluding the Doha Development Agenda; increasing developing countries' exports and doubling those of LDCs; and promoting duty-free quota-free access for LDCs. This is pertinent given the extent of environment-related goals—such as sustainable management of water, oceans and other ecosystems and the need to combat climate change, promote sustainable energy and build resilient infrastructure—which have important implications for inter-linkages between trade, climate change and biodiversity.

Though a comprehensive review of the SDGs is beyond the scope of this chapter, it is worth noting that SDG 12 aims to '[e]nsure sustainable consumption and production patterns' and the efficient use of natural resources, the rationalisation of fossil fuel subsidies, sustainable practices for transnational companies and technological capacity. The fossil fuel subsidies phase-out agenda is pertinent as it provides effective price signals for sustainable consumption and production patterns—and since 2009 the G20 has committed to phase out fossil fuel subsidies, with the G7 calling on countries to end these by 2025.

Both the 2030 Agenda and the Addis Ababa Action Agenda—the implementation agenda for the SDGs—recognise the respective multilateral authority of the WTO, the UNFCCC and the CBD. The Addis Ababa Action Agenda also considers the role of trade, beyond financing for development, in delivering the SDGs. In particular, it highlights a 'commit[ment] to coherent policy, financing, trade and technology frameworks to protect, manage and restore our ecosystems'. The agenda picks up on the role of trade in ensuring food security and eliminating agricultural export subsidies and subsidies contributing to overfishing as well as illegal wildlife trade.

Another key area in which the trade and environment worlds have come under renewed scrutiny is in the global fisheries market, discussed further in Chapter 4 of this publication. In brief, of 91 countries at the UN Conference on Trade and Development (UNCTAD), 14 have signed up to a roadmap to eliminate harmful fisheries subsidies. Global fisheries subsidies are estimated at US$35 billion, with $20 billion contributing to overfishing (UNCTAD, 2016c). The provisions include a roadmap for countries to report on what subsidies they are providing and to prohibit subsidies contributing to overfishing and illegal fishing (ibid.). (The UN Convention on the Law of the Sea and the Antarctic Treaty, which address marine biodiversity, are not discussed further here.)

Overall, it can be argued that there is an increasing appetite for environmental considerations in trade, as seen for example in the 2030 Agenda, the Addis Ababa Action Agenda, the WTO CTE and the EGA negotiations. This picture is reflected in the rising number of regional and bilateral trade agreements that address the environment. For example, the US Free Trade Agreements with Peru and Colombia, respectively, contain environment chapters that recognise 'it is inappropriate to encourage trade or investment by weakening or reducing the protections offered in their respective environment laws' and the importance of market-based incentives to encourage the 'conservation, restoration, sustainable use, and protection of natural resources and the environment'. Both the mega-regionals—the Trans-Pacific Partnership and the (draft) Transatlantic Trade and Investment Partnership—include chapters on SPS that reflect the language of the WTO SPS Agreement. The former includes a chapter on the environment, which includes the right of the Parties to regulate within their territories through measures necessary to achieve legitimate policy objectives, such as the protection of public health, safety and the environment.

Cosbey (2016) cites the role of subsidies and certification schemes as important in boosting climate-compatible products and services. While the potentially trade-distorting effect of subsidies is noted, they can be important in the adoption of 'new' and green technologies. Action on eliminating global fossil fuel subsidies, totalling US$493 billion in 2014, remains vital, to even the playing field for renewable energy technologies (IEA, 2016). For certification schemes, access to market information, finance and technology represents complementary policies required to shift into 'green' and sustainable products and services; these present significant barriers to adoption, particularly for small states, LDCs and micro, small and medium-sized enterprises (MSMEs) (see Chapter 8 in this publication).

5.4 International public financing options

This section provides an overview of international public financing earmarked for climate, biodiversity and Aid for Trade (AfT). Globally, volumes of public and private sector finance outstrip 'finance needs' for development; however, inequalities in distribution arise as a result of inefficient drawdown by certain economies (ERD, 2015). Small states, low-income countries (LICs) and LDCs are highly reliant on international public financing to achieve development objectives, given that they often attain comparatively lower levels of private sector investment and domestic resource mobilisation to meet development needs. International public financing is often catalytic in attracting other sources of financing, including through public–private partnerships and the lowering of private sector investment risk, and in the general creation of an enabling policy environment for domestic resource mobilisation and private sector investment.

Countries attracting official development assistance (ODA) and other official flows (OOF) can be crudely argued to have a comparative advantage in the sectors drawing down financing, whether this arises out of domestic or donor dynamics. They can also have increased ability to attract other types of finance in these sectors through ODA's catalytic effect (see ERD, 2015). It is not necessarily the case that international

public flows earmarked for specific sectors will be allocated based on the economic efficiency or policy effectiveness within a sector, as finance can equally be distributed based on financial needs or vulnerability needs assessments. For example, needs assessments may be particularly relevant for climate change vulnerability, whereas LDCs and LICs may be those least able to financially adapt to climate change. ODA can be allocated based on any number of methodologies, assessments based on country income or vulnerability; on whether the domestic political economy and legal environment is conducive to sectoral investments; or on donor priorities and trade agreements, among others.

In terms of trade sustainability, developing countries, and in particular LDCs, small states, LLDCs and SIDS, which face the greatest challenges in terms of trade competitiveness, also often lack the financial resources to invest in sustainable trade. Many of these countries will also be among those most affected by climate change, given that the poorest communities and countries will be those least able to finance adaptation capacity. They are also the most affected by biodiversity degradation and reliance on natural resource sectors, and many are exposed to the adverse impacts of climate change as a result of geophysical and weather characteristics. Climate and biodiversity financing can be used to increase the resilience of communities and value chains.

The methodological approach categorises international public finances earmarked for biodiversity, climate change and AfT according to country income group and geographical region. Corrections are made for population effects, with the figures presented in per capita terms wherever feasible.[7] This is particularly relevant for hypothesis on needs-based or vulnerability assessments, with regard to exposed populations. No correction has been made for any potential double-counting across various sources of data, relevant in particular for biodiversity and climate financing. Further, no distinction is made between grants and loans, except in the section on AfT— and further analysis for international public biodiversity and climate financing is required.

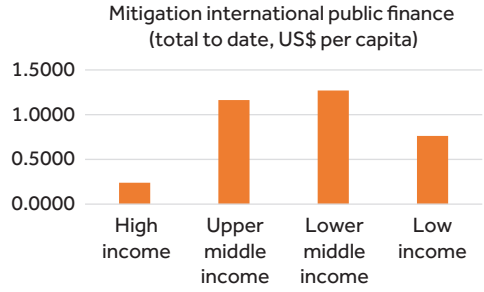
5.4.1 Climate change

The Climate Policy Initiative (2015) outlines that total climate finance flows reached US$391 billion in 2014, accounting for both private and public investment in climate mitigation and adaptation. The below figures show international public financing only for climate mitigation and adaptation financing to date, by income group and region, taken from the Climate Funds Update (CFU) database, including REDD+ finance. It is presented in per capita terms to correct for any population effects.

A higher level of international public mitigation financing has been allocated to middle-income countries (MICs) than to LICs and high-income countries (HICs). In per capita terms, US$0.24 has been awarded to HICs, $1.16 to upper-middle-income countries (UMICs), $1.27 to lower-middle-income countries (LMICs) and $0.76 to LICs to date. Adaptation financing trends reveal that the majority of international public finances are allocated to LICs, with low levels of allocation to MICs and HICs, and donors likely allocating finance on a financial needs basis. While $0.02 per capita

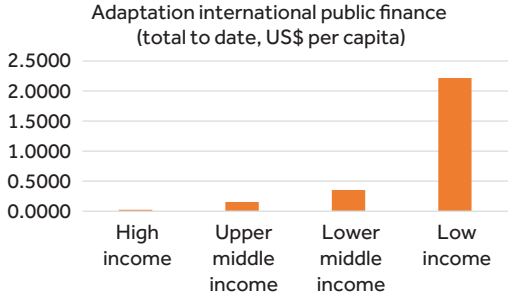
has been awarded to HICs, $0.15 to UMICs and $0.35 to LMICs, there has been a clear increase in per capita spending on LICs of $2.22. It is also worth noting that the CFU database total international public finance earmarked for mitigation purposes is over 2.5 times the level of adaptation ($7,737.68 million compared with $2,875.18 million).

Figure 5.1 International public financing for climate mitigation (to date) by country income group (US$ per capita)



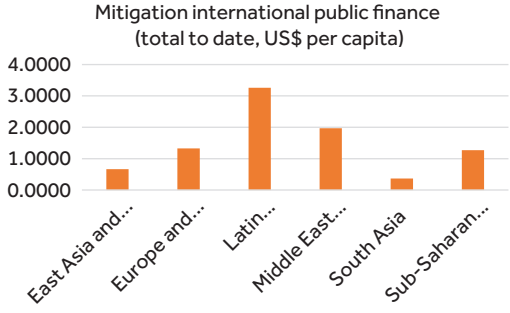
Source: CFU (2016)

Figure 5.2 International public financing for climate adaptation (to date) by country income group (US$ per capita)



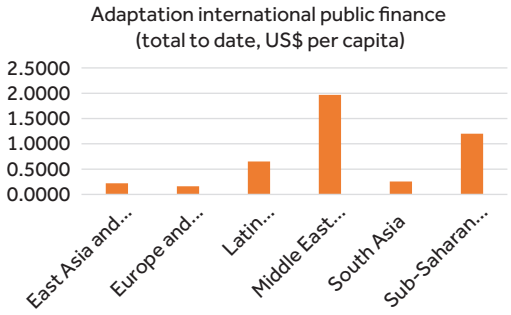
Source: CFU (2016)

Figure 5.3 International public financing for climate mitigation (to date) by region (US$ per capita)



Source: CFU (2016)

Figure 5.4 International public financing for climate adaptation (to date) by region (US$ per capita)



Source: CFU (2016)

From a regional perspective, Latin America and the Caribbean has received the highest amount of international public mitigation finance per capita ($3.26) to date, followed by the Middle East and North Africa ($1.97). This is significantly higher than East Asia and the Pacific, South Asia and Sub-Saharan Africa, which are attracting a range of $0.37–1.27 per capita. The Middle East and North Africa receives the highest amount of international public adaptation financing per capita ($1.97), followed by Sub-Saharan Africa ($1.20). This is compared with a range of $0.16–0.65 per capita for East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean and South Asia.

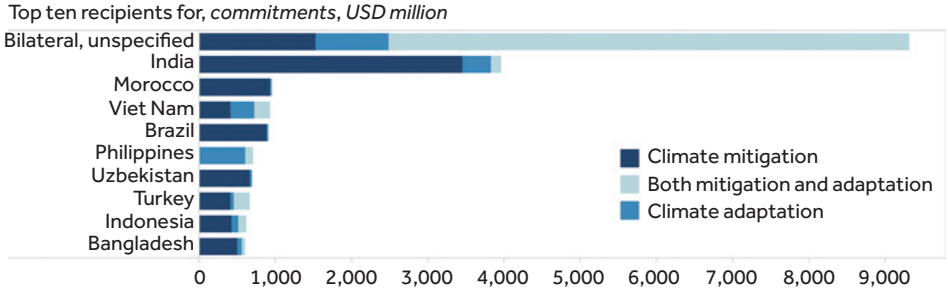
Using data from the Climate Policy Initiative (2015) (absolute data) in 2014, the regional picture is somewhat different, with East Asia and the Pacific drawing down the highest proportion of financing, followed by Western Europe. This could reflect both differences in accounting for both private and public sources of financing and potential shifts over time, with more financing being allocated in recent years to these regions.

Figure 5.5 shows the top 10 country recipients of Organisation for Economic Co-operation and Development (OECD) international public financial flows earmarked for climate purposes in 2014, combining both mitigation and adaptation financing. In this graph, India received the significant majority of climate international public flows for mitigation ($3,463.85 million), adaptation ($375.01 million) or both mitigation and adaptation purposes ($132.11 million). Perhaps not surprisingly, South Asia had the highest absolute level of international public financing for climate purposes in 2014 (including India), exceeding financing for Latin America and the Caribbean and the Middle East and North Africa as the second and third largest regional recipients, according to the OECD data.

5.4.2 Biodiversity

Parker et al. (2012) in the CBD High-Level Panel report (2014) estimate levels of global funding for biodiversity at between $51 and $53 billion annually. The below figures show international public financing only, earmarked for biodiversity purposes

Figure 5.5 Top 10 recipients of OECD climate financing (commitments, US$ millions)

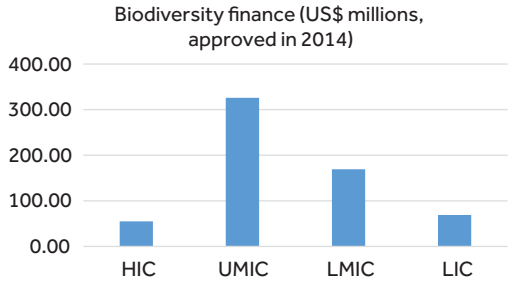


Source: OECD climate-related development finance data visualisation portal (2016)

by country income group and region and showing only finance approved through the Global Environment Facility (GEF) in 2014. The data are taken from the GEF website. The data by income group show both total finance in that period (US$ millions) and data per capita (US$ per capita). The regional data have not been adjusted for population, given the discrepancy between the World Bank WDI and OECD data in regional categorisations. The lower per capita figures presented below for biodiversity financing are a direct result of the data being restricted to international public financial flows through GEF in 2014, as compared with the climate financing data, which show total international public financial flows to date for climate purposes as recorded within the CFU.

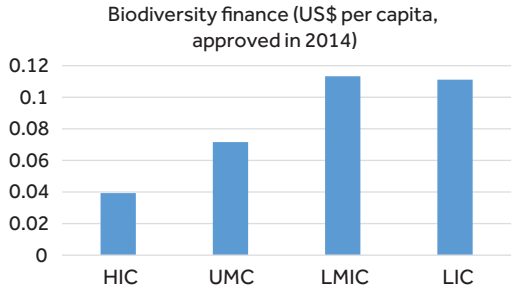
It is worth noting the significant change in trends when comparing the two country income graphs, with the latter showing trends corrected for population effects. The raw data show UMICs receiving the majority of international public biodiversity financing, totalling $326.04 million as compared with $54.88 million to HICs, $169.06 million to LMICs and $69.11 to LICs. When adjusted for population effects, the majority of the financing is allocated to LMICs ($0.113 per capita), followed by LICs ($0.111 per capita), with UMICs and HICs receiving a lower proportion ($ 0.071 and $ 0.039 per capita, respectively).

Figure 5.6 Biodiversity finance approved in 2014 by country income group (US$ millions)



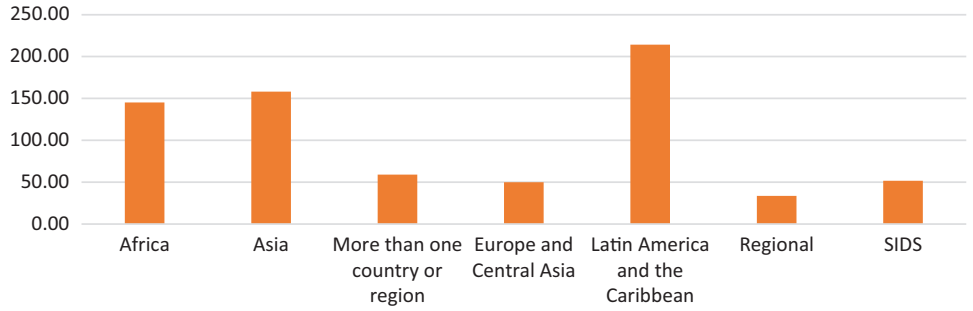
Source: GEF (2016)

Figure 5.7 Biodiversity finance approved in 2014 by country income group (US$ per capita)



Source: GEF (2016)

Figure 5.8 Biodiversity finance approved in 2014 by region (US$ millions)

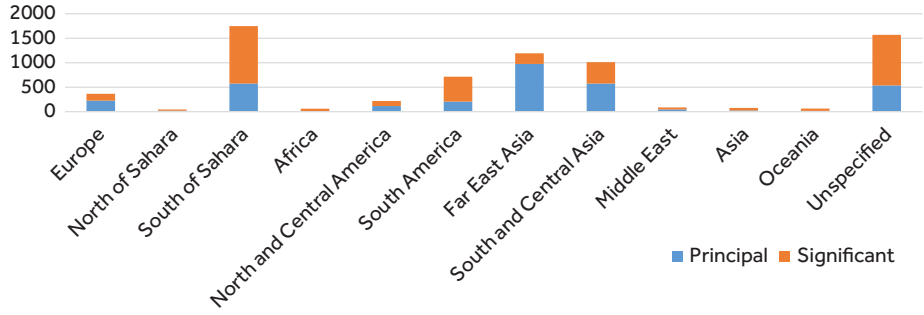


Source: GEF (2016)

When analysing the data by region, the majority of international public biodiversity financing approved in 2014 is allocated to Latin America and the Caribbean ($214.26 million), followed by Asia and Africa ($158.18 million and $145.13 million, respectively). SIDS and Europe and Central Asia receive a smaller level of financing ($51.59 million and $49.93 million, respectively), with the remainder distributed via regional or multiple country envelopes. Latin America and the Caribbean attracts the highest proportion of international public financing earmarked for both climate mitigation and biodiversity purposes; Africa and Asia receive the second and third largest volumes of financing.

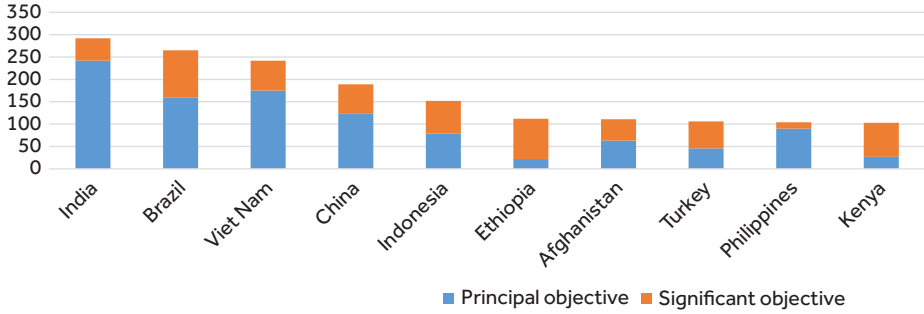
When compared with OECD Development Assistance Committee (DAC) regional data for 2014 in Figure 5.9, the picture changes to reflect higher proportions of international public financing to Sub-Saharan Africa ($576 million principal objective; $1,172 million significant objective), followed by Far East Asia ($977 million; $217 million significant objective).[8] South America attracts the fourth highest level of financing, after South and Central Asia. This indicates a difference in allocation across different mechanisms and donors of international public financing for biodiversity in 2014. When omitting the OECD DAC tracking of 'significant objective' (i.e. not the primary objective), Asia is the primary recipient of biodiversity financing.

Figure 5.9 ECD international public financing by region in 2014 (US$ millions)



Source: OECD DAC (2016)

Figure 5.10 Top 10 recipients of OECD international public biodiversity financing (US$ millions)



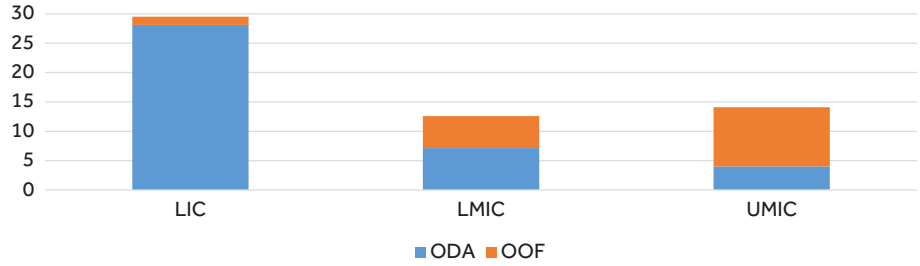
Source: OECD DAC (2016)

Figure 5.10 uses data taken from the OECD Rio Markers and shows international public financing for 2014 where biodiversity is the principal objective or a significant objective. India was the primary recipient of biodiversity aid, receiving $292 million in total financing ($242 million principal objective; $50 million significant objective). Note that India was also the primary recipient of international public mitigation financing. After India, Brazil ($160 million; $105 million), then Viet Nam ($175 million; $67 million) and China ($123 million; $66 million) received the highest contributions. Brazil and Viet Nam were also top five recipients of OECD international public financing earmarked for both biodiversity and climate change. The OECD data also show significant volumes of international public biodiversity financing earmarked to countries in Asia and Latin America.

5.4.3 Aid for Trade

Total AfT flows reached $42,830 million in 2014 (US 2013 constant prices) according to the OECD.stat database. The figures below show international public AfT financing in 2013 by income group and region, with data from the OECD.stat

Figure 5.11 AfT in 2013 by country income group (US$ per capita) (ODA and OOF)



Source: OECD.stat database (2016)

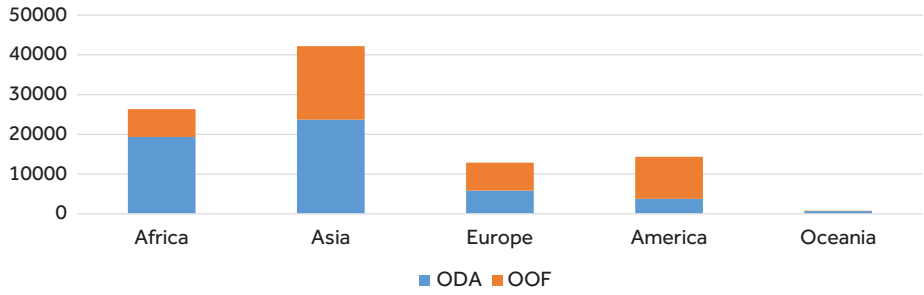
database. The blue figures show ODA and OOF and the orange figures ODA only. The regional data show US$ millions whereas the country income data have been corrected for population effects and show US$ per capita. In terms of country income classifications, the 'LICs' group includes LDCs, LICs and Other LICs according to OECD classifications, whereas the 'UMICs' includes data for UMICs and More Advanced Developing Countries and Territories (MADCTs).

There is a significantly higher proportion of international public financing for AfT (OECD, 2013 data) when comparing the US$ per capita figures with those presented in the biodiversity financing section (GEF, 2014 data). The data organised by country income group show the majority of AfT is being directed to LICs (including LDCs) as opposed to MICs. When OOF are removed, the ODA flows for 2013 show an even clearer country income trend, with LICs (including LDCs) receiving $28.12 per capita, LMICs $7.13 per capita and UMICs (including MADCTs) $4.02 per capita. This is compared with $29.53 per capita for LICs (and LDCs), $12.60 per capita for LMICs and $14.09 per capita for UMICs (and MADCTs) for ODA and OOF.

At the regional level, Asia attracts a significantly higher proportion of OECD AfT counting both ODA and OOF (totalling $42,202 million) compared with other regions. Africa attracts the second highest amount ($26,341 million) followed by America ($14,351 million). When OOF are omitted, ODA regional AfT shows a similar trend, with Asia attracting the highest amount, totalling $23,689 million, and Africa attracting $19,330 million in 2013. With ODA-only flows, Europe receives a higher proportion of ODA than America ($5,839 million and $3,769 million, respectively), though it receives less in total in comparison with America when OOF are taken into account.

Figure 5.12 shows the top 10 country recipients of OECD AfT disbursements in 2014 (US$ millions). As with international public financing for climate and biodiversity, India receives the highest amount of AfT financing ($5,007 million). Turkey receives $3,486 million, with the remainder receiving between $1,503 million (Egypt) and $2,658 million (Pakistan), excluding unspecified and Africa regional AfT disbursement. Other countries that are top 10 recipients of international public financing to all three sectors include Viet Nam and Turkey.

Figure 5.12 AfT in 2013 by region (US$ millions) (ODA only and ODA and OOF)



Source: OECD.stat database (2016)

5.4.4 International public finance conclusions

Allocation of international public financing for climate adaptation and AfT closely follows a country income trend, with lower-income countries receiving the highest proportion of financing. Climate mitigation and biodiversity financing do not follow such a trend, with MICs receiving the highest proportion of finance, which may be in part explained by more conducive business or policy environments. Bilateral, regional and multilateral trade agreements, including preferential treatment, are likely to affect the donor prioritisation of AfT. For example, under the WTO, LDCs are prioritised under AfT provisions.

From a regional perspective, Latin America and the Caribbean receives the highest proportion of international public financing earmarked for climate mitigation and biodiversity, respectively. This may owe in part to the existence of bio-diverse forests, which also act as emissions sinks, or to the fact that environmental degradation may have occurred on a wider scale in more industrialised nations. The Middle East and North Africa has been the greatest recipient of international public biodiversity financing per capita, followed by Sub-Saharan Africa. It may be that these regions have high presence of environmental awareness and environmentally dependent sectors, such as the ecotourism sector in Sub-Saharan Africa. Finally, Asia receives the highest proportion of AfT financing, followed by Africa. This is not necessarily surprising. The EC's 2017 trade map of agreements shows preferential trade agreements in place or under negotiation with countries, with the majority in Central and South America, Asia and Africa; in the Pacific (Oceania) region trade agreements are much less common.

India receives the highest total investments in AfT, climate and biodiversity financing. Further research is required to ascertain the factors that explain this advantage.

5.5 Conceptualising the inter-linkages

This section addresses the inter-linkages between trade, climate change and biodiversity for sustainable trade—that is *'the exchange of goods and services that yields positive economic and environmental benefits, internalising climate and biodiversity considerations'*. Table 5.1 provides an overview of the inter-linkages between these three sectors.

Table 5.1 Inter-linkages between climate change, biodiversity and trade

The force					
Climate change		**Biodiversity**		**Trade**	
Long-term	***Short-term shock***	***Long-term***	***Short-term shock***	***Long-term***	***Short-term shock***
The response **Climate change**					
		Bio-diverse and healthy ecosystems are less vulnerable to climate change (more able to adapt) and more able to act as sinks, absorbing emissions, requiring effective management of biological resources.	Localised destruction/ degradation or conservation events affect the emissions absorbed and emitted by ecosystems (e.g. forests) in the short term, with a long-term climate forcing effect. Effective legal and policy protection is required.	Trade has an impact on climate through scale, composition and technique effects. Trade can create opportunities in green technologies, goods and services (and reduce emissions) if conducive domestic frameworks are in place.	Production shocks can reduce emissions through a reduction in transport needs, the reduced supply of goods and services (scale effect) and shifts to less/more polluting goods and services (composition effect).

(*continued*)

Table 5.1 Inter-linkages between climate change, biodiversity and trade (*continued*)

The force					
Climate change		**Biodiversity**		**Trade**	
Long-term	***Short-term shock***	***Long-term***	***Short-term shock***	***Long-term***	***Short-term shock***
Biodiversity					
Shifts in climate will have largely negative, but also positive, impacts on species and ecosystems. Species and ecosystems will differ in their ability to adapt to changing conditions, but healthy ecosystems will be more resilient.	Weather shocks can cause localised and high-impact destruction or degradation of species and ecosystems that will differ in their ability to survive and recover. Effective management of biological resources will help reduce impacts.			Trade can have impact on biodiversity through scale, composition and technique effects, with Biotrade/ sustainability opportunities e.g. higher value environmentally sustainable products and services. Conducive policy frameworks are required to attract 'green trade'.	Input, production and logistics shocks can reduce the supply of goods (scale) and the biological input resources required, with some potential for shifts to other products (composition). Policy frameworks need to ensure this does not result in overexploitation.

(*continued*)

Table 5.1 Inter-linkages between climate change, biodiversity and trade (*continued*)

The force					
Climate change		**Biodiversity**		**Trade**	
Long-term	***Short-term shock***	***Long-term***	***Short-term shock***	***Long-term***	***Short-term shock***
Trade					
Climate change will affect natural, human and financial capital, e.g. shifts in climate will affect long-term water and land availability. Policy frameworks are needed to manage the long-term impacts of climate change.	Weather shocks can cause localised destruction and degradation of natural, human and financial capital e.g. labour and infrastructure. It can also increase/ decrease demand for goods and services (e.g. reparation labour).	Genetic and biological resources create opportunities for trade, especially within poorer communities more reliant on natural resources. Effective legal and policy environments are required for sustainable use.	Localised destruction/ degradation or conservation events will affect the biological resources available for livelihoods and trade purposes. This can increase/decrease the impact of biological resource use in the short term.		

5.5.1 Policy, investment and trends

The implementation of multilateral climate and biodiversity agreements is likely to have wide-reaching implications for trade, as will multilateral trade agreements for the realms of climate and biodiversity. Section 5.3 outlined some of the ways in which multilateral policy agreements impact are interrelated and impact on one another. Multilateral negotiation processes and implementation processes at domestic level need to take into account inter-linkages so that proactive sustainable trade measures can be put in place and conflicts can be avoided. The WTO's dedicated CTE, for example, helps serve this purpose. CBD members have also addressed the theme of trade liberalisation in COPs (see CBD, 2002, 2005).

While trade and climate change can be characterised under the polarity of reconciling fossil fuel-based globalisation with environmental implications, sustainable trade policies can also generate positive climate and biodiversity externalities that are not trade-distorting. An example was eliminating fossil fuel subsidies worth US$493 billion in 2014 (IEA, 2016) to create an even playing field for all types of energy, as the G7 has committed to do by 2025 (Mathiesen, 2016). Bearing in mind that renewables are already beginning to compete with fossil fuels in certain markets, the impact could tip the balance in favour of these, reducing the need for renewable energy subsidies, which were at $112 billion in 2014, while biofuel subsidies were estimated at $23 billion (Kavanagh, 2016). Other examples include research and development investments, including in 'green' technologies; lowering tariff and non-tariff barriers for environmental goods and services, such as the plurilateral EGA that select WTO Member States are working towards; and shifting economic and financial incentives to encourage investments with returns along longer timescales, which include some form of environmental accounting. These suggestions are, however, not new, and the emphasis remains on the effective implementation of such measures.

In addressing the conflicts, globalisation and trade liberalisation creates increasing demand for products and services and for cross-border regional and international transport. This holds the potential for increased emissions, assuming fossil fuel-intensive production, energy systems and transport. The WTO categorises the impact of trade on climate according to (i) the 'scale effect' of increased output; (ii) the 'composition effect' of trade liberalisation in changing the mix of production; and (iii) the 'technique effect' through the promotion of technologies (WTO, 2016a; Worrall, 2015). Decreases in global agricultural productivity are predicted to 2050, alongside increasing strains on natural resource and energy inputs for manufacturing and services infrastructure. Climate change will affect human, financial and infrastructure capital. For example, UNCTAD (2011) has outlined that, by 2050, 136 major port cities will experience infrastructure asset damage worth up to US$28 trillion, assuming a sea level rise of 0.5 metres. The new Paris Agreement excludes emissions from aviation and shipping, which currently account for 5 per cent of global emissions—and this is likely to increase with the increased fragmentation of trade and higher demand for products (Jegou et al., 2016). This shows the importance of the need to develop an international transport carbon market mechanism, such as the International Civil Aviation Authority is developing for aviation emissions.

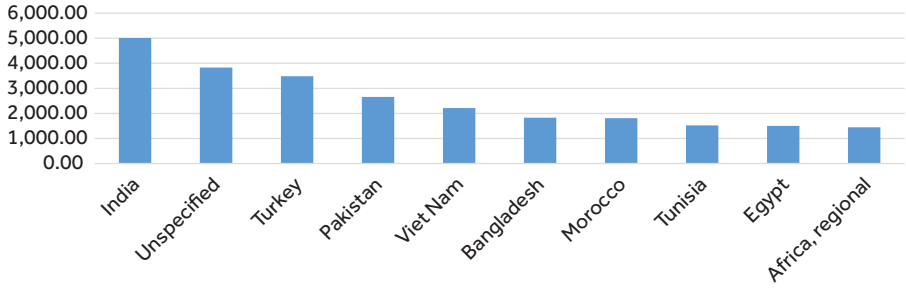
Healthy ecosystems are better able to withstand weather shocks and other stresses, with conservation investment and policy increasing the resilience of ecosystems to climate change. Beyond re-conservation measures, sustainable management of existing natural resource assets is required. When addressing trade and biodiversity, environmental accounting needs to address the value of biodiversity and ecosystem services. This is often a nuanced exercise, where for example a fully grown Amazon rainforest palm tree (*Euterpe precatoria)* has higher value than a newly planted tree—both in terms of its mitigation services and as an input for sustainable trade. Sustainable agricultural practices, including in reducing fertiliser inputs, decreasing water usage and increasing agricultural biodiversity, can support some level of agricultural adaptation, though this needs to be matched with ambitious climate targets to be effective. Biodiversity and trade can interact synergistically provided a conducive policy environment is established at the domestic and international levels; this includes investments that operate with an understanding of environmental accounting and are included in policy decision-making.

The UNCTAD Biotrade initiative provides demonstrated examples of sustainable trade in goods derived from biological resources that has contributed to local social and economic development, including in rural, indigenous and marginalised communities. This trend has been bolstered through increasing global demand for sustainable goods and services—a growing sector that recent estimates suggest amounts to US$5.2 billion (UNCTAD, 2016a). UNCTAD (2016b) defines Biotrade as 'the collection, production, transformation and commercialization of goods and services derived from native biodiversity (ecosystems and species) under social, environmental and economic sustainability criteria'.

Conservation incentives can also be linked to tourism services with linkages into the local economy, creating local value chains into the agriculture, manufacturing and services sectors. General trade enablers, including access to market information, finance and technologies for small-scale producers and MSMEs, are general enablers for producers and service providers in developing countries, including in sustainable products and services. Such schemes are often taken up asymmetrically according to the size of the company and access to information, with MSMEs less likely than larger corporations to adopt new sustainable technologies, processes or inputs. For certification schemes, for example, access to information and markets is vital, but only firms with the financial and technological capital required to invest in sustainable goods and services will be able to benefit from the sustainability market. Education and training on biodiversity can also provide further incentives for sustainable trade.

Conflicts can arise whereby globalisation and trade liberalisation create increased demand for goods and services that rely on unsustainable use of natural resources or the conversion of land (including for agricultural purposes). This puts pressure on environmental assets, including through unsustainable practices in manufacturing and services. This can result in reduced ecosystem services and natural resource assets, including carbon mitigation and adaptive services, such as in the role of coastal mangroves and marshlands in buffering sea level rise and storm shocks (CBD, 2002). Meanwhile, trade liberalisation has also in part been implicated in the spread of

Figure 5.13 Top 10 recipients of OECD AfT in 2014 (US$ millions)



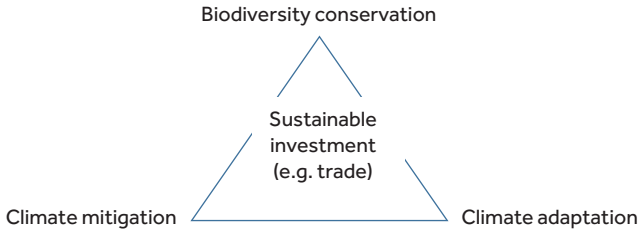
Source: OECD.stat database (2016)

invasive species, with its associated impacts on fauna and flora in overseas territories, and the potential for knock-on impacts on biodiversity levels and ecosystem services. Robinson (2014) estimates the cost of invasive species to the global economy at US$1.4 trillion in 2014. Costanza et al. (2014) estimate the global value of ecosystem services at $145 trillion per year (based on 1997–2011 data). Healthy ecosystems will increase the resilience of ecosystems to such shocks, whereas genetic diversity provides species and ecosystems with 'options' to adapt to climate change and other economic stressors.

Investments in climate mitigation, adaptation and biodiversity conservation will not necessarily contribute positively across all these facets. This points to the need for sound policy-making to manage the trade-offs of sustainable trade. For example, while biofuels can be climate-mitigating in reducing fossil fuel demand, life cycle analysis reveals that they can also act as a net source of emissions if unsustainable agricultural practices are taken into account. Such practices include their production on deforested land, intensive use of chemical inputs and utilisation of unhealthy soils that act as a source of emissions. The biofuels market is estimated at US$168 billion in 2016 and is predicted to grow by over 4 per cent per annum to 2024 (Biofuels International, 2016). Renewable energy investments may also lead to the creation of energy assets and grids in areas susceptible to climate change impacts in the medium to long term, such as coastal regions, or involve the clearing of important biological resources that are not climate-mitigating but are important for biodiversity purposes. Sustainable trade investment should consider the impact on all these facets.

Beyond the long-term implications of climate change and biodiversity for trade and vice versa, short-term shocks can create significant implications for the social,

Figure 5.14 Sustainable investment



economic and environmental aspects of trade sustainability. It is worth noting that simultaneous shocks, for example simultaneous lower market demand and a natural disaster, would create a stronger combined shock to any given economy than a single shock force acting on trade sustainability. An overview of long-term forces and short-term shocks for trade sustainability is provided in Table 5.1 above.

5.5.2 Social implications

A full examination of the social implications of trade sustainability is beyond the scope of this chapter. However, in the context of trade as a force for poverty reduction and economic development, unsustainability creates issues for the sustainability of global achievements in development, including poverty reduction efforts. The Overseas Development Institute (ODI) (2015) and the World Bank (2016) have argued the need to think about poverty reduction synergistically with climate change, given that lower-income households and women are among those most vulnerable and dependent on biological resources for welfare and livelihood purposes—sectors that will be highly affected by climate change. A modelling exercise reveals that unchecked climate change could draw up to 720 million people back into extreme poverty in the period 2030–2050 (based on a 3.5°C emissions trajectory; ODI, 2015). Climate change therefore poses a severe threat in terms of increasing inequality and poverty over the long term, including through impacts on biological resources. Renewable energy investments, beyond climate mitigation potential, can also increase access to energy in rural populations.

Briefly, research has also explored the role of climate change in conflict and violence (e.g. Hsiang et al., 2013, Kelley et al., 2015). A recent paper outlines climate shocks as responsible for 23 per cent of conflict outbreaks (Schleussner et al., 2016), whereas the UN Environment Programme (UNEP) (2016) claims 40 per cent of armed conflict between government and instate groups has a link to natural resources. UNCTAD (2016b) has also demonstrated the role of Biotrade in post-conflict recovery in Indonesia and Colombia through social and economic recovery.

5.6 Conclusion

This chapter has summarised the international policy environment for trade sustainability and discussed international public financial resources earmarked for climate, biodiversity and trade purposes, as well as examining the inter-linkages in more detail. The analysis demonstrates the presence of trade-offs between climate, biodiversity and trade objectives and investments, with long-term horizons required for policy and investment decisions to promote climate adaptation, mitigation and environmental conservation.

Within the international policy context, international policy-making across climate, biodiversity and trade spheres remains largely siloed. The SDGs present an exception, with objectives across these three trade sustainability spheres. Trade is included as an MOI to achieve the SDGs in the 2030 Agenda and the Addis Ababa Action Agenda, including objectives on climate and biodiversity. This platform is important for the

WTO, the UNFCCC and the CBD, among other international organisations, to begin to engage more effectively on the issue of trade sustainability of value chains. It will also help small states begin engaging with trade sustainability, as countries particularly reliant on natural resources. International public financing is largely geared towards the achievement of international development objectives, and could also help in the drawdown of additional international public financing for trade sustainability.

WTO, UNFCCC and CBD ministerial meetings and conference of the parties already often host representatives from respective international organisation. The WTO, for example, has a dedicated Committee on Trade and Environment. However, this has not necessarily translated into boosting the importance of sustainability considerations in international trade policy processes. The onus remains on individual countries to develop national policy that effectively intertwines climate, biodiversity and trade considerations for sustainable development. Though not fully addressed in this chapter, the social development implications would need to be thoroughly integrated.

Given the regularly enforced dispute settlement mechanism of the WTO, which can carry more weight with Member States than certain environmental agreements that lack strong enforcement measures, the incorporation of environmental considerations within WTO processes (from negotiation to implementation) will be vital. This is particularly relevant for small states that already face challenges in the implementation of WTO rules and that may lack the financial and technical capital to support dispute settlement processes. Technical contributions from environmental experts should be consulted in the formation of new WTO agreements; whilst WTO environmental exemption rules would allow countries to implement unilateral environmental policy, they need to ensure these are not a means of arbitrary or unjustifiable discrimination. The introduction of new rules is necessary given the ineffectiveness of 'environmental exemptions' rules already included in the WTO dispute settlement process. Furthermore, the plurilateral negotiations on the EGA present a positive example of trade negotiations under the WTO as a beneficial force for the environment, in facilitating the movement of environmental goods and services.

From an international public finance perspective, there are differences in the way that climate, biodiversity and AfT financing is disbursed across country income groups and regions. According to the data selected for use in this chapter, there are some clear trends. When corrected for population effects in disbursement, international public financing for climate mitigation and biodiversity are both directed primarily to UMICs and the Latin America and Caribbean region. For climate adaptation international public financing, LICs and the Middle East and North Africa receive the highest proportion per capita. The highest proportion of AfT is allocated to LICs and Asia (not corrected for population effects owing to differences in data categorisation). More research needs to be conducted to isolate the effects of loans versus grants in allocations, which were here identified only for AfT.

For countries and regions that are seeking to finance trade sustainability transitions and policies, respective comparative advantages are apparent in attracting international public flows. It is also recognised that international public financial

flows can be catalytic in attracting alternative sources of financing, particularly if used to support improvements in the business environment or to encourage public–private partnerships (see discussion in ERD, 2015). More analysis is required to isolate country-level comparative advantages, but the regional financial data provided in this chapter provide a first step for policy-makers. Small states and LICs are particularly dependent on international public resources to finance development policy—and the analysis shows that climate adaptation and AfT allocations are strongest to LICs and LDCs. Meanwhile, cost-effective spending of limited international public resources can also be maximised through joined-up thinking on trade sustainability.

While short-term trade and economic considerations can be the primary focus of national policy-makers and investments, the implications of climate change and biodiversity degradation for value chains will have significant effects on existing trade patterns at domestic to international levels in the longer term. Examining the possible synergies and trade-offs between trade, climate and biodiversity becomes essential at national level, in light of international sustainable development objectives (such as the 2030 Agenda). Existing trade patterns can both exacerbate climate change and biodiversity degradation and be susceptible to the future impacts of climate change and biodiversity degradation. However, trade can also help support green growth opportunities in countries. When trade policy and national policy strategy are developed at the country level, identification of the risks and opportunities of climate and biodiversity should be fully integrated into policy-making processes; while many countries already possess environmental safeguards for policy and investment decisions, these need to be maximised in order to deliver transformational change into climate-resilient and sustainable value chains to support the long-term development of trade livelihoods, processes and sectors. Beyond financial support, international support may be required by small states that lack the technical know-how to do so, with the potential to draw down environmental knowledge, for example from UNFCCC and CBD mechanisms or developed country partners.

In providing international policy and public finance context, as well as theoretical investigation of inter-linkages, this chapter has aimed to provide a first step in further research on trade sustainability at international to country levels.

Notes

1 Various other multilateral environmental agreements are not mentioned here, given their number.
2 The CITES 17th COP in September 2016 revised the status of a variety of marine and land species, including thresher sharks.
3 The Kyoto Protocol commits Annex B industrialised nations to 'assigned [emissions] amounts'. Annex B Parties are permitted under Article 17 to sell 'excess' emissions, known as Assigned Amount Units to other Annex B Parties and the transfer of climate mitigation activities to other countries is also permitted through (i) Land Use, Land Use Change and Forestry removal units, (ii) emission reduction units from Joint Implementation projects in Annex B countries and (iii) certified emissions reduction units from Clean Development Mechanism (CDM) projects in non-Annex B developing countries.
4 See the WTO website for examples of environment-related arbitration cases.
5 The Aichi Biodiversity Targets (2011–2020) agreed by CBD Member States aim to phase out subsidies harmful to biodiversity, preserve genetic diversity and control invasive species pathways. The latter

is particularly pertinent given that international transport (air and water) has been implicated in the spread of invasive species. With regard to pollution, transnational corporations (including fossil fuel extraction corporations) are often implicated in large-scale environmental violations in countries of operation and are often difficult to bring to account, largely because of the complicated structure of these corporations, which have subsidiaries across various legal jurisdictions, and the unwillingness of host governments to penalise them.

6 Some climate research suggests that emissions already emitted will lock the world into temperature increases of at least 1.5°C above pre-industrial levels; the upcoming publication by the Intergovernmental Panel on Climate Change (IPCC) will explore the 1.5°C level in further detail.

7 Population figures are taken from the World Bank income and regional classifications, therefore population corrections were feasible only for those data sources that use the same categories. WDI 2014 aggregate population data were used for the adjustment.

8 'Activities scored as "principal" would not have been funded but for that policy objective; activities scored "significant" have other primary objectives but have been formulated or adjusted to help meet the policy objective' (OECD, 2015).

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