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Legal Aspects of Climate Change Adaptation

The IBA Working Group on Climate Change Adaptation

Foreword

To further explore and respond to the findings and recommendations in the 2014 IBA report ‘Achieving Justice and Human Rights in an Era of Climate Disruption’, in 2015, the IBA initiated work on two follow-up reports focused respectively on mitigation and adaptation. With respect to mitigation, the IBA convened an Expert Working Group to evaluate approaches for resolving obstacles to citizen claims to compel government mitigation, which in 2020 published a Model Statute for Proceedings Challenging Government Failure to Act on Climate Change. With respect to adaptation, the IBA convened an international group of legal scholars and practitioners to study and make recommendations regarding critical legal aspects of climate change adaptation. After initial discussions about the most pressing needs related to adaptation, the IBA Working Group on Climate Change Adaptation elected to focus its efforts on three areas central to adaptation to climate change where law, and in particular international law and policy, will play a crucial role in shaping the effectiveness of adaptation: migration, technology transfer, and food security. Members of the working group organised into subgroups to focus on these specific areas and met regularly by phone to coordinate their research and drafting. Most members of the working group were also able to meet in person in New York City in April 2016 to share progress and review each section of the report.

The report text was largely drafted and complete in 2017. However, for reasons beyond the control of the authors contributing to the report, publication was regrettably delayed. The research and drafting of the report was accordingly completed well in advance of publication and some citations and analysis reflect this delay.

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About the IBA

The International Bar Association (IBA), established in 1947, is the world's leading organisation of international legal practitioners, bar associations, law firms and law societies.

The IBA influences the development of international law reform and shapes the future of the legal profession throughout the world. It has a membership of more than 80,000 individual lawyers and more than 190 bar associations and law societies spanning over 170 countries.

Inspired by the vision of the United Nations, the IBA was founded in the same spirit, just before the Universal Declaration of Human Rights was proclaimed in 1948. The IBA covers all practice areas and professional interests, providing members with access to leading experts and up-to-date information, enabling them to better represent their clients' interests.

Through its various committees, fora and task forces, the IBA facilitates the exchange of information and views among its members as to laws, practices and professional responsibilities relating to the practice of law around the globe.

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List of acronyms

ACCNNR	African Convention on the Conservation of Nature and Natural Resources
AMIS	Agricultural Market Information System
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AU	African Union
BITs	bilateral investment treaties
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CBI	Climate Bonds Initiative
CDM	Clean Development Mechanism
CFS	Committee on World Food Security
CIF	Climate Investment Funds
COP	Conference of the Parties
CPI	Climate Policy Initiative
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CTCN	Climate Technology Centre and Network
DRI	displacement risk index
DRM	disaster risk management
ECOWAS	Economic Community of West African States
ECT	Energy Charter Treaty
EEZ	Exclusive Economic Zone
EIA	Environmental impact assessment
EIB	European Investment Bank
EC	European Commission
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign direct investment
FET	Fair and equitable treatment
FTA	free trade agreement
GAE	geographic areas of climate hazard exposure
GATT	General Agreement on Tariffs and Trade
GEF	Global Environment Facility

GHG	greenhouse gas
HLTF	High Level Task Force on Global Food and Nutrition Security
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICSID	International Centre for Settlement of Investment Disputes
IDMC	Internal Displacement Monitoring Centre
IDPs	internally displaced persons
IFAD	International Fund for Agricultural Development
IIA	international investment agreement
IIIL	international investment law
ILO	International Labour Organization
IOM	International Organization for Migration
IORA	Indian Ocean Rim Association
IP	intellectual property
IPCC	Intergovernmental Panel on Climate Change
ISDS	investor-state dispute settlements
LDCs	least developed countries
LME	large marine ecosystem
MDBs	multilateral development banks
MDGs	Millennium Development Goals
MERCOSUR	Southern Common Market
MFN	most favoured nation
MiFID II	Markets in Financial Instruments Directive II
NAFTA	North American Free Trade Agreement
NAMAs	Nationally Appropriate Mitigation Actions
NAPAs	National Adaptation Programmes of Action
NDA	National Designated Authorities
NGO	non-governmental organisation
NMHS	National Meteorological and Hydrological Services
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
OHCHR	Office of the United Nations High Commissioner for Human Rights
PDD	Platform on Disaster Displacement
PEPs	public employment programmes
PWA	Palestinian Water Authority
R&D	research and development
RECs	regional economic communities
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SADC	Southern African Development Community
SCF	Standing Committee on Finance

SDGs	Sustainable Development Goals
SIDS	small island developing state
TEC	Technology Executive Committee
TNAs	Technology Needs Assessments
TNCs	transnational corporations
TRIMS	Agreement on Trade-Related Investment Measures
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNCITRAL	United Nations Commission on International Trade Law
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNGP	UN Guiding Principles on Business and Human Rights
UNHCR	United Nations High Commissioner for Refugees
UNHRC	United Nations Human Rights Council
WFP	World Food Programme
WHO	World Health Organization
WIM	Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts
WTO	World Trade Organization

Introduction

Through the Paris Agreement of 2015,² climate change has emerged as one of relatively few areas in which global collective action presently appears conceivable. Progress on climate change will, of course, depend on stability in other domains: countries at war, literally or metaphorically, cannot deliver the economic transformation and technical collaboration needed to successfully implement the Paris Agreement. This is especially the case given the voluntarism of Paris.³ At the same time, climate change is itself a destabilising force. Unless there is swift and significant progress in implementing the Paris Agreement, we are years, rather than decades away from spiralling destabilisation.

The present report looks closely at three areas key to heading off the likelihood of accelerating instability in the near future: population displacement, food security, and access to technology. This short introductory note places these issues, and the report's conclusions, within the larger context of the Paris accord and the recent advances in research and policy on the human rights implications of climate change.

The Paris Agreement is somewhat less than a roadmap: it rather resembles a framework agreement within a larger framework agreement (the UNFCCC itself). It has few sticks with which to coerce states to achieve the – in any case vague – objectives it aspires towards. Instead it provides a small set of fundamentally technocratic tools: reporting and monitoring mechanisms, 'stocktaking', harmonised methodologies, ad hoc institutions, which may collectively facilitate the kinds of national and international policies that can address climate change. For the most part, the relevant policies focus on mitigation, although the Agreement touches on much besides.⁴ The Agreement itself has relatively little to say about specific steps countries might take to reduce greenhouse gas (GHG) emissions. But it does put in place several building blocks of a long-term policy: for one, there is an assumption that all countries will attend to long-term mitigation; for another, countries are expected to announce their self-imposed obligations and to report upon their progress in achieving them.⁵ Crucially, there is a 'ratchet', requiring countries to raise their objectives consistently over time.⁶ And there are a series of nascent and established international structures designed to process the resulting information, assess the progress of global policy as a whole, and make recommendations to improve it.⁷

Mitigation is central to the Paris Agreement. It is nevertheless only one of several key questions addressed in the accord. Other 'pillars' of emerging global climate policy include adaptation, 'loss and damage', finance, technology, capacity building, transparency, and the 'global stocktake'.⁸ The challenge of the Agreement is not only to provide a framework for effective global mitigation

2 Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC) (adopted on 12 December 2015, entered into force on 4 November 2016) UNTC 54113 ('Paris Agreement').

3 *Ibid* Art 3.

4 Paris Agreement; UNFCCC, *Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015: Adoption of the Paris Agreement* (29 January 2016) UN Doc FCCC/CP/2015/10/Add 1, Decision 1/CP 21 ('Adoption of the Paris Agreement'), notably paras 7-9, 26-29, 31-32, 57, 91-101, 109, and 124-128.

5 Paris Agreement (n 2) Art 4(1) and 4(2).

6 *Ibid* Art 4(3).

7 *Ibid* Arts 8-10 and 13-19. See in particular the Ad Hoc Working Group on the Paris Agreement established under para 7 of Adoption of the Paris Agreement and the multiple references to its mandate throughout the document. See also the Sustainable Development Mechanism being devised under Art 6 as a replacement for the Kyoto Protocol's Clean Development Mechanism.

8 Paris Agreement (n 2) Arts 7, 8, 9, 10, 11, 13 and 14. Mitigation measures are the subject of Arts 4-6.

actions, but also to ensure that they are not achieved at the cost of ensuring improved basic living standards for much of the world's population. Since we live in a world in which a decent life remains aspirational for very many, the principal challenge of the Agreement – as it has always been within the UNFCCC – is to ensure continued improvement in access to public goods (food, healthcare, housing, and so on) for the billion-odd people for whom these essentials remain inaccessible – and to do so even as aggregate GHG emissions are sharply reduced. The Paris Agreement is explicit on this point: mitigation measures are to be taken ‘in the context of sustainable development and efforts to eradicate poverty’. Variations on this expression occur four times in the Agreement.

Pathways to 2°C (or 1.5°C?)

The full extent of the challenge becomes clear when we consider what it would mean to keep global average temperatures ‘well below 2°C’ or, even better, to no more than 1.5°C ‘above preindustrial levels’.⁹ What does this imply, in fact, for ‘poverty eradication’? We clearly need to attempt to answer this complex question if we are to grasp the human rights implications of climate policies. This is for two reasons. On one hand, the raw impact of a changing climate will itself foreseeably disrupt existing poverty eradication programmes and efforts, casting an increasing number of people into poverty. A recent report published by the World Bank asserts that ‘shocks and stresses related to climate change can undermine poverty reduction and push new groups into poverty.’¹⁰ And this in a context in which ‘the impacts of climate change will often be most severely felt by poor and socially excluded groups, whose capacity to adapt to both rapid- and slow-onset’ climate-related phenomena is ‘more limited’.¹¹ Indeed, to be ‘poor’ or ‘socially excluded’ is by definition to have ‘more limited’ capacity to react to changing circumstances.

On the other hand, and at least as important, climate mitigation measures will themselves tend to prohibit or at least drastically modify the time-honoured and only proven route to poverty eradication – which has, for well over a century, been achieved through fossil-fuelled development. It is not that economic growth must necessarily involve increased carbon emissions in theory. We can imagine various other ways to do it. But this is how it has always been done in practice. We live in a fossil-fuelled world. Alternatives exist but – although the cost of renewable energies has been tumbling in recent years – they require significant infrastructural investment and profound economic path-shifting for countries that often lack the resources to do this quickly or effectively. Most worryingly, they are least easily accessible where they are most needed.

Consequently, precisely those parts of the world already struggling to raise health standards, improve food security, and eradicate poverty, are hit twice over by climate change: first by the new normal of deteriorating conditions, second by new limitations on the traditional means of economic growth, and so addressing poverty. Many of these same least developed countries have, in their Paris commitments, built in a margin of continued emissions growth for their immediate future. At the same time, however, most developing countries, even the poorest, already envisage – in their ‘nationally determined contributions’ submitted under the Paris Agreement – future reductions from

9 *Ibid* Art 2. See also IPCC (V Masson-Delmotte et al eds) *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (IPCC, 2018).

10 World Bank, ‘Turn Down the Heat: Confronting the New Climate Normal’ (2014) xxii (World Bank, 2014). See also IPCC AR5 WG2, Ch 13.

11 *Ibid* xxii.

what would take place under business as usual.¹² This is not something that has, as yet, gained much human rights attention. It should.

The Paris process was successful, in the main, because it allowed countries to choose mitigation targets by reference to their own capacity and trends rather than by comparison with what other countries were doing. The advantage of this system is a sense of national ownership over mitigation targets. There are also losses, however. The first obvious loss is the coherence of the global target. Once all the various commitments are totted up, it is difficult to know how the inevitable shortfall will be met.¹³ A second loss is the potential for meaningful burden-sharing across countries.

Let us take as an example a least developed country in West Africa: Senegal. The United States today produces 40 times as much carbon per person as Senegal, for a GDP 50 times as great per person.¹⁴ In such circumstances, Senegal's commitment to reduce emissions by five per cent on business-as-usual a mere 15 years from now appears either generous or foolhardy.¹⁵ Of course, it is not merely desirable, but vital, that solid reductions are achieved wherever they can be – and yet, the context is disturbing. According to the World Food Programme (WFP), 'food insecurity exceeds 50 per cent' in Senegal; half the adult population is illiterate; the World Bank estimates that 66 per cent of the population live beneath the poverty line of US\$3.10/day (at PPP).¹⁶ This is a Sahel country, economically dependent on agricultural exports, likely to suffer enormously from climate impacts.¹⁷ It is difficult to imagine a scenario in which these pressing exigencies can be met while simultaneously reducing the emissions needed to get there.¹⁸

To increase standards of living while simultaneously reducing emissions is fundamentally a technological challenge, the enormity of which is difficult to overstate. In its Fifth Assessment Report, released in 2013 and 2014, the Intergovernmental Panel on Climate Change (IPCC) draws on a set of four 'representative concentration pathways', synthesising the vast number of modelled scenarios produced to date. At one end is RCP8.6, the business-as-usual scenario (8.6 refers to the radiative forcing effect of the concentrations of GHG in the atmosphere, expressed in Watts/m²), in which current trends, including existing climate policies, continue, leading to a 4.8°C temperature rise above preindustrial levels by 2100. At the other end is RCP2.6, gathering in scenarios specifically aiming to model the conditions under which temperatures do not rise more than 2°C by end of the

12 UNFCCC, 'Nationally Determined Contributions (NDCs)' (UNFCCC, 2020) http://unfccc.int/focus/indc_portal/items/8766.php accessed 11 July 2016.

13 According to Climate Action Tracker, the current crop of commitments, were they fully implemented, would still lead to a rise in temperature by 2100 of 2.7°C over preindustrial levels. Climate Action Tracker, Climate pledges will bring 2.7°C of warming, potential for more action, 8 December, 2015. The Paris Agreement includes a 'global stocktake' presumably with precisely this problem in view.

14 In 2005, Senegal, with per capita GDP of about US\$1,000, produced 13 MtCO₂, about half a tonne per person. In the same year, the average person in the United States earned US\$54,600 and produced 19.6 tonnes of carbon. Sources: country per capita emissions: World Bank; per capita GDP: World Bank; population projections: UN Department of Economic and Social Affairs (UNDESA), 'World Population Prospects: Key Findings and Advance Tables 2015 Revision' (2015) ESA/P/WP 241, 21.

15 Contribution Prévue Déterminée au Niveau National (CPDN) du Sénégal (UNFCCC, 26 September 2015) ('Senegal INDC') 12. The step is explained as follows: 'Malgré des capacités limitées et le faible niveau des émissions actuelles du Sénégal, cette contribution traduit la volonté de l'État à prendre part aux stratégies globales d'atténuation et d'adaptation aux changements climatiques'.

16 World Food Programme (WFP), 'Senegal' (World Food Programme, 2020) www.wfp.org/countries/senegal accessed, 11 July 2016; UNICEF 'Statistics' (UNICEF, 27 December 2013) www.unicef.org/infobycountry/senegal_statistics.html accessed 11 July 2016; World Bank, 'Povcal Net: An Analysis Tool for Global Poverty Monitoring' (World Bank, 2020) <http://iresearch.worldbank.org/PovcalNet/index.htm> accessed, 11 July 2016.

17 Senegal INDC (n 15) 4-5.

18 In fact, Senegal expects to achieve these reductions through efficiencies in the agricultural and waste management sectors, rather than in energy. See Senegal INDC (n 15).

century. RCP2.6 assumes immediate and steep emission cuts. The models date from 2011, so their immediacy is already something of a lost opportunity.

Perhaps surprisingly, RCP2.6 does not envisage vastly more reliance on renewable energy technologies than RCP8.6: they both expect a significant increase in use over the century, but only as a part of a broader energy mix.¹⁹ There is, however, much greater reliance on nuclear energy in RCP2.6. There is an overall reduction of energy consumption – by 2100, the world is using about 20 per cent less energy in RCP2.6 than it would be in RCP8.6. There is, most glaringly of all, a preponderant reliance on carbon reabsorption technologies such as carbon sequestration and storage. This is because the use of fossil fuel does not end in RCP2.6, instead it is mitigated through carbon capture. The 2°C target can only be met if emissions of carbon dioxide fall below net zero. This is because emissions of methane and nitrous dioxide cannot be reduced to nothing, so a 95 per cent reduction in overall emissions needs a 100 per cent plus reduction in CO₂. Under RCP2.6, by 2070 or so, more carbon is being put into the ground than into the sky. It is difficult to know how likely this scenario is as the technologies are untested and the potential for error is great.

At time of writing, new models are under development and RCP2.6 may soon be superseded. Yet it remains at present the single available scenario in which development basics are met within a 2°C budget. Indeed, RCP2.6 assumes a convergence in intra-regional (but not global) living standards towards something like parity by 2150. This assumption may, again, be unlikely to transpire, but it is nevertheless fortuitous for a human rights analysis: in practice RCP2.6 describes the conditions in which basic human rights are fulfilled even while the climate goal of 2°C is met. It is a world of reduced energy use – with the presumptive implication of a less productive (if also more efficient) global economy – but it is one relying heavily on advanced technologies: nuclear, bioenergy, renewables, and carbon reabsorption. In short, RCP2.6 expects a huge feat of technology development and transfer, to use the language of the Paris Agreement.

Food – migration – technology

Returning to the present, a country like Senegal finds itself subject to a combination of extraordinary pressures. Rising temperatures put agricultural productivity under immense strain. Where, as in Senegal, some 60 per cent of the economy – and a comparable 60 per cent of employment – relies on agriculture,²⁰ the sector has multiple roles, as a source of food security, livelihoods, and export revenues. With populations increasing rapidly, food production needs to keep pace – but, with climate change, the reverse is more likely.

The pressures climate change generates – loss of both means of subsistence and livelihoods, especially in rural areas – lead in turn to migration to the cities, and, ultimately, out of the country altogether. Slow-onset drivers such as these are sometimes likely to combine with sudden-onset events such as droughts or famines. But if their immediate effect is less devastating, slow-onset events are also much more lasting. When people leave a place that can no longer support their livelihoods, whether

19 The present discussion draws in particular on Detlef van Vuuren et al, 'RCP2.6: Exploring the Possibility to Keep Global Mean Temperature Increase Below 2°C' (2011) 109 *Climatic Change* 95, and in particular the graph at 102. The article is regularly cited in the IPCC's fifth assessment report. Van Vuuren is an IPCC author. IPCC (2018) (n 9) introduces a series of 'shared socioeconomic pathways'.

20 Senegal INDC (n 15), 4; World Bank, 'Turn Down the Heat: Climate Extremes, Regional Impacts and the Case for Resilience' (2013), 24 (World Bank, 2014).

fishing, cropping, or livestock husbandry – when the land itself will not support traditional food production, or is ravaged by desertification – they are unlikely to return. Beyond this again, a country such as Senegal struggles with a string of extraordinary challenges simultaneously: to reorganise its economy to flourish in new climactic conditions; to bolster its agricultural sector by means of (presumably) technological fixes; to lift its population out of poverty and improve access to education and healthcare; and to position itself as a low emission economy all the while. Climate change hits hardest where people are the most vulnerable.

Let us look at this set of drivers in more detail, drawing here on the second report of the Potsdam Institute published by the World Bank, which includes a focus on Sub-Saharan Africa. This report draws in particular on the RCP8.6 pathway, reflecting the most credible forecasts based on current activity:

- *Decreasing crop yields:* West African staple crops, such as corn, wheat and sorghum, have high temperature sensitivity thresholds which, if breached even briefly, will cause lasting damage. Temperatures above about 32°C have a deleterious effect on the photosynthesis rate of wheat and rice. According to the IPCC, moderate global average increases (1–2°C), translating into higher local temperature spikes, are ‘likely to have a negative effect on yields for major cereals like wheat, maize, and rice.’ A local increase of about 5°C, which will frequently be exceeded once global average temperature increases breach 2°C, will cut production of these crops in half. The World Bank expects ‘significant [food] production shocks’ in Sahelian Africa.²¹
- *Loss of growing areas.* ‘A 1.5°–2°C warming by the 2030s–2040s could lead to about 40–80 per cent reductions in present maize, millet, and sorghum cropping areas for current cultivars. By 3°C warming, this reduction could grow to more than 90 per cent.’²²
- *Loss of livelihoods in fisheries.* ‘The job loss associated with projected declines in catches is estimated at almost 50 per cent compared to the year 2000 [...] Of the whole of Sub-Saharan Africa, Malawi, Guinea, Senegal, and Uganda rank among the most vulnerable countries to climate-change-driven impacts on fisheries. This vulnerability is based on the combination of predicted warming, the relative importance of fisheries to national economies and diets, and limited adaptive capacity.’²³
- *Malnutrition:* ‘There is also an associated projected increase in malnutrition in children under the age of five. Without climate change, the number of children with malnutrition is projected to increase from 33 million to 42 million; climate change adds a further 10 million children by 2050’.²⁴
- *Terms of trade:* Overall global trade is expected to shrink, leading to ‘an overall efficiency loss and climate change impacts on crop production are projected to decrease global welfare by [US]\$123 billion, which would be the equivalent of approximately 18 per cent of the global crops sector GDP.’²⁵ With crop yields falling by ten per cent and local populations rising

21 World Bank 2014 (n 22) 22.

22 *Ibid*, 22.

23 *Ibid*, 52.

24 *Ibid*, 44.

25 *Ibid*, 46.

rapidly, ‘when food trade is taken into account, the net effect is a reduction in food availability per capita (measured as calories per capita) by about 15 per cent in 2050 compared to the availability in 2000.’²⁶

- *Rural emigration*: ‘In the face of mounting pressures on rural livelihoods under climate change, even more people may migrate to urban areas [...] For example, patterns of urbanisation in Senegal have been attributed to desertification and drought, which have made nomadic pastoral livelihoods less feasible and less profitable.’²⁷

Food security is, then, intimately linked to migration. Both, however, are bound up with the question of technology. Technology plays a triple role in this story. First, global technological advance is the key to slowing the temperature rises that lie behind the threats to food security. Second, through access to specific adaptation technologies, such as desalination plants, or advanced agricultural techniques, countries at risk from water stress or crop failure may find the effects easier to manage or deflect. Third, in those same countries, low-carbon technologies open the door to broader development, including technological development and acquisition of the wherewithal to absorb the pressures of climate change better, without further contributing to them themselves.

This IBA report comprises a unique and focused investigation of these three adaptation challenges emanating from climate change: food security, migration and technology. It does so conscious that successful climate change action must attend to its human rights implications. Let us now look briefly at climate change and human rights, before turning to the report’s findings on food security, migration and technology transfer in the context of climate change.

Climate change and human rights

Over the last decade a consensus has emerged that climate change puts the basic human rights of hundreds of thousands at serious risk, and more likely hundreds of millions, bearing directly on satisfaction of the human rights to food, health, water, shelter – and the right to life itself. A formidable movement has grown around the notion of ‘climate justice’, aiming to work human rights principles into the emergent climate change regime and to sensitise human rights institutions and organisations to the threat climate change poses. At the UN in Geneva, the Office of the UN High Commissioner for Human Rights (OHCHR) has been apprised of the dangers of climate change for some time and has produced a series of increasingly sophisticated analyses of the issues.²⁸ The UN Human Rights Council (UNHRC) has produced five resolutions on climate change and human rights, focusing on increasingly detailed aspects of the climate problem.²⁹ The post of a UN ‘Special Procedure’ on human rights and the environment was created in 2011 and various other

26 *Ibid*, 44.

27 *Ibid*, 55.

28 See the Office of the High Commissioner for Human Rights (OHCHR) page on climate change: www.ohchr.org/EN/Issues/HRAndClimateChange/Pages/HRClimateChangeIndex.aspx accessed July 20 2016. www.ohchr.org/Documents/Issues/ClimateChange/KeyMessages_on_HR_CC.pdf accessed 20 July 2016.

29 OHCHR, Documents and Resources (OHCHR, 2020) www.ohchr.org/EN/Issues/HRAndClimateChange/Pages/HRCAction.aspx accessed 20 July 2016.

Special Procedures have closely examined the relevance of climate change to their mandates, notably the Special Rapporteurs on housing, health, food, water and extreme poverty.³⁰

The best of these various interventions aim to join up the dots between the complicated science and ethics of climate change, and to make sense of the concrete human rights stakes of the bewildering array of political options and policy proposals – in particular, their transnational dimensions. The OHCHR pre-Paris primer is, for example, a model of succinct (three-page) digested climate policy re-described in terms of real-world human effects.³¹ A recent paper by five Special Procedures engages profoundly and critically with the IPCC’s Fifth Assessment Report.³² It cites the human rights implications of the Fifth Assessment Report as follows: ‘future impacts of climate change, extending from the near term to the long term, mostly expecting 2°C scenarios, will slow down economic growth and poverty reduction, further erode food security, and trigger new poverty traps, the latter particularly in urban areas and emerging hotspots of hunger.’ Moreover: ‘The report warns that “climate change will create new poor between now and 2100, in developing and developed countries, and jeopardise sustainable development.”³³ Outside the UN’s formal institutions, human rights activists grapple, for example, with the displacement occasioned by the Clean Development Mechanism (CDM), and the indigenous rights aspects of Reducing Emissions from Deforestation and Forest Degradation (REDD+).

A UNHRC Resolution passed in June 2016 and focused on children’s rights followed the previous year’s Resolution focusing on the right to health.³⁴ The 2016 Resolution shows increasing cross-fertilisation between the worlds of climate policy and human rights. It references the UNFCCC liberally and encourages states to sign the Paris Agreement and to perform their UNFCCC requirements. It adopts a number of climate law terms, such as the notion of ‘long-term cooperative action’, the principle of ‘common but differentiated responsibilities and respective capabilities’, and the broad notion of ‘vulnerability’ as a trigger of human rights concerns. It invokes the UNFCCC’s provisions on mitigation, adaptation, technology transfer and finance. This is complicated technocratic language, jargon-heavy and unfamiliar in the mouths of human rights lawyers and activists – but it helps to master it if the human rights stakes of climate change are to be met.

The Resolution acknowledges in the preamble that:

‘responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impact on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty.’

This clause is taken directly from the UNFCCC’s own preamble, and provides a clear example of the potentially strong areas of synergy between the human rights and climate communities. At bottom,

30 See, in particular, Special Procedures Mandate-Holders of the UNHRC, ‘A New Climate Change Agreement Must Include Human Rights Protections For All’ (Open Letter, OHCHR, 17 October 2014); UN Special Procedures, ‘Joint statement by UN Special Procedures on the Occasion of World Environment Day’ (Joint Statement, OHCHR, 5 June 2015); and Catalina Devandas Aguilar et al, ‘The Effects of Climate Change on the Full Enjoyment of Human Rights’ (OHCHR, 30 April 2016).

31 OHCHR, ‘Key messages on Human Rights and Climate Change’ (OHCHR 2015), www.ohchr.org/Documents/Issues/ClimateChange/KeyMessages_on_HR_CC.pdf.

32 Devandas Aguilar et al, ‘The Effects of Climate Change’ (n 30).

33 *Ibid* 19.

34 UNHRC, ‘Human Rights and Climate Change’ (28 June 2016) UN Doc A/HRC/32/L 34.

both share a central concern with preserving and progressing access to basic human rights that requires, in its turn, elementary economic wherewithal and the political capacity of a state equipped to deliver. Human rights law expects, according to the International Covenant on Economic, Social and Cultural Rights (ICESCR), that states achieve at a minimum the ‘progressive realisation’ of its listed rights – to ‘adequate food’ and ‘the best attainable standard of physical and mental health’, for example – using the ‘maximum available resources’ including ‘international assistance’. However, as even the above brief appraisal of expected (and current) climate impacts clarifies, for thousands, indeed millions of people in much of the world, a ‘progressive deterioration’ of human rights is therefore more likely to be the norm. Insofar as there is a coherent global response to poverty and to the conditions of its exacerbation or amelioration, it is through international development. An important locus for the climate and human rights communities to discover and nurture synergy is, therefore, in their mutual approach to development.

However, neither of these bodies of law speaks in a detailed way to the conditions in which development actually takes place – or fails to – globally today. Although the issue is raised regularly – in, for example, the OHCHR’s ‘key messages’ report or the five special procedures’ April 2015 document – very little attempt has been made to draw out the concrete implications for development policies. The recent UNHRC Resolution, for example – and in this, it is representative of formal statements from the great majority of human rights institutional mechanisms – does not capitalise on the language of ICESCR, Article 2(1), foregrounding international cooperation in the achievement of the enumerated rights. Nor does it incorporate the arguably stronger operational language of UNFCCC, Article 4(7):

‘The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.’

None of these sources – the ICESCR’s Article 2(1), the UNFCCC’s preambular paragraph above, nor its Article 4(7) – have an equivalent in the Paris Agreement, which uses a softer and more voluntarist language of cooperation throughout.³⁵ The Agreement does, however, make explicit mention of human rights, a sign of the progress of the movement to place human rights firmly within the climate context. Its preamble ‘acknowledges’ that climate change is a common concern of humankind. Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity,

This is an important development. At the same time, it is hard to imagine that, when it comes to concrete protection from human rights risks, it adds much weight to the existing mechanisms within

35 The Paris Agreement provides different language again (Art 6(8)): ‘Parties recognize the importance of integrated, holistic and balanced non-market approaches being available to Parties to assist in the implementation of their nationally determined contributions, in the context of sustainable development and poverty eradication, in a coordinated and effective manner, including through, inter alia, mitigation, adaptation, finance, technology transfer and capacity-building, as appropriate.’

the UNFCCC or the human rights covenants – or for that matter within the Paris Agreement’s own binding articles.

Food security

The extraordinary threat climate change poses to food security in much of the world is by now well documented in the reports of the IPCC itself (the Fifth Assessment Report devotes a chapter to the issue) as well as by the human rights institutions (successive Special Rapporteurs on the right to food have prioritised the question).³⁶ It is, moreover, explicitly acknowledged in the Paris Agreement. The preamble recognises ‘the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change’. The main body of the Agreement includes as one of its three stated objectives, that of ‘[i]ncreasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low GHG emissions development, in a manner that does not threaten food production’. These laudable desiderata are, however, missing qualifiers. Which food production systems? Whose ability to adapt?

The present report explores the complexity of food security as a climate change adaptation issue through its intersection with multiple governance and legal frameworks (those dealing not only with food security and climate change, but also with energy and global trade). It then examines the human right to food and considers the contribution it can make towards strengthening these existing governance and legal frameworks and orienting them towards increasing food security at the global, regional and local level amid climate change.

Migration

Given that the likelihood of massive population displacements throughout the world due to a changing climate was identified early on – from the first, and then through successive, IPCC reports – the issue has received remarkably little attention under the UNFCCC’s own rubric. Indeed, beyond a brief mention in the Cancun decision of the Conference of the Parties (COP), the briefer tag in the Paris Agreement preamble noted above, and a request by the Paris COP to investigate ‘displacement related to the adverse impacts of climate change’ as part of the Warsaw Mechanism on Loss and Damage, climate-induced migration remains largely unaddressed.³⁷ Moreover, migration does not easily fit within the world’s human rights instruments, having been cordoned off into its own Geneva regime almost immediately after the call for a ‘right to seek asylum’ in the 1948 Universal Declaration

36 IPCC, *RK Pachauri and LA Meyer (eds), ‘Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change’ 2014* (IPCC, 2014) vol 2, ch 7 (‘AR5 Synthesis Report: Climate Change 2014’). See also the extensive resources on the website of the former Special Rapporteur on the right to food, Prof Olivier de Schutter, ‘Documents’ (2014) www.srfood.org/. The World Bank ‘Turn Down the Heat’ (n 20) reports also pay special attention to this question.

37 UNFCCC, ‘Decision 1/CP.16, Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention’ (15 March 2011) UN Doc FCCC/CP/2010/7/Add 1, [14(f)] ‘Cancun Adaptation Framework’; UNFCCC, ‘Adoption of the Paris Agreement’ (12 December 2015) UN Doc FCCC/CP/2015/L.9, [50].

of Human Rights. Some exceptions aside,³⁸ it would be easy to forget that migration is a quintessential human rights concern, and that the likelihood of massively exacerbated population movements as climate change takes hold is undoubtedly one of the major human rights consequences of our failure to rein in carbon usage.

Yet the relative paucity of discussion within the standard climate and human rights framework does not belie a lack of activity. On the contrary, climate migration has long been a key area of discussion and contention within the broader climate debate. Significant energy has been devoted to terminological issues: should people displaced by climate change be considered refugees, migrants, displaced persons or something else? Is climate change really responsible for their displacement? Although a broad consensus has by now emerged on the inadequacy of existing instruments to manage or contain climate displacement, there remains a notable lack of progress towards developing a new framework or undertaking serious reform of the existing one.

Several reasons have been identified for the relative inaction related to climate migration at the international level. One is that climate displacement will be mainly internal (that is to say, a matter of border controls), and so a human rights matter for individual states rather than a matter of international law or the international community. Such a view may, however, tend towards supporting the reinforcement of existing borders. A second claim is that climate-related migration can never be attributed merely to the phenomenon of climate change itself: there will always rather be other more immediate causes for people to flee their localities, with climate change merely a contributory factor. Certainly, it is true that climate change is likely to exacerbate most or all the other reasons people already have for migrating. There are currently 65 million displaced people in the world, and the number increases each year.³⁹ Climate change is undoubtedly already a contributory cause, but its specific contribution is probably impossible to quantify. It is far from clear, however, whether this should permit discounting that contribution altogether.

With the principal international institutions playing a secondary role and few UN human rights institutions speaking out on the issue, other approaches have blossomed. Key among these is the Nansen Initiative, bringing together a key group of interested states, advised by a cadre of qualified scholars and advisors. This Initiative has gradually brought momentum to bear around a move to align thinking and policy in the direction of preparing for the likelihood of mass population movements. Other key initiatives are regional, particularly in the South Pacific, where several islands have agreed on a rudimentary framework for climate adaptation (the Pacific Islands Forum).

The present report contributes to this incremental development of climate change-related migration and displacement policy by: identifying the adaptive capacity of labour migration and explaining how it can be enhanced; and illustrating how better understanding, communication, and management of

38 The exceptions include the works of: the Special Rapporteur on the human rights of internally displaced persons, Dr Chaloka Beyani (see UNHRC, 'Report of the Special Rapporteur on the human rights of internally displaced persons', 1 April 2015 UN Doc A/HRC/29/34); the Special Rapporteur on the human rights of migrants, François Crépeau (although the Special Rapporteur does not refer to climate migration specifically, the human rights of migrants are at the core of this mandate); and the Special Rapporteur on the right to adequate housing as a component of the right to an adequate standard of living, and on the right to non-discrimination in this context, Raquel Rolnik (see United Nations General Assembly (UNGA), 'Annual Report of the Special Rapporteur on the right to adequate housing as a component of the right to an adequate standard of living, and on the right to non-discrimination in this context', 5 August 2011 UN Doc A/66/270 5, 2011). See too, UN Special Rapporteurs on the rights of persons with disabilities, Catalina Devandas Aguilar; the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy, and sustainable environment, Mr. John H. Knox; extreme poverty and human rights, Philip Alston; the human right to safe drinking water and sanitation, Mr. Léo Heller; and the Independent Expert on human rights and international solidarity, Ms. Virginia Dandan, 'The Effects of Climate Change on the Full Enjoyment of Human Rights', 30 April 2015, 21-22.

39 United Nations High Commissioner for Refugees, 'Global Trends: Forced Displacement in 2015' (UNHCR, 2016), 5.

climate displacement risk and vulnerability can avert or mitigate internal displacement of vulnerable populations from climate change effects.

Technology

As signalled above, technology policy is of fundamental importance to the achievement of human rights in the context of climate change, although it remains underexplored. To gain a better sense of where international thinking is (and should be) headed on this important issue, let's turn again to the case of Senegal. In its nationally determined contribution (NDC), beyond its promised five per cent emissions cut by 2030 from business as usual, Senegal specifies that it could further reduce emissions by 20 per cent should it benefit from international support, and in particular 'technology transfer', to that end.⁴⁰ This scenario of increasing mitigation ambition with the help of transferred technologies is sometimes referred to as NDC+. Similar forecasts litter the developing country NDCs collected at the UNFCCC secretariat.⁴¹ Senegal estimates the cost of NDC+ at US\$5bn, as against US\$1.8bn for the more modest NDC reduction. This compares with a projected cost of US\$14bn for adaptation through to 2030. International technology transfer will, in short, contribute to global GHG attenuation, while at the same time alleviate the potential damage that cutting emissions would otherwise produce in struggling countries – and it will do so at a fraction of the cost of other proposed adaptation measures.⁴²

The current report takes this claim seriously. Technology transfer has long been a central plank of the UNFCCC architecture and retains a key place in the Paris Agreement. Article 4(7) UNFCCC, cited earlier, has the interesting quality of describing less an obligation than a prediction. It points out that if developed countries do not take seriously their obligations to promote, facilitate and finance the transfer of technologies to developing countries, the latter will not be in a position themselves to adopt climate change mitigation policies – precisely because social and economic development and poverty eradication must necessarily be their overriding priorities. There is little doubt this is correct. Yet the content of the obligations on developed countries – and even the identity of those duty-bearing entities – is notoriously vague. Moreover, the entire topic of technology transfer has frequently been mired in a debate over intellectual property rights.

While the question of intellectual property is clearly important, the present report has taken a different approach to the problem of technology, given especially its increasing urgency. The report looks to the existing international structures that tend to decide whether technologies can be easily adopted in the countries which need them most to tackle the impacts of climate change: financial flows, on one hand, and international investment law, on the other. The report finds that in neither case is there an optimal framework for ensuring technology transfer and makes recommendations to that end.

40 Senegal INDC (n 15) 12; see too graph at 13.

41 See for example, Argentine Republic, Intended Nationally Determined Contribution ('Argentina INDC') (UNFCCC, 1 October 2015); Cote d'Ivoire, Intended Nationally Determined Contribution ('Cote d'Ivoire INDC') (UNFCCC, 30 September 2015).

42 Adaptation measures are frequently technology-intensive (the present report gives the example of desalination technologies) and the challenge of energy technology differs between wealthier and poorer countries. For wealthier countries—the old industrial economies—the central challenge of climate change is to maintain standards of living, or reduce them as little as possible, while sharply reducing the greenhouse gas emissions that go into producing them. For poorer developing countries such as Senegal, however, the central challenge is rather different—it is to continue to raise living standards (and so energy use) while minimising the inevitable increase in emissions. This is not so much mitigation in the usual sense of the word: it might be better understood as a form of adaptation to the changing circumstances of a carbon-constrained world.

This report endorses, and then aims to push beyond, the easy language of ‘climate justice’ and human rights, not least in the IBA’s own Task Force contribution in 2014.⁴³ The current report delves into the concrete human rights implications of climate adaptation concerns to do with food security, migration and technology. The hope and expectation is that it can contribute to a groundswell of work ensuring that climate targets are met while enhancing the human rights of vulnerable peoples around the world.

43 International Bar Association Climate Change Justice and Human Rights Task Force, ‘Achieving Justice and Human Rights in an Era of Climate Disruption’ (International Bar Association, 2014) (‘The IBA Task Force Report’).

Summary of recommendations

Climate change-related migration and displacement

Despite labour migration's adaptive potential, it has yet to feature as a potentially positive component of national or regional climate change adaptation strategies. Where migration is already occurring out of climate-affected areas, this may be a missed opportunity. Developing regular channels of migration for those suffering economic hardship due to natural disaster or long-term climate damage can help to prevent climate-related migrants entering into the informal economy or exploitative forms of employment abroad. In order to harness the adaptive capacity of labour migration, the Working Group recommends that states:

- Link existing labour policies, migration agreements and climate adaptation strategies through better coordination and collective efforts.
- Make labour migration a just option for climate-affected communities by reducing the high cost of movement, including through progressive elimination of exploitative recruitment practices.
- Further explore how regional cooperation on climate change adaptation and pilot programme implementation in a bilateral or regional context for the development of 'good practice' guidance can better link labour mobility.

It is further recommended that states act on the enormous opportunities that exist to avert or mitigate internal displacement of vulnerable populations from climate change effects by adapting laws and policies to address climate displacement risk. In order to do so, the Working Group recommends that states:

- Improve understanding of climate displacement risk and vulnerability at a local level and develop indicators of displacement risks based on a range of physical, socio-economic, and other relevant factors.
- Revise disaster risk management (DRM) laws and policies to ensure that they include mandates and processes for understanding and identifying climate displacement risk, and ensure that technical and scientific bodies responsible for providing weather, climate, hydrological, and environmental monitoring and prediction services have sufficient human, financial, and technical capacity.
- Use a multisector approach to develop strategies for mitigating displacement risk at the local, regional, and national level.
- Ensure that systems are in place to communicate climate hazards at the local level and empower local governments and communities, as well as vulnerable and disenfranchised groups, to be involved in their own risk management, including managing climate displacement risk.

Lastly, the Working Group urges states to endeavour to address the extremely difficult questions regarding where people will settle if they are displaced across borders but are unable to return home for many years or perhaps ever. The recent crisis of mixed migration and refugee flows of those

seeking to reach Europe highlights the enormous challenges states are likely to confront in the absence of planning for climate-displaced persons. The Working Group recommends that states:

- Start a dialogue – at a regional or international level – on locations for the long-term resettlement of populations that will be unable to return home for long periods of time (or ever) as a result of climate change.

Food security

By identifying and describing the key inter-linkages between the legal regimes for climate change and food security, the Working Group has found that whereas climate change law has potential to impact on the three dimensions of food security (availability, accessibility and adequacy), food systems also have the capacity to affect the goals of climate change law and policy. It is therefore paramount that both regimes evolve in a highly coordinated manner to avoid negative interrelations and to promote synergies. Both governance regimes must be understood within a wider and more complex set of interrelated regime complexes, which at least includes the regime complex for trade and the regime complex for energy. The resulting near-overwhelming complexity and the corresponding set of interlocking effects can only be understood and therefore managed when all complexes are looked at from an external perspective. The global governance regime for sustainable development may provide just such perspective as it is premised on a core number of globally shared public policy goals specified through a series of indicators that can be used to track progress towards those goals.

The Working Group has sought to identify strong, widely shared normative foundations on which the global governance regime for sustainable development can be sustained. The suggestion is that fundamental rights have the normative clout to play that role, and within them, the right to food is particularly apposite to ensure the necessary coordination among all the relevant regime complexes. The contours, potential and limitation of this fundamental right to exert a pull and push factor on key public and private players has been assessed, and the conclusion is that the right has a promising track record in holding both sets of actors to account for violations of the right and steering them towards full respect of the right, which includes respecting, protecting, and fulfilling the right to food and therefore food security. This is particularly promising in relation to extraterritorial effects of states' and TNCs' actions, where more doubts about the justiciability of the right seem to remain.

Based on our analysis, the Working Group recommends that international organisations:

- Work to develop, effectively implement at a national level, and monitor the compact indicator framework for sustainable development goals (SDGs), with a particular attention to the impact on the right to food of national policies on, inter alia, climate, food, energy, and trade.
- Work to improve the degree of coordination among the relevant international legal frameworks and regime complexes so as to identify and mitigate negative impacts on food security (eg, climate change adaptation measures may be tested and strengthened by closely evaluating their impact on food stability).
- Systematically require the integration of the right to food in states (eg, during the approval process of market-based projects within the UNFCCC).

- Mainstream the right to food in all existing mechanisms for financial transfers and transfers of technology across the relevant regimes (eg, the CDM, REDD+, the Green Climate Fund, the Adaptation Fund and various other climate-related funds).
- Use the Universal Periodic Review and reports to specific treaty bodies to systematically assess and highlight the links between climate change, energy, trade and human rights.

As a general matter, the Working Group recommends that states:

- Put in place at a domestic level the necessary framework to monitor progress towards the SDGs, select the adequate indicators and consider the right to food as a key cross-cutting issue and assign sufficient resources to the task.

With regard to food law and policy, the Working Group recommends that states:

- Seek innovative ways to promote the organisation of small food producers to deal with the challenges arising from the concentration of the agrifood market (buyer-driven supply chains, power in setting standards and codes of conduct, etc).
- Seek innovative ways to promote investment in smallholder agriculture, including by facilitating access to financial markets (eg, by adopting laws to that end).
- Seek ways to promote sustainable agriculture and social movements supporting it.
- Reform agricultural policies (in middle-income and high-income countries) to eliminate market distorting subsidies to production and exports of agricultural produce.
- Remove subsidies to bioenergy that have negative impacts on food security.
- Use competition policy to prevent negative effects of buyers driven agrifood markets.
- Increasing accountability of global food processors and retailers through, for example, codes of conduct, and possible legal instruments.
- Continue monitoring the negative impacts of the financialisation of agricultural markets on food security and take measures, including legislative measures, if necessary, to avoid negative side effects on the environment and human rights.
- Require financial institutions to report on the material environmental, economic and social impacts of their investments (socially responsible investment), if need be through legal instruments.
- Improve access to information, participation and justice related to the enforcement of the right to food and remove existing (legal and practical) barriers.
- Assist non-governmental organisations (NGOs) that exert oversight over TNCs' practices, as well as those fostering access to information, public participation and justice.

With regard to climate change law and policy, the Working Group recommends that states:

- Fully integrate interactions between climate change and food security in National Communications to the UNFCCC.

- Make progress towards the elimination of market distorting subsidies to energy that aggravate climate change and food insecurity.
- Apply in a systematic manner Strategic and Environmental Impact Assessments to plans and projects which may have a negative impact on food security and the right to food.

Technology transfer

The developed world's obligation to transfer technologies to assist the developing world in reducing GHG emissions and adapting to climate change is widely recognised and reiterated in successive climate agreements. Moreover, as the impacts of climate change have come into greater focus, similarly the need for successful technology transfer to protect and advance human rights has become increasingly apparent. Technology transfer is key to disseminating mitigation technology to slow climate change and limit its effect. Access to specific adaptation technologies is needed to help communities manage or deflect climate impacts. Low-carbon technologies permit development and progress toward poverty eradication that will not exacerbate climate change. Environmentally sound climate technologies are becoming widely available. Renewable desalination technology, for example, may provide communities with a means to adapt to climate-induced water scarcity and support social and economic development without exacerbating climate change. The broad consensus about the need for and importance of technology transfer stands in stark contrast to the relatively halting pace of realised-in-fact technology transfer.

International institutions, national governments and regulators are starting to pursue initiatives to mobilise private funding in support of climate initiatives, including through mechanisms such as green bonds, sustainable stock exchanges, and adaptation tax credits. These initiatives often do not explicitly connect to the UNFCCC process, including with respect to identifying goals for technology transfer. Going forward, international institutions, national legislators, regulators and other standard-setting bodies should consider the requirements and principles of technology transfer in designing these interventions. The Working Group recommends that international institutions, national legislators, regulators and other standard-setting bodies:

- Consider including technology transfer requirements in the criteria that they develop for standards for green loans or awarding preferential lending rates by public bodies for green loans when designing public sector initiatives to scale up the green bond market.
- Consider including technology transfer in reporting requirements in efforts to integrate environmental and sustainability goals in financial reporting.
- Consider including a technology transfer requirement in the development of priority sector lending criteria.
- Consider including a technology transfer requirement as criteria are developed for awarding adaptation tax credits for developers of adaptation projects.

There is no settled methodology for accounting for climate financing; methodological uncertainty is particularly pronounced with respect to accounting for adaptation financing, private finance, and technology transfer. Developing methods to better identify and quantify these finance flows could

promote such financing. Including technology transfer as a criterion in accounting for developed countries' contributions to the Cancun mobilisation commitment would, for example, create a powerful incentive for developed countries to pursue technology transfer in their effort to mobilise private finance. The Working Group recommends that stakeholders:

- Continue to develop, through a transparent process, an appropriate and comprehensive methodology for accounting for flows of climate finance, including adaptation and private finance.
- Reference technology transfer and the principles developed by the Technology Mechanism in methodologies to account for flows of climate finance. The Technology Mechanism and the Financial Mechanism can coordinate to support countries in implementing mitigation and adaptation. TNAs, which countries carry out to identify technology priority needs, provide a means by which collaboration can occur between the Technology and Financial Mechanisms. These assessments result in implementable action plans.

The existing international investment law (IIL) regime may hinder the goal of mobilising private investment flows for technology transfer by prohibiting performance requirements and providing for enforcement through investor-state dispute settlement (ISDS) mechanisms. While performance requirements, if they were lawful, could be part of a range of policy tools considered by developing countries seeking to condition foreign direct investment (FDI) to facilitate policy goals, including technology transfer, at present the use of performance requirements is foreclosed by various legal constraints. Specifically, most investment treaties and agreements outlaw performance requirements. Moreover, ISDS mechanisms are included in the majority of international investment agreements (IIA) and allow private investors to sue a host state for alleged violations of an IIA.

The Working Group:

- Endorses reform of the IIL regime to promote technology transfer, including by allowing the use of performance measures and state regulation to condition FDI.
- Encourages states to be mindful of the importance of retaining the flexibility to impose performance requirements for other state regulation supportive of adaptive technology transfer in future trade or investment agreements.

Chapter 1: Climate change-related migration and displacement

1.1 Introduction

Climate change is a contributing factor to human displacement and migration both within countries and across international borders. Over the next few decades, climate change is expected to increase the risk of acute disasters, gradual environmental deterioration, loss of livelihoods, and social disorder, all of which are expected to increase displacement and migration. Certain attempts to mitigate or adapt to the impact of climate change, such as some forestry projects and biofuel production initiatives, may also indirectly lead to displacement and migration. While the number of people likely to be affected will depend on many factors including the rate of warming and the extent to which communities are able to adapt effectively, climate change could induce upwards of 100 million people to move within countries or across borders on a temporary or permanent basis by the middle of the century. This volume of migration would overwhelm the present capacity of international and national institutions and aid mechanisms.⁴⁴ As most movement will take place within countries, internal displacement is a major challenge.⁴⁵ Disasters brought on by sudden-onset extreme weather events such as floods and cyclones are already responsible for internally displacing an average of 21 million people a year.⁴⁶ Adding to the complexity of the challenge, most migrant movement will not be caused by climate change alone, and in practice, climate-related migrants may be indistinguishable from other migrants.

In the context of climate change, migration is most often viewed as an adaptation failure.⁴⁷ Yet migration can be an important adaptive response for people facing slow-onset environmental changes or disasters.⁴⁸ Migration can also contribute to the socio-economic development of climate-affected areas.⁴⁹ Many obstacles, however, impede safe and legal migration from climate-affected areas.

Overall, there is a lack of international legal recognition for persons uprooted by climate change, both internally and across borders. No international legal instrument directly addresses climate-related displacement or migration, and existing international and national displacement, refugee, immigration and asylum policies are inadequate in addressing the problem. International legal instruments and doctrines related to human rights could be seen as generally establishing the

44 Koko Warner, 'Climate Change Induced Displacement: Adaptation Policy in the Context of the UNFCCC Climate Negotiations' (Legal and Protection Policy Research Series, UNHCR, May 2011) UN Doc PPLA/2011/02.

45 'Internal displacement' refers to situations in which individuals and groups are (1) forced or obliged to leave and remain away from their homes, but (2) remain within the borders of their own countries. The Brookings Institution et al, 'Guidance on Protecting People From Disasters and Environmental Change Through Planned Relocation' (7 October 2015), 2.

46 Internal Displacement Monitoring Centre and Norwegian Refugee Council, 'Global Report on Internal Displacement' (IDMC, May 2018).

47 International Organisation for Migration (IOM), 'Migration, Climate Change and the Environment' (2009) www.iom.int/jahia/webdav/shared/shared/mainsite/activities/env_degradation/compendium_climate_change.pdf accessed 14 March 2020.

48 Philippe Boncour, 'The Moment of Truth: Adaptation to Climate Change' [2009] Migration 3.

49 See, eg, Somalia is already receiving temporary protection status due to drought: US Citizenship and Immigration Services, 'Temporary Protected Status Designated Country: Somalia' (USCIS, 17 January 2020) www.uscis.gov/humanitarian/temporary-protected-status/temporary-protected-status-designated-country-somalia accessed 8 August 2016; the ILO is working with Kiribati, Tuvalu, and Nehru on a hybrid cash-for-work program: International Labor Organization (ILO), 'Disaster Preparedness and Response in Pacific Island Countries' (ILO, 2015) www.ilo.org/suva/areas-of-work/disaster-mitigation-and-recovery/lang-en/index.htm accessed 8 August 2016; the US Government has adopted temporary protection status for Hurricane Mitch victims in Honduras: Peter J Meyer 'Honduras: Background and U.S. Relations' (Congressional Research Services, 22 July 2016).

international community's obligation to act cooperatively to avert potential human rights impacts of international migration and cross-border displacement.⁵⁰ Yet, the exact scope of legal rights and duties in this context remains unclear, especially in relation to the obligations to assist and protect affected populations.⁵¹

As discussed in greater detail below, the principal international instrument concerning forced migration, the 1951 UN Convention relating to the Status of Refugees and its 1967 Protocol (Refugee Convention), does not apply to migrants or most people displaced by climate change-related adverse effects as they are not fleeing 'persecution'.⁵² Proposals to address legal protection gaps for people who are internally displaced in the context of disasters and climate change have focused on enhanced implementation of the 1998 UN Guiding Principles on Internal Displacement (Guiding Principles).⁵³ Several regional instruments and non-binding guidelines offer further guidance for responding to internal displacement. But when applied in the context of those uprooted by climate change, traditional approaches to refugees and internally displaced persons have proved limited in numerous respects. They do not sufficiently address responsibilities and opportunities to minimise or avoid climate-related displacement or the right of affected populations to be supported to adapt in place. Nor are they adequate in meeting the international protection needs of those who are forced to flee abroad due to climate-related disasters or climate-affected populations for whom international migration is a matter of necessity not choice.

The issue of climate displacement was briefly acknowledged in a 2010 decision of the UNFCCC.⁵⁴ Much more focused attention occurred under the Nansen Initiative, a consultative process launched by the governments of Switzerland and Norway in 2012 and culminating in October 2015 when officials from over 100 countries endorsed the Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change ('Nansen Protection Agenda').⁵⁵ In addition, in 2013, the non-profit group Displacement Solutions, in cooperation with a handful of small island nations, developed an unofficial set of guidelines called the Peninsula Principles on Climate Displacement within States ('Nansen Protection Agenda'). Developed to address situations in which climate-vulnerable communities may need to relocate internally as a proactive measure to avoid forced displacement (sometime referred to as 'inland retreat'), the Principles aim to ensure that the human rights of those affected are respected and upheld before, during and after relocation, with a special focus on low-lying island nations and indigenous peoples.⁵⁶

50 María José Fernández, 'Refugees, Climate Change and International Law' (2015) 49 *Forced Migration Review* 42.

51 But see, eg, the ETO Consortium, 'Maastricht Principles on Extra-Territorial Obligations of States in the Area of Economic, Social and Cultural Rights' (FIAN International, January 2013); Expert Group on Global Climate Obligations, 'Oslo Principles on Global Climate Change Obligations' (Kings College London, 30 March 2015); UNHRC Working Group on Human Rights and Transnational Corporations established by UNHRC, 'Human Rights and Transnational Corporations and Other Business Enterprises' (6 July 2011) UN Doc A/HRC/RES/17/4.

52 Convention Relating to the Status of Refugees (adopted 28 July 1951, entered into force 22 April 1954) 189 UNTS 137 ('Refugee Convention').

53 UNHCR, 'Guiding Principles on Internal Displacement' (22 July 1998) UN Doc ADM 1.1, PRL 12.1, PR00/98/109.

54 UNFCCC, 'Report of the Conference of the Parties to its 16th session, held in Cancun from 29 November to 10 December 2010: The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention' (15 March 2011) UN Doc FCCC/CP/2010/7/Add 1, Decision 1/CP 16 para. 14(f).

55 The Nansen Initiative, 'Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change' (Nansen Initiative, December 2015) ('Protection Agenda').

56 Displacement Solutions, 'The Peninsula Principles on Climate Displacement within States' (adopted Mornington Peninsula, 18 August 2013) <http://displacementsolutions.org/peninsula-principles/> ('Peninsula Principles').

Since then, growing national and international recognition of the need to build on these efforts and better plan for and address climate-related displacement and migration has led to progress on several fronts. Most notable are the establishment of a task force on displacement under the UNFCCC and the adoption in late 2018 by a majority of member states of the UN Global Compact for Safe, Orderly and Regular Migration ('GCM') which includes commitments to address climate change-related displacement and migration. Its commitments and recommendations are however, non-legally binding and implementing them will require significant political will and investments.

Any comprehensive discussion of the intersection of climate variability and cross-border movement requires linking existing policies, regional agreements and legal precedents such as refugee policies, humanitarian protections, visa regimes, regional trade agreements, bilateral development interventions and multilateral environmental cooperation regimes. While some international organisations and states have made efforts to consider such links, more work is necessary.⁵⁷

Many sources have promoted assorted recommendations for addressing the current legal insufficiencies related to climate change migration. These are some of the most common recommendations:

- Prioritise the prevention of displacement through adaptations focused on vulnerability and risk reduction.⁵⁸
- Incorporate local perspectives and participation in developing solutions.⁵⁹
- Maintain a focus on equity, anti-discrimination, safety, dignity, and the human rights of displaced people.⁶⁰
- Develop more robust institutional frameworks for global migration governance.⁶¹

In its 2014 report, *Achieving Justice and Human Rights in an Era of Climate Disruption*, the IBA Climate Change Justice and Human Rights Task Force called on the IBA to establish a Working Group on the Legal Aspects of Adaptation that would consider, among other issues, whether the Guiding Principles, the Peninsula Principles, and/or the Nansen Protection Agenda are models for more expansive, global efforts in the area of climate change-related migration. If so, the Task Force was also tasked with determining whether the international legal community can use these models, in coordination with existing initiatives and without duplicating efforts, to build consensus towards new norms, institutions and coordinated action.⁶²

57 For example, the Nansen Initiative on Disaster-Induced Cross-Border Displacement; a partnership between the International Labour Organization, Economic and Social Commission for Asia and the Pacific, and UNDP; and the International Organization for Migration and UNEP's Climate Change, Environment and Migration Alliance.

58 See, eg, UNFCCC, 'Report of the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts' (Report, UNFCCC, 17 November 2015) UN Doc FCCC/SB/2015/3; Scott Leckie, 'Finding Land Solutions to Climate Displacement: A Challenge Like Few Others' (Displacement Solutions, 2013); Warner (n 43); Frank Laczko and Christine Aghazarm (eds), 'Migration, Environment and Climate Change: Assessing the Evidence' (International Organization for Migration, Switzerland, 2009).

59 See, eg, Christian Gahre, 'The Nansen Conference. Climate Change and Displacement in the 21st Century' (Norwegian Refugee Council, 2011); Leckie (n 58).

60 See, eg, Leckie (n 58); Displacement Solutions (n 56); Gahre (n 59); Warner (n 44); Laczko & Aghazarm (n 58).

61 See, eg, Walter Kaelin and Nina Schrepfer, 'Protecting People Crossing Borders in the Context of Climate Change Normative Gaps and Possible Approaches' (Division of International Protection, UNHCR, February 2012) UN Doc PPLA/2012/01; Warner (n 44); Laczko & Aghazarm (n 58); Margareta Wahlström, 'A common understanding' in 'The Nansen Conference, Climate Change and Displacement in the 21st Century' (Norwegian Refugee Council, 2011).

62 IBA Climate Change Justice and Human Rights Task Force (n 43) 182-83.

This chapter's aim is to provide practical policy guidance and tools that usefully build on existing recommendations and prior initiatives and endeavours, while recognising the unique challenges posed by climate change. In acknowledging the multifaceted nature of the issue, we offer practical approaches to address climate-related migration both across borders and within countries. In section 1.2 below, we review the state of existing knowledge and action regarding climate-related migration, highlighting, in particular, legal gaps in protection for climate-displaced people and notable efforts to fill those gaps. In section 1.3, we explore the role that regional governance might play in harnessing the synergies between cross-border labour mobility and climate adaptation. And in Part IV, we explore how states might proactively address climate-related risks of internal displacement.

1.2 Climate change impacts on human mobility and legal responses

Throughout this century, climate change is anticipated to increase the frequency and severity of tropical hurricanes and associated flooding as well as droughts and associated food shortages.⁶³ Additionally, slow-onset sea level rise is expected to be the main displacement catalyst for many people living in coastal areas.⁶⁴ Recent findings of the IPCC indicate that current and future warming of the planet above pre-industrial levels will have significant direct and indirect effects on displacement and migration. The report found that the increase of 1°C in global average temperature has already had a 'statistically significant effect' on outmigration, primarily from agriculture-dependent countries. The report warns that a further increase in temperature of 2°C is likely to result in: more extreme heat, heavy precipitation/flooding and drought; increases in sea level rise of three feet, putting millions of people living in low-lying island nations and coastal areas at risk of displacement; an increase in the number of people both exposed to climate-related risks and susceptible to poverty by up to 'several hundred million people by 2050'; and increased food and water insecurity.⁶⁵

Extreme weather events can undermine and compromise people's ability to support themselves and their families by destroying or diminishing the natural resource base that provides for their livelihood.⁶⁶ Each year since 2008, approximately 21 million people on average are displaced from their homes by weather-related hazards.⁶⁷ Ninety-three per cent of this weather-related human displacement has occurred in developing countries.⁶⁸ In 2017, flooding displaced 1.3 million people in India during the monsoon season, while Hurricane Irma displaced 1.7 million people in Cuba.⁶⁹ In East Asia and the Pacific, 8.6 million people were internally displaced by sudden-onset hazards.⁷⁰

Climate change has also been increasingly recognised as a major variable that can exacerbate underlying vulnerabilities to poverty, conflict and health epidemics, which are in turn related to migration. Absent substantial efforts to build climate resilience, the WFP estimates that the number

63 *Ibid.*

64 Brookings Institution et al (n 45).

65 IPCC, 'Global Warming of 1.5°C' (Report, IPCC, 2018).

66 Michelle Leighton, 'Population Displacement, Relocation and Migration' in Gerrard, M. and Kuh, K. (eds), *The Law of Adaptation to Climate Change: U.S. and International Aspects* (ABA 2012) 693-739.

67 Internal Displacement Monitoring Centre (IDMC), 'Global Internal Displacement Database' (2019) www.internal-displacement.org/database.

68 See M. Yonetani, 'Global Estimates 2015: People Displaced by Disasters' (2015) Internal Displacement Monitoring Centre www.internal-displacement.org/assets/library/Media/201507-globalEstimates-2015/20150713-global-estimates-2015-en-v1.pdf accessed 16 May 2016.

69 *Ibid.*

70 *Ibid.*

of people facing hunger and malnutrition could increase by up to 20 per cent by 2050.⁷¹ Poor, fragile and conflict-ridden states are particularly vulnerable. For example, severe, protracted drought in the Horn of Africa between 2015 and 2017 displaced hundreds of thousands of people and brought both countries to the brink of famine. At the height of the crisis in 2017, 892,000 people in Somalia and 381,000 people in Ethiopia were reported displaced by the drought.⁷² In Somalia, an ongoing armed insurgency by the terrorist organisation, Al Shabaab, made humanitarian access to drought-affected populations extremely challenging, forcing people to flee to urban areas within government control to access aid.⁷³ In Ethiopia, approximately 500,000 people were displaced by the drought and subsequent flooding in 2018.⁷⁴ Having lost all of their livestock, crops and/or homes, they remain displaced and dependent on humanitarian aid because they have nothing to return to and no viable livelihood.

Recent trends in global migration correlate with climate displacement, suggesting that climate change plays a significant role in contemporary mass migration. Sub-Saharan Africa and South Asia,⁷⁵ two of the most climate-affected regions, also represent the regions of the world with the highest emigration rates. Notably, these regions also have the highest share of workers in poverty⁷⁶ (over 40 per cent and 25 per cent of the workforce respectively) and the lowest levels of social protection.⁷⁷

1.2.1 Challenges in addressing climate-related displacement and migration

The IBA report *Achieving Justice and Human Rights in an Era of Climate Disruption* discussed in detail the human rights obligations that pertain to climate displacement and migration, as well as the limitations of the human rights framework. The UNHRC has appointed an Independent Expert on the *Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, and his reports lay out the relevant obligations in considerable detail.⁷⁸ These reports draw many important conclusions including that those most vulnerable to climate variables and extreme weather events are also the ones who face the most movement barriers: economic, cultural, physical, legal and institutional.

(i) INTERNATIONAL LEGAL AND INSTITUTIONAL CHALLENGES

At the international level, no legal instrument speaks directly to climate-related international migration, and existing international and national laws and policies are inadequate to address the problem. In general, existing legal frameworks for international migration are woefully

71 WFP, *Climate Action*, www.wfp.org/climate-change accessed 16 May 2016.

72 IDMC (n 67).

73 *Ibid.*

74 UN Office for Coordination of Humanitarian Affairs and Government of Ethiopia, 'Ethiopia 2018: Humanitarian and Disaster Resilience Plan' (Report, ONOCHA, 2018).

75 Population Reference Bureau, 'World Population Data Sheet 2014' (Population Reference Bureau, 2014) <https://interactives.prb.org/wpds/2014/index.html>.

76 ILO, 'Global Employment Trends: January 2010' (2010) 54.

77 As defined by ILO, social protection involves access to health care and income security, particularly in cases of old age, unemployment, sickness, invalidity, work injury, maternity or loss of a main income earner. ILO, Social protection, www.ilo.org/global/topics/social-security/lang-en/index.htm.

78 UNGA, UNHRC, 'Report of the Independent Expert on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment, John H. Knox' (Mapping Report, HRC, 30 December 2013) UN Doc A/HRC/25/53.

underdeveloped.⁷⁹ Most of the discussion that has occurred regarding policy frameworks for climate-change migrants has focused on disasters brought on by sudden-onset natural hazards such as hurricanes, where destruction unfolds almost instantaneously and forces people to move from their homes, rather than slow-onset displacement events such as protracted drought and food shortages, which develop over time due to the gradual confluence of multiple factors.⁸⁰ Temporary humanitarian protections have been provided in certain instances to those displaced across borders by sudden-onset disasters, although this response has not been standardised. By contrast, in the case of slow-onset, climate change-related effects, normative frameworks for supporting international migration are absent. There is therefore little precedent for addressing international migration stemming in whole or part from slow-onset climate change impacts such as food insecurity, loss of livelihood and rising sea levels.

Current institutional arrangements for protecting internally displaced persons (IDPs) and refugees have yet to adapt to the particular protection and assistance needs of those who are uprooted in the context of climate change. National governments have the primary duty to protect IDPs, but many states lack the capacity or the will to do so. Currently, no single UN agency or other international institution has been given the mandate to respond comprehensively to the issue of climate-related migration (although see the discussion on the Global Compact below). The lack of international legal recognition for climate-forced migrants leaves them vulnerable to human rights infringements, particularly regarding rights to life, health, food, water, shelter and property; rights associated with livelihood and culture; rights associated with migration and resettlement; and rights associated with personal security in the event of conflict.⁸¹ Furthermore, displaced populations do not always have the right to work or seek protection in their host country, leaving them even more vulnerable to exploitation, trafficking and other unsafe conditions.

(a) International initiatives related to planned relocation

Cross-border migration resulting from slow-onset climate-related effects is usually first conducted as an adaptation strategy; yet, international law affords no special rights or protections for people who relocate abroad as a result of such an adaptation strategy. In the context of climate change, international migration of small island communities is likely to arise initially as an adaptation strategy. Absent more well-developed legal frameworks, these migrants will be forced to rely on the good will rather than the legal duty of destination states to provide them with refuge.⁸²

Few international standards exist when it comes to internal relocation of climate change-affected communities. National governments, which bear the primary responsibility to protect the health and safety of those residing within their territories, often use relocation as a strategy to avoid risk of harm for those living in hazard-prone areas. This obligation is understood to extend not only to remedial actions but to preventative ones as well. Many countries have struggled with the difficulties involved in shouldering this additional burden. For example, after a typhoon hit the Philippines in late 2013,

79 Global Forum on Migration and Development, 'Roundtable 3.2: Assessing the Relevance and Impact of Climate Change on Migration and Development' (Fourth Meeting of the Global Forum on Migration and Development, 8-11 November 2010).

80 Susan F Martin, 'Climate Change and International Migration' (German Marshall Fund Study Team on Climate-Induced Migration, 2010).

81 'International Council on Human Rights Policy, Climate Change and Human Rights: A Rough Guide' (International Council on Human Rights Policy, 2008).

82 Kaelin and Schrepfer, (n 61).

President Aquino implemented ‘no build zones’ for residential dwellings in all areas within 40 metres of high tide levels along the coastline.⁸³ The implementation of this policy proved problematic for many reasons including the lack of official notice to many affected citizens and the lack of satisfactory rationale for the seemingly arbitrary 40-metre line. The programme was also criticised for lacking appropriate safeguards for the human rights of those being displaced, particularly ‘the rights of displaced populations to voluntarily return, to adequate and decent housing, and to property restitution, as well as for disregarding prohibitions on forced evictions and arbitrary displacement’.⁸⁴

Even when well-planned and financed, relocating people internally remains complicated, time-intensive and difficult.⁸⁵ Experience from development-induced resettlement – eg, resettlement of populations to make way for large infrastructure projects such as dams – shows that most resettled communities are adversely affected and end up homeless, jobless and in greater poverty.⁸⁶ Given the utility of planned relocation as a strategy for reducing displacement risk and adapting to climate change, several recent initiatives have sought to provide guidance to governments and affected communities on undertaking planned relocation in a manner that addresses these risks and challenges.⁸⁷

(b) International refugee law, human rights law and the law of stateless persons

People who are displaced across borders as a result of climate change are offered little international legal protection.⁸⁸ While the notion of ‘climate refugees’ has become popular in the literature, these persons generally do not fit within the legal definition of a ‘refugee’ set out in the Refugee Convention.⁸⁹ The Refugee Convention defines the term ‘refugee’ as someone who has experienced past or present persecution ‘for reasons of race, religion, nationality, membership of a particular social group or political opinion’.⁹⁰ Characterising climate change or its drivers as ‘persecutors’ and environmentally displaced people as ‘persecuted’ stretches the definition beyond current interpretation. The definition further specifies people who have left their home country, therefore completely excluding internal migrants. Even migrants who have crossed an international border must demonstrate an ‘inability or unwillingness to avail oneself of the protection of one’s country’ to be classified as a refugee.⁹¹ Additionally, establishing a nexus between any persecution and the five listed reasons that qualify a person for refugee status can be difficult in the case of climate-forced migrants.⁹² For these reasons, international law does not officially recognise ‘climate refugees’ as a

83 Alice Thomas, ‘Philippines: Post-Typhoon Resettlement Plan’ (Field Report, Refugees International, 26 February 2015).

84 Alice Thomas (n 83).

85 *Ibid.*

86 Michael Cernea, ‘Impoverishment Risks, Risk Management, and Reconstruction: A Model of Population Displacement and Resettlement’ (UN Symposium on Hydropower and Sustainable Development, Beijing, 27-29 October 2000) www.un.org/esa/sustdev/sdissues/energy/op/hydro_cernea_population_resettlement_backgroundpaper.pdf accessed 16 May 2016.

87 See eg, Displacement Solutions (n 56); Brookings Institution et al (n 45).

88 *Ibid.*

89 Jane McAdam, ‘Climate Change Displacement and International Law’ (Side Event to the High Commissioner’s Dialogue on Protection Challenges, Geneva, 8 December 2010) www.unhcr.org/4d05ecf49.pdf; Benjamin Glahn, ‘Climate Refugees? Addressing the International Legal Gaps’ (International Bar Association, 11 June 2009) www.ibanet.org/Article/Detail.aspx?ArticleUid=B51C02C1-3C27-4AE3-B4C4-7E350EB0F442; Margaret Wahlstrom, ‘Nansen Conference on Climate Change and Displacement in the 21st Century: Chairperson’s Summary’ (Nansen Conference, Oslo, 6-7 June 2011) <http://pnc.iucnp.org/wp/wp-content/uploads/2011/06/Chairpersons-Summary-Nansen-Conference-on-Climate-Change-and-Displacement.pdf> accessed 16 May 2016.

90 Refugee Convention (n 52).

91 Kaelin and Schrepfer, (n 61).

92 McAdam (n 89).

legally identifiable group and does not provide frameworks, guidelines or protocols to protect and assist them.⁹³ Ad hoc policies provide temporary protection from deportation for some people who have crossed borders as a result of certain natural disasters in their country of origin, but this is not a permanent or comprehensive solution.⁹⁴

Outside of refugee law, two potential international protection measures for migrants predominate: human rights law and the law of stateless persons. In relation to human rights law, several international organisations including the UN General Assembly (UNGA), the UNHRC, the International Law Commission, and the Office of the UN High Commissioner for Refugees (UNHCR) have all either requested reports on legal protection for climate-forced migrants or directly incorporated the topic into their extended work plans.⁹⁵ Nevertheless, human rights law provides limited aid to most climate-related migrants.

Human rights law does not accord a special protected status to migrants in the same way that refugee law does.⁹⁶ The main protection that human rights law provides is protection from expulsion for people at ‘risk of arbitrary deprivation of life, torture, or cruel, inhuman or degrading treatment or punishment’.⁹⁷ While this creates a right not to be sent back to a country when such action would amount to inhumane treatment, this does not provide significant further protection.

At the same time, international human rights law has been used successfully to provide migrant protection in limited circumstances in the past. For example, in 2011, the Austrian Constitutional Court, under Article 3 of the European Convention of Human Rights, annulled a decision to expel a refugee to their home country due to lack of sufficient consideration for whether they would be forced back to an area devastated by 2010 floods.⁹⁸ Yet, it is unlikely that this precedent will be applied broadly because of concerns that a general finding of risk could potentially apply to whole populations.⁹⁹

In a more recent decision, the High Court of New Zealand rejected a Kiribati man’s request for asylum as a ‘climate change refugee’.¹⁰⁰ In that case, Ioane Teitiota argued he should be entitled to protection as a refugee because rising sea levels and environmental hazards caused by climate change were endangering his life on Kiribati, a low-lying island nation in the South Pacific.¹⁰¹ The Court concluded that Teitiota’s claim fell short of 1951 Refugee Convention legal criteria because he was unable to show that by returning to Kiribati, he would suffer ‘a sustained and systematic violation of his basic human rights such as right to life [...] or the right to adequate food, clothing and housing’.¹⁰²

The law of stateless persons also has limited applicability to climate-displaced people. According to the 1954 UN Convention relating to the Status of Stateless Persons, a ‘stateless person’ means

93 Glahn (n 89).

94 Susan F Martin (n 80).

95 *Ibid.*

96 *Ibid.*

97 McAdam (n 89).

98 Kaelin and Schrepfer, (n 61).

99 McAdam (n 89); *AF (Kiribati)* [2013] NZIPT 800413, at [2].

100 *Teitiota v. Chief Exec. of the Ministry of Bus. Innovation & Employment* [2013] NZHC 3125 (NZ).

101 *Ibid* 13–15, 21 (41).

102 *Teitiota v Chief Exec. of the Ministry of Bus. Innovation & Employment* (n 100) 54.

a person who is not considered as a national by any state under the operation of its law.’¹⁰³ This definition could theoretically extend to people whose state has ceased to exist due to the effects of climate change, ie, low-lying island states that have become submerged or otherwise uninhabitable due to rising sea levels.¹⁰⁴ Yet, the definition of a stateless person technically refers to people without a nationality rather than people without a physical state. This means that unless the government of the submerged nation withdraws nationality from a particular person – something that is neither required nor likely – citizens will not become ‘stateless persons’ under current international law.¹⁰⁵ Notably, there is a strong presumption for the continued existence of currently recognised nations within the international order, and a submerged country will not necessarily cease to be once it has no more inhabitable territory.¹⁰⁶ In addition, the 1954 Convention has not been widely ratified, thus limiting its potential applicability still further.¹⁰⁷

(ii) LEGAL AND INSTITUTIONAL CHALLENGES AT THE NATIONAL AND REGIONAL LEVEL

At the national level, many states have developed migration policies largely in isolation without consulting civil society actors, labour ministries, employers, workers, organisations and other expert stakeholders in the multidimensional migration policy arena. National policies also largely fail to adequately consider internally displaced populations, despite the fact that evidence demonstrates that the majority of human migration tends to be within countries rather than across borders.¹⁰⁸ Some nations have assisted IDPs through domestic disaster management legislation, but such ‘temporary or subsidiary protection is not based on a legal entitlement of persons concerned but rather depends on the discretion of competent authorities.’¹⁰⁹

At the regional and sub-regional level, a lack of standardised protection mechanisms, processes, and procedures makes it difficult for climate-vulnerable populations to navigate legal migration pathways close to home and may result in the use of irregular migration channels.

1.2.2 Efforts to address gaps in legal protection for climate-displaced people

(i) THE NANSEN INITIATIVE

Although collective action to address the issue of climate displacement is lacking at all levels, several important avenues have emerged for building international consensus on how to tackle this complex issue. One of the most comprehensive attempts to address gaps in the legal frameworks has been the Nansen Initiative on Cross-Border Displacement in the Context of Disasters and Climate Change (‘Nansen Initiative’), a bottom-up, state-led consultative process that was launched in 2012 by the

103 Carol Batchelor, ‘The 1954 Convention relating to the Status of Stateless Persons: Implementation within the European Union Member States and Recommendations for Harmonisation’ (UNHCR, Department of International Protection, October 2003).

104 Kaelin and Schrepfer, (n 61).

105 McAdam (n 89).

106 Kaelin and Schrepfer, (n 61); Jenny Grote Stoutenburg, ‘When Do States Disappear? Thresholds of Effective Statehood and the Continued Recognition of ‘Deterritorialized’ Island States’ in Michael B Gerrard & Gregory E Wannier (eds) *Threatened Island Nations: Legal Implications of Rising Seas and a Changing Climate* (Cambridge University Press, 2013).

107 McAdam (n 89).

108 Walter Kaelin, ‘Durable Solutions for Internally Displaced Persons: An Essential Dimension of Peacebuilding’ (Briefing Paper, Peacebuilding Commission Working Group on Lessons Learned, 2008).

109 Kaelin and Schrepfer, (n 61)

Norwegian and Swiss governments. Recognising the implausibility of attaining a new international agreement on so-called ‘climate refugees’, the Nansen Initiative’s goal is to build consensus among governments on how to address the legal protection gaps for people displaced across international borders in the context of disasters and climate change. In October 2015, more than 100 governments endorsed an Agenda for the Protection of Cross-Border Displaced Persons in the Context of Disasters and Climate Change (‘Nansen Protection Agenda’).

Acknowledging that the effects of climate change and their impacts on patterns of displacement and migration will vary regionally (as will political dynamics), the Nansen Protection Agenda proposes that solutions build on a broad set of existing displacement, migration and refugee policies and practices that have been employed by governments to protect people in such crises (eg, humanitarian visas, temporary protection status). In addition, the Nansen Protection Agenda further identifies priority action areas to prevent displacement such as improved management of internal migration.

The Nansen Protection Agenda consolidates legal standards and protection mechanisms to provide a framework for protection measures taken at the local, regional, sub-regional, national and international levels. The Nansen Protection Agenda recommends three areas that can serve to enhance coordination and action between these multiple levels of authority. First, it recommends multilateral efforts to collect data and share knowledge on cross-border disaster displacement. For example, international organisations and agencies can share technical advice and offer operational support to governmental authorities. Second, the Protection Agenda encourages the application of humanitarian protection measures for cross-border disaster-displaced persons through the harmonising of approaches at the sub-regional level. Lastly, the third area that the Protection Agenda recommends for potential coordination is disaster displacement risk management; more specifically, it suggests that human mobility considerations be integrated into disaster risk reduction (DRR) and climate change adaptation strategies.

At the national level in particular, the Protection Agenda recommends that states designate institutional leadership to coordinate national planning and response efforts across branches of government. With this in mind, state-level coordination can facilitate efficient regional and sub-regional consultative processes on migration, human rights mechanisms, disaster management, climate adaptation and trade. Following adoption of the Protection Agenda, a group of governments supported the creation of the Platform on Disaster Displacement (PDD) to implement the Protection Agenda. The PDD works to address knowledge and data gaps, enhance the use of effective practices, and mainstream human mobility challenges across relevant policy frameworks and practice areas.¹¹⁰

(ii) UN FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

The issue of how to address displacement and migration arising from the negative effects of climate change has also been taken up by the Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC) following its recognition of the need to enhance understanding and action in the area of climate change-induced displacement, migration and

¹¹⁰ Platform on Disaster Displacement, ‘The Platform on Disaster Displacement’ (2020) <http://disasterdisplacement.org> accessed 25 March 2019.

planned relocation.¹¹¹ Pursuant to a COP decision adopted in Cancun, Mexico in 2010, parties to the Convention were invited to ‘enhance action on [climate change] adaptation [...] by undertaking [...] [m]easures to enhance understanding, coordination and cooperation with regard to climate change induced displacement and planned relocation, where appropriate, at the national, regional and international levels’.¹¹² This decision, known as the Cancun Adaptation Framework, clearly identifies measures to address climate displacement as a form of adaptation, thereby linking it to adaptation funds established under the UNFCCC such as the Green Climate Fund.¹¹³

In order to help Least Developed Countries (LDC) identify activities necessary to adapt to climate change, the UNFCCC calls on LDCs to adopt National Adaptation Programmes of Action (NAPA). NAPAs are intended to ‘provide a process for [LDCs] to identify priority activities that respond to their urgent and immediate needs to adapt to climate change – those for which further delay would increase vulnerability and/or costs at a later stage’.¹¹⁴ Within these NAPAs, migration is often specified as an adaptation strategy either to minimise human impact on fragile ecosystems or to implement planned procedures in areas where resettlement is inevitable.¹¹⁵ Such relocation plans predominantly focus on internal relocation rather than cross-border migration.¹¹⁶

Despite commitments of the developed country parties to the UNFCCC to stabilise GHG concentrations in the atmosphere and to help developing countries adapt to climate change, it became evident that some climate change impacts are ‘unavoidable’. These unavoidable or residual impacts came to be known as ‘loss and damage’. In 2012, the COP adopted the Doha Decision, which further defined the concept of loss and damage by acknowledging the need to ‘advance the understanding of and expertise on loss and damage, which includes, inter alia, [...] [h]ow impacts of climate change are affecting patterns of migration, displacement and human mobility...’¹¹⁷

In 2013, the COP established the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM) ‘to address loss and damage associated with impacts of climate change, including extreme events and slow-onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change’.¹¹⁸ The functions of the WIM are: (1) enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change, including slow-onset impacts; (2) strengthening dialogue, coordination, coherence and synergies among relevant stakeholders; and (3) enhancing action and support, including finance, technology and capacity building, to address loss and damage associated with the adverse effects of climate change, so as to enable countries to undertake actions to assess climate-related risks, identify risk management strategies, and implement

111 UNFCCC ‘Decision 1/CP 16’ (n 37) para 14(f); UNFCCC Decision 3/CP 18 ‘Approaches to Address Loss and Damage Associated with Climate Change Impacts in Developing Countries that are Particularly Vulnerable to the Adverse Effects of Climate Change to Enhance Adaptive Capacity’ (28 February 2013) UN Doc FCCC/CP/2012/8/Add 1 para 7(a) (vi).

112 *Ibid* para 14(f).

113 *Ibid* para 95-137.

114 UNFCCC, ‘Report of the Conference of the Parties on its 16th session,’ held in Cancun from 29 November to 10 December 2010, p 32.

115 Leighton et al (n 66) 698.

116 *Ibid*.

117 UNFCCC Decision 3/CP 18 (n 111) para 7(a) (vi).

118 UNFCCC Decision 2/CP 19, ‘Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts’ (31 January 2014) UN Doc FCCC/CP/2013/10/Add1 para 1.

those strategies.¹¹⁹ The implementation of the functions of the WIM is to be guided by an Executive Committee (WIM ExComm), under the guidance of the COP.

Acknowledging that climate change impacts on displacement and migration may constitute a form of loss and damage, the WIM ExComm has included as an action area in its two-year work plan a commitment to ‘[e]nhance the understanding of and expertise on how the impacts of climate change are affecting patterns of migration, displacement and human mobility; and the application of such understanding and expertise’.¹²⁰ In addition, the Paris Agreement reached at COP21 in December 2015 requested the WIM ExComm to establish a task force to work with existing bodies and expert groups ‘to develop recommendations for integrated approaches to avert, minimise and address displacement related to the adverse impacts of climate change’.¹²¹ As discussed below, the task force’s final recommendations were welcomed by state parties to the UNFCCC at the December 2018 COP in Katowice, Poland.

At the same time, none of the agreements reached to date, and few of the informal discussions, have tackled one of the thorniest issues of all: where people will settle if they are displaced across borders but are indefinitely unable to return home. States have an obligation to afford basic human rights protections even for non-citizens who are within their borders but (absent a few small-scale bilateral agreements) have no legal obligation to allow non-citizens to enter. The recent crisis of mixed migration and refugee flows into Europe led to a substantial death toll during attempts to cross the Mediterranean Sea and to political upheaval in Europe particularly regarding the large influx of Syrian refugees. Under many estimates the number of people who will be displaced across borders as a result of climate change in the second half of this century will substantially exceed the number involved in the current crisis described above. However, if no country has agreed in advance to accept substantial numbers of these displaced persons, an even larger crisis could occur. Some academics have proposed that those countries responsible for the largest loads of GHGs in the atmosphere should accept a percentage of the world’s climate-displaced persons roughly proportional to their historic GHG emissions.¹²² Such proposals would be anathema given the current political climate in the US and Europe. However, failure to consider these issues in advance creates a high probability of crises in the decades to come.

1.3 Labour mobility and regional climate adaptation¹²³

As global climate change intensifies and diminishes economic opportunity, people may consider migration as a potential coping strategy.¹²⁴ Many workers are already seeking decent work and

119 *Ibid.*

120 UNFCCC, ‘Initial Two-Year Workplan of the Executive Committee of the Warsaw International Mechanism for Loss and Damage’ (UNFCCC, 2020) http://unfccc.int/adaptation/workstreams/loss_and_damage/items/8805.php accessed 16 May 2016.

121 UNFCCC Adoption of the Paris Agreement (n 3) para 50.

122 Michael B Gerrard, ‘America is the Worst Polluter in the History of the World. We Should Let Climate Refugees Resettle Here’ *Washington Post* (Washington, 25 June 2015) www.washingtonpost.com/opinions/america-is-the-worst-polluter-in-the-history-of-the-world-we-should-let-climate-change-refugees-resettle-here/2015/06/25/28a55238-1a9c-11e5-ab92-c75ae6ab94b5_story.html; see also Peter H Schuck, ‘Refugee Burden-Sharing: A Modest Proposal’ (1977) 22 *Yale Journal of International Law* 24.

123 The section to this report was completed in 2018. Since that time, more recent figures have been made available, but follow the same trends described in this section of the report.

124 Michelle Leighton, ‘Drought, Desertification, and Migration: Past Experiences, Predicted Impacts, and Human Rights’ in Piquet, E Pecoud, A, de Guchteneire, P (Eds.) *Migration and Climate Change* (Cambridge University Press, 2012) 331-58.

income security abroad due to conflict, disaster or poor economic opportunities at home.¹²⁵

Internally displaced persons in particular may be among those pushed to move across borders and enter the labour market to support themselves and their families. In 2017, 18 million people were estimated to have been displaced within their countries by climate-related events.¹²⁶ In the first half of 2020, disasters triggered by natural hazards displaced some 9.8 million people internally, it is unknown how many may eventually cross an international border.¹²⁷ Some of the roughly 18 million displaced people displaced each year since 2017, join the over 164 million migrant workers that the International Labour Organization (ILO) estimates are in the world of work today.¹²⁸ The growing gap between the opportunities for prosperity in home communities and the opportunities available abroad, compounded with an increase in incidents of extreme weather events, suggest that human mobility and climate change will continue to be linked for years to come.

Too often, migrants who are forced to cross international borders due to natural disaster or climate impacts are not viewed as persons in need of protection, aid or assistance.¹²⁹ To survive in climate-affected regions, households may choose to send a member or several members of the household into migration through irregular (illegal) channels. This may result in migrants taking low paying jobs in the informal sector, paying high costs to recruiters and working without adequate social protection. Irregular migrant workers report frequent instances of non-payment or underpayment of wages, including during the Covid-19 pandemic,¹³⁰ which means that they return home with little or no savings to support their families or to help rebuild their communities. Such costs undercut the economic, social and environmental contributions migrants can make to their communities of origin.

Migration, although not traditionally pursued as an adaptation strategy under the UNFCCC framework, can serve dual adaptive purposes if it is managed well. Migration can contribute to development objectives while also reducing population pressure in climate-affected areas, particularly areas prone to drought or desertification. It can also help build resilience in destination countries, particularly when labour migration is channelled into sustainable industries.

Capitalising on migration's adaptive potential can begin by identifying good policies, models and mechanisms that allow people to move through regular migration channels into areas where decent work opportunities exist. If labour mobility is governed in a manner that meets international standards, fills genuine labour market shortages, and protects the rights of migrant workers, it can contribute to climate adaptation and economic development.

As governments and regional bodies develop strategies for climate adaptation, a key consideration is to what extent legal and political responses can ensure that climate-related migration is a positive

125 Clionadh Raleigh, Lisa Jordan and Idean Salehyan 'Assessing the Impact of Climate Change on Migration and Conflict. Social Dimensions of Climate Change' (The World Bank Group, 2011) <https://environmentalmigration.iom.int/assessing-impact-climate-change-migration-and-conflict> accessed 16 May 2016.

126 See M Yonetani, 'Global Estimates 2015: People Displaced by Disasters' Internal Displacement Monitoring Centre (2015) www.internal-displacement.org/assets/library/Media/201507-globalEstimates-2015/20150713-global-estimates-2015-en-v1.pdf accessed 16 May 2016.

127 Internal displacement monitoring centre 'Internal displacement 2020: Mid-year update' Geneva (2020) www.internal-displacement.org/sites/default/files/publications/documents/2020%20Mid-year%20update.pdf

128 ILO Labour Migration Branch and ILO Department of Statistics, 'ILO Global Estimates on Migrant Workers: Results and Methodology' (ILO, Geneva, 2018). www.ilo.org/global/publications/books/WCMS_652001/lang-en/index.htm

129 In a few special cases temporary humanitarian visas have been granted to populations displaced by extreme weather events, although the practice is far from standard. See Nansen Initiative, 'Discussion Paper: Draft Elements of a Guide to Effective Practices on Admission and Stay for Persons Moving across Borders in the Context of Disasters', for more detail.

130 See ILO, 'Protecting migrant workers during the COVID-19 pandemic', www.ilo.org/global/topics/labour-migration/WCMS_748791/lang-en/index.htm

experience for migrants, their home communities and the host society. Given an increased focus on migration at the regional level, how might regional cooperation help to ensure that human mobility contributes positively to personal and community development and include highly vulnerable groups, including the growing cohort of unemployed youth? A further consideration is whether adaptation strategies can help create enabling environments for regional investment, jobs and entrepreneurship in tandem with labour mobility so that there are opportunities for diaspora investment and sustainable job creation when migrants return. These are current questions of interest for the ILO and other development partners that already seek to support social justice and climate justice through fair and well-managed migration as a part of inclusive development.

We provide an early exploration of the potential contribution of regional governance in this regard, and examine the synergies between labour mobility and climate adaptation in the following section. Recognising that there is a dearth of experience in integrating these two objectives, we review the regional cooperative processes that serve as potential models for considering both labour mobility and adaptation together. Annexes I and II provide a more detailed review of the regional bodies, dialogues and processes that exist today.

1.3.1 Links between climate change and labour mobility

The search for work in a neighbouring country can serve as a safety valve in coping with economic distress. As the UK Climate Change and Migration Coalition has argued, migration ‘gives an individual a chance to diversify their income [and] spread risk for the household’.¹³¹ At the same time, when migration is well-managed, it can be a positive contributor to development of the host community. A survey conducted by the UN University’s Institute for Environment and Human Security found that remittances play an important role to ‘improve resilience to environmental stressors and the capacity to cope with future climate change impacts’.¹³² When migration is framed only as a negative consequence of climate disaster, it fails to account for these positive contributions.

Even when migration is not undertaken primarily for reasons of work, experience has shown that most migrants eventually enter the labour market. Out of the total 232 million international migrants, ILO estimates that 207 million are of working age (15 years and over) and over 70 per cent, or 164 million, of them are working or economically active.¹³³ Some 60.8 per cent of migrant workers are found in three subregions: northern America (23.0 per cent), Northern, Southern and Western Europe (23.9 per cent) and the Arab States (13.9 per cent).¹³⁴

Evidence also suggests that these foreign-born workers have a higher average labour force participation rate than native workers and contribute more to the tax base than they take away.¹³⁵ While empirical studies on their economic impacts are mixed, several suggest that migrants can

131 Kayly Ober, ‘Migration as Adaptation: Exploring Mobility as a Coping Strategy for Climate Change’, (The UK Climate Change and Migration Coalition, 2011) 4.

132 Pacific Climate Change and Migration Project, Newsletter: COP21 Special Edition’ (Pacific Climate Change and Migration Project, 11 March 2016).

133 ILO Labour Migration Branch and ILO Department of Statistics (n 128).

134 *Ibid.*

135 ILO, OCED and World Bank Group, ‘G20 Labour Markets: Outlook, Key Challenges and Policy Responses’ (Report, G20 Labour and Employment Ministerial Meeting, Melbourne, 10-11 September 2014).

stimulate demand for basic commodities and push lower-skilled native workers into higher-earning, managerial positions.¹³⁶

The potential for economic growth to be supported by labour mobility has led to increasing dialogue bilaterally and within regional economic integration processes and regional economic communities (RECs) on how to foster free movement pathways, including to recognise the role of climate change.¹³⁷ Reducing cross-border barriers to free movement supports economic growth by enabling people to travel, shop, invest and pursue decent work across borders. A review of Asia Pacific nations has shown that, since the early 2000s, the countries that perform best in generating decent work opportunities for migrant workers have maintained higher rates of per capita income growth.¹³⁸

The contribution of migration to development is also now better recognised by the international community. Although absent from the Millennium Development Goals (MDGs), the 2030 Sustainable Development Agenda and Goals (SDGs) adopted by the UNGA in September 2015 confirm the importance of this link. SDG 10 calls on member states to ‘facilitat[e] orderly, safe, regular and responsible migration and mobility of people including through the implementation of planned and well-managed migration policies’. Additionally, SDG 8 includes a target on promoting decent work opportunities for all workers, including migrant workers.¹³⁹

The contributions migrants can make has not, however, been widely applied in the context of climate change. There are a few pilot projects and case studies that begin to demonstrate how labour migration can help climate-vulnerable areas boost resilience and adapt to changes. Several recent international initiatives to combat climate change may provide impetus to connect the two issues in a more coherent manner.

As indicated above, the 2010 Cancun Adaptation Framework invites parties to the UNFCCC to enhance action on adaptation in several ways, including by undertaking ‘[m]easures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels’.¹⁴⁰ At COP19, the Parties established WIM, in order to address loss and damage associated with impacts of climate change, particularly in developing countries that are most vulnerable to the adverse effects of climate change. At the time, migration, more specifically ‘displacement’, was framed as a symptom of loss and damage.

Although the Paris Agreement of 2015 frames migration as an issue associated with loss and damage, during COP21 a panel of experts confirmed that migration can and should be considered in more positive ways to support adaptation strategies.¹⁴¹ During a high-level round table at COP21, representatives from the ILO, the International Organization for Migration (IOM) UN University,

136 Ethan G Lewis, ‘Immigration, Skill Mix, and Capital-Skill Complementarity’ (2011) 126 (2) *Quarterly Journal of Economics* 1029.

137 Intergovernmental Authority on Development (IGAD), <https://igad.int/divisions/health-and-social-development/2016-05-24-03-16-37/2373-protocol-on-free-movement-of-persons-endorse-at-ministerial-meeting>.

138 Asia-Pacific RCM Thematic Working Group on International Migration including Human Trafficking, ‘Asia-Pacific Migration Report 2015: Migrants’ Contributions to Development’ (2016).

139 UNGA, ‘Transforming Our World: the 2030 Agenda for Sustainable Development’ (18 September 2015) 70th Session Agenda Items 15 and 116 UN Doc A/70/L1 ‘Sustainable Development Goals’.

140 UNFCCC Cancun Adaptation Framework (n 37) para 14 (f).

141 Advisory Group on Climate Change and Human Mobility, ‘Human Mobility in the Context of Climate Change’ (Recommendations, COP 21 Paris, December 2015) <https://unfccc6.meta-fusion.com/cop21/events/2015-12-02-17-00-united-nations-high-commissioner-for-refugees-unhcr-prepare-and-adapt-climate-change-and-human-mobility-in-cop21-and-beyond>.

the UN Convention to Combat Desertification, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the UN Educational, Scientific and Cultural Organization, UNHCR, the United Nations Office for the Coordination of Humanitarian Affairs, and the World Meteorological Organization discussed climate change from a human mobility perspective, taking note of conditions under which mobility strategies save lives, enhance resilience and reduce risk.

A key outcome to COP21 was a request made by Parties to the UNFCCC Executive Committee to establish a task force under the WIM to develop recommendations to avert, minimise and address displacement related to the adverse effects of climate change. In nominating members of the Task Force, a wide variety of expertise was called upon, including development actors such as UN Development Programme (UNDP) and the ILO.¹⁴² Their appointments on the Task Force signal a clear change in perspective, taking into account the links between development and displacement risks. ILO's nomination more clearly demonstrates that access to decent jobs plays a critical role in building resilience and preventing future displacements.

In September 2018, the Task Force on Displacement produced a global study of actions and institutions in the area of climate-related displacement, and provided a report containing recommendations for the WIM and UNFCCC¹⁴³ which were then adopted by the WIM, including an extension of the Task Force mandate, and which were welcomed in a decision by the UNFCCC COP 24 in December 2018. The recommendations include provisions recognising the importance of migration and labour mobility, and of ILO standards:

'Invite Parties:

- (i) to consider formulating laws, policies and strategies, as appropriate, that reflect the importance of integrated approaches to avert, minimise and address displacement related to the adverse impacts of climate change and in the broader context of human mobility, taking into consideration their respective human rights obligations and, as appropriate, other relevant international standards and legal considerations;
- (ii) to enhance research, data collection, risk analysis and sharing of information to better map, understand and manage human mobility related to the adverse impacts of climate change in a manner that includes the participation of communities affected and at risk of displacement related to the adverse impacts of climate change;
- (iii) to strengthen preparedness, including early warning systems, contingency planning, evacuation planning and resilience-building strategies and plans, and develop innovative approaches, such as forecast-based financing, to avert, minimise and address displacement related to the adverse impacts of climate change;
- (iv) to integrate climate change-related human mobility challenges and opportunities into national planning processes, as appropriate, by drawing on available tools, guidance and good practices, and consider communicating these efforts undertaken, as appropriate;

142 Author Michelle Leighton serves as an expert on the UNFCCC WIM Task Force on Displacement.

143 Task Force on Displacement, 'Report of the Task Force on Displacement' (UNFCCC, 17 September 2018) https://unfccc.int/sites/default/files/resource/2018_TFD_report_t_17_Sep.pdf.

(v) to recall the UN Guiding Principles on internal displacement and seek to strengthen efforts to find durable solutions for internally displaced people when working to implement integrated approaches to avert, minimise and address displacement related to the adverse impacts of climate change, as appropriate;

(vi) to facilitate orderly, safe, regular and responsible migration and mobility of people, as appropriate and in accordance with national laws and policies, in the context of climate change, by considering the needs of migrants and displaced persons, communities of origin, transit and destination, and by enhancing opportunities for regular migration pathways, including through labour mobility, consistent with international labour standards, as appropriate...'¹⁴⁴

The Recommendations adopted further invite UN agencies and other stakeholders to engage with the WIM and Task Force 'when facilitating the efforts of States to address challenges and opportunities associated with climate change related human mobility, including the Global Compact for Migration [discussed below] and the work of the international migration review forum, the United Nations Network on Migration and other relevant international frameworks and programmes of action, as appropriate, to avoid duplication on climate change aspects...' and for the UN Secretary-General to consider strategic approaches and system-wide coherence to avert, minimise and address climate related displacement.¹⁴⁵

The GCM is an instrument adopted by the UN on 19 December 2018.¹⁴⁶ It contains a section under its second objective related to adverse drivers of migration on natural disasters, the adverse effects of GCM, and environmental degradation. The GCM includes non-legally binding commitments by states under this section to develop strategies for resilience and adaptation, and coherent approaches to addressing climate-related migration and displacement, including from desertification, land degradation and drought.

The Nansen Protection Agenda¹⁴⁷ calls for protecting persons displaced across borders by disasters as well as for management of disaster displacement risk in the country of origin through reducing vulnerability and building resilience. It also calls for decent living conditions for migrants and for planned relocation. It identifies three priority areas for action:

1. collecting data and enhancing knowledge on cross-border disaster-displacement;
2. enhancing the use of humanitarian protection measures for cross-border disaster-displaced persons, including mechanisms for lasting solutions (for instance, by harmonising approaches at (sub-)regional levels);
3. strengthening the management of disaster displacement risk in the country of origin by –

144 Executive Committee of the Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts, 'Recommendations from the Report of the Executive Committee of the Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts on Integrated Approaches to Averting, Minimizing and Addressing Displacement Related to the Adverse Impacts of Climate Change' in Annex to Report of the Executive Committee of the Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts Decision -/CP24 Katowice, (2018) https://unfccc.int/sites/default/files/resource/cp24_auv_ec%20wim.pdf?download.

145 *Ibid.*

146 UNGA Res 73/185 (19 December 2018) UN Doc A/RES/73/185.

147 Nansen Protection Agenda, 'About Us' (2020) www.nanseninitiative.org/secretariat/ accessed 16 May 2016.

- (i.) integrating human mobility into disaster risk reduction and climate change adaptation strategies and other relevant development processes;
- (ii.) facilitating migration with dignity as a potentially positive way to cope with the effects of natural hazards and climate change;
- (iii.) improving the use of planned relocation as a preventative or responsive measure to disaster risk and displacement;
- (iv.) ensuring that relevant laws and policies address the needs of IDPs displaced in disaster situations.

International human rights and labour standards apply to all workers, including those who migrate due to or are displaced by climate change. For example, ILO Migration for Employment Convention (No 97) and ILO Migrant Workers Convention (No 143) and their Recommendations (No 86 and No 151 respectively) cover all workers employed outside of their own countries. When taken together, international labour standards provide for fair wages, decent working conditions and social protection coverage. ILO has also adopted in 2016 Guiding Principles on access of refugees and other forcibly displaced persons to the labour market, and a new standard on peace and resilience, covering migrants and refugees.¹⁴⁸ These are critical for workers to make their full contributions to the development of host communities, as well as to their countries of origin.

Although migration has long served as an individual coping strategy to deal with the effects of extreme weather events, it has yet to be routinely integrated into resilience or adaptation plans. Where regular or more formal migration channels are available to provide decent work, there could also be an opportunity to boost resilience at home through employment opportunities abroad. Labour mobility programmes should therefore seek to support economic development that is aligned with international labour standards and supports rather than displaces national workers. There are now 164 million migrant workers, and because most migrants move within their own regions,¹⁴⁹ particularly for work, regional mobility is a key area of migration governance. Recognising this, the Paris Agreement affirmed the importance of regional approaches to migration policy. Potential exists for regional economic integration processes to consider whether labour mobility programmes can target climate vulnerable groups within a broader adaptation strategy.

1.3.2 Regional governance approaches

Working at the regional level with geographically defined groups that share common cultural, linguistic and economic characteristics allows national actors to collaborate and coordinate at a higher level. Regional economic groups refer to the geographically defined groups of states that serve as the basis for progressive economic integration. Regional groups have different legislative constructs and may forge multilateral agreements on different areas of mutual interest including trade, labour, investment and migration. Within some regional bodies, individual member states

148 ILO, 'Guiding principles: Access of Refugees and Other Forcibly Displaced Persons to the Labor Market' (Tripartite Technical Meeting on the Access of Refugees and other Forcibly Displaced Persons to the Labour Market, Geneva, 7 July 2016); International Labour Organisation, www.ilo.org/global/topics/labour-migration/projects/WCMS_536440/lang-en/index.htm; 'Recommendation No. 205: Employment and Decent Work for Peace and Resilience Recommendation' (10th ILO Session, Geneva, 16 June 2017). www.ilo.org/dyn/normlex/en/f?p=NOR_MLEX PUB:12100:0::NO::P12100_ILO_CODE:R205.

149 ILO Labour Migration Branch and ILO Department of Statistics (n 128).

ratify treaties and agreements and pass them into legally binding and enforceable national law. Other regional dialogues and processes have been established as mechanisms to foster collective discussion regarding specific topics, but typically result in no legal agreement. For example, the Migration Dialogue for Southern Africa is a non-binding regional consultative process that focuses on migration topics, including irregular migration, migration and development and migration management capacity building. Few such processes, however, consider climate displacement. The details of various processes are more comprehensively identified in section 1.3.4 below.

Although there has been little dialogue at the regional level on the climate dimensions of migration, regional groupings have three distinct advantages in pursuing collective objectives on labour migration more generally. First, they understand the social, economic and cultural contexts better than international actors only operating at the global level. These contexts will dictate local opportunities, constraints and barriers for labour migration. Second, there are more cultural, linguistic and economic ties within regional groups, making labour market integration a relatively easier process for migrant workers. Third, regional groups have pre-existing bilateral relations and multilateral agreements or arrangements that can be built on and strengthened to support climate dimensions. Regional fora may therefore serve as an appropriate space to discuss and develop regional labour mobility arrangements that can target climate-vulnerable areas. As discussed below, there are a number of recent international instruments that encourage regional cooperation on climate adaptation. For example, a new African and European agreement forged in Valletta in November 2015 calls for strengthening cooperation around climate change and migration issues.

1.3.3 Regional cooperation on labour mobility

Adopting labour mobility to support climate adaptation will be a more challenging feat for some regional groupings than others. One factor that may support discussion on the topic is the existence of free mobility arrangements between member states. In this vein, the EU, the Southern Africa Development Community (SADC)¹⁵⁰ and the Economic Community of West African States (ECOWAS) are among the few that have set out protocols on the free movement of people. Other regional bodies, such as the Southern Common Market ('MERCOSUR'), have established special provisions and privileges to citizens of member states. This includes the regional mobility of registered skilled professionals in the Association of Southeast Asian Nations (ASEAN) and Caribbean Community (CARICOM). Other special privileges short of full mobility include waiving visa fees, expediting visa procedures and permitting temporary mobility for specific groups.

Whether or not the region is highly vulnerable to the effects of climate change, free mobility arrangements can help address skills and jobs mismatches as well as labour shortages. In the EU, a Seasonal Workers Directive grants admission to workers outside the EU territory for seasonal work in agriculture, horticulture and tourism. The Directive provides uniform protections, common criteria for admission and standardised conditions for residence. Quotas are also driven by labour shortages. Critics have, however, raised concerns over inadequate social protection measures thus illustrating another important variable that sustainable labour migration schemes need to consider in order to uphold the human rights of workers. The provision of social protection for migrant

¹⁵⁰ In 2005, SADC proposed a protocol on Free Mobility Movement although it is not yet operational due to ratification issues in member states

workers, particularly those outside a regional group and therefore not covered by the same protection regimes, is critical. Other practical measures to facilitate free movement include standardising social security agreements across nations and establishing common qualification criteria.¹⁵¹

Although not linked to climate adaptation, general discussion regarding the development of more comprehensive protections for migrant workers is already underway in the EU, the ASEAN, ECOWAS, SADC and MERCOSUR. The various regional initiatives focus on strengthening cooperation around fair migration through standard setting and social dialogue. In SADC, ILO has helped member states to consider how best to harmonise national labour mobility policies through a regional strategy that is in line with international labour standards. Other regional initiatives include the extension of social protections for overseas workers from the Philippines¹⁵² and the provision of social security rights for non-EU workers working within the European Union.¹⁵³ The portability and recognition of social security arrangements will be an important component of any migration scheme going forward.¹⁵⁴

1.3.4 Regional platforms on migration

A number of other intra-regional platforms support cooperation among countries of migrant origin, transit and destination. They bring key actors together at regular meetings where they can discuss and potentially develop non-binding strategies and initiatives on issues of mutual concern. Few platforms mention the climate dimension of displacement; however, several provide platforms for discussion on social protection and the generation of decent work opportunities. The Rabat Process is an initiative launched by European and African ministers in charge of migration and development. It covers nearly 50 countries in North Africa, Central Africa, West Africa and Europe.¹⁵⁵ The Khartoum Process is an additional intra-regional process which encourages 27 EU countries, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Tunisia and the UK to consider specifically how best to combat human trafficking channels between the regions.

The Valletta Joint Action Plan provides renewed support for such discussion platforms. It was launched by EU Member States and the African Union (AU) to support development actions that can reduce pressure for irregular and forced migration, particularly to Europe and which seek to stimulate economic development, job creation and labour mobility within RECs. Among the key root causes of irregular migration and displacement which the Declaration of the Valletta Summit Action Plan mentions are ‘environmental and climate change issues’.¹⁵⁶ The Action Plan seeks to:

151 ILO, ‘Social Protection for Migrant Workers’ (2020) www.ilo.org/global/topics/labour-migration/policy-areas/social-protection/lang-en/index.htm accessed 29 March 2016.

152 ILO, ‘Labour Migration in the Philippines’ (2020) www.ilo.org/manila/areasofwork/labour-migration/lang-en/index.htm accessed 29 March 2016.

153 ILO, ‘Portability of Social Security Rights to Nationals of both the EU and Third Countries’ (19 May 2015) www.ilo.org/dyn/migpractice/migmain.showPractice?p_lang=en&p_practice_id=18.

154 ILO, ‘Fair Migration Agenda’ (2020) www.ilo.org/global/topics/labour-migration/fair-migration-agenda/lang-en/index.htm accessed 29 March 2015; ILO, EU, IOM, International Centre for Migration Policy Development (ICMPD), ECOWAS, ‘Technical Workshop on Strengthening Employment Services Through Job Matching Tools in ECOWAS Member States and Mauritania’ (FMM West Africa, Dakar, 9-10 February 2016).

155 *North Africa*, Algeria (observer) and Tunisia; *Central Africa*: Cameroon, Central African Republic, Chad, the Democratic Republic of Congo (DR Congo), Gabon; *West Africa*: Benin, Burkina Faso, Cabo Verde, Ivory Coast, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mauritania, Niger, Nigeria, Sierra Leone, and Togo; *Europe*: Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Romania, Slovenia, Sweden, Switzerland and the United Kingdom: ICMPD, ‘Participants’ www.icmpd.org/our-work/migration-dialogues/rabat-process/participants/ accessed 16 May 2016.

156 European Council, ‘Valletta Action Plan’ (Valletta Summit on Migration, Valletta, 11-12 November 2015) 3.

- Support resilience, to benefit the most vulnerable, in particular women and children, and communities hosting protracted refugee populations, including through rural development, food and nutrition security, health, education and social protection.
- Enhance the resilience agenda aiming at reducing food insecurity and under-nutrition and increase the delivery of basic services notably through the AGIR (Sahel) and Share 2.0 (Horn of Africa) initiatives.
- Address environmental and climate change issues in the most affected regions, including through adaptation to climate change and development of sustainable and renewable energies, notably via consensual electrification projects.
- Provide satellite data and information (Copernicus programme) to support rural development, the improvement of food security and the management of natural resources in a sustainable way. The existing access to Copernicus data and information products by African countries will be further facilitated.¹⁵⁷

Countries in the EU and Africa have developed a number of bilateral agreements, including some intended to develop cooperation frameworks such as the ‘Mobility Partnership and Common Agendas on Migration and Mobility’.¹⁵⁸ These are official government arrangements which are different from other regional processes such as regional consultative processes discussed below.

1.3.5 Other regional migration dialogue processes

In recent years, multilateral organisations and UN agencies have played an important role in mobilising regional dialogue through ministerial meetings and consultative processes. The ILO has supported its constituent governments, employers and workers organisations to ensure that business and trade unions can participate directly in migration dialogue processes at national and regional levels. The ILO supports, for example, the ASEAN Forum on Migrant Labour,¹⁵⁹ a tripartite labour migration process addressing issues related to migrant workers at the regional level. The ILO and the IOM jointly support a number of other processes, including the Joint Labour Migration Programme for Africa (JLMP) together with the African Union Commission (AUC).

Regional consultative processes supported by the IOM among other organisations also help to provide an informal forum for regional actors to build consensus leading up to international meetings on migration.¹⁶⁰ These consultations have allowed regional actors to develop coordinated action plans, outline draft legislation and establish information-sharing networks. Some have even served to coordinate regional recognition of vulnerable migrant groups, demonstrating the capacity that non-binding, informal processes have to guide coordinated action on migration that is in line with international standards.¹⁶¹

157 *Ibid* 2.

158 *Ibid* 7.

159 ILO, ‘The ASEAN Forum on Migrant Labour (AFML): Background Information Booklet’ (ILO, 2018).

160 Amanda Klekowski von Koppenfels, *The Role of Regional Consultative Processes in Managing International Migration*, (International Organisation for Migration, 2001).

161 The Inter-Governmental Asia-Pacific Consultations on Refugees and Displaced Persons. The consultations began as an informal process to discuss refugee movements and developed into an advisory body on refugee policy for governments not signed onto the 1951 Refugee Convention.

The Global Forum on Migration and Development (GFMD) is an inter-governmental, state-led and non-binding consultative process open to member states and observers, including NGOs and UN agencies. It provides a platform for states to discuss key challenges and opportunities informally. In 2017, under the Chair of Morocco and Germany, the GFMD hosted a Thematic Workshop on Climate Change and Human Mobility. During the workshop, the availability of employment and jobs were recognised as an important variable in determining migratory movements.

The Pacific serves as a promising example, where regional consultations helped states develop and implement a comprehensive migration strategy linked to climate adaptation. The strategy links climate change, migration and development through bilateral seasonal labour agreements with New Zealand and Australia. These arrangements have been instrumental in generating payments in small communities severely compromised by sea level rise and flooding. In 2008, the small island states, with support from the World Bank, organised the Pacific Labour Sending Forum, to create greater opportunities for labour mobility. Although it only meets sporadically, such a forum could help mediate national adaptation mechanisms through regional cooperation on mobility.

1.3.6 Regional cooperation on climate change and migration

The Paris Agreement placed regional cooperation at the centre of its outcome agreement. The Paris Agreement makes no less than 22 references to regional networks, cooperation and financial institutions, therefore emphasising the fact that regions need to cooperate on global climate change responses. The Paris Agreement refers to ‘regional economic integration organizations’¹⁶² or regional groups of states that have the authority to sign, ratify and accept conventions on climate change. The Paris Agreement calls on regional economic integration organisations to raise awareness about the effects of climate change, to develop mitigation and adaptation strategies and to coordinate green finance.¹⁶³ The multiple references to regional approaches provide grounds to mobilise bottom-up movements toward climate adaptation and mitigation.

With respect to the aforementioned Task Force on Displacement whose term has been extended and whose recommendations have been adopted, and considering the role of regional organisations to assist in implementing the Global Compact on Migration, including its climate-related provisions, regional bodies could consider to develop recommended actions together with agencies of the UN Migration Network and the Task Force that link the adverse effects of climate change with a greater need for legal, safe, fair and regular channels for labour mobility (in line with the 2030 SDGs discussed above). In this way, labour mobility agreements could be framed as a mechanism to grant concessions to states that have experienced economic loss and damage due to climate change. While affected states may seek monetary compensation, labour mobility agreements might be more achievable.

162 ‘Regional economic integration organisation’ means an organisation constituted by sovereign States of a given region which has competence in respect of matters governed by this Convention or its protocols and has been duly authorised, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to the instruments concerned.

163 Earlier drafts of the Paris Agreement referenced migration in a proposed ‘climate change displacement coordination facility’ which was intended to be established under the Warsaw International Mechanism to ‘help coordinate efforts to address climate change induced displacement, migration and planned relocation’. It further requested that the Executive Committee of the Warsaw Mechanism develop ‘modalities and procedures, for review and adoption.. which shall: a) assist in developing arrangement for emergency relief; b) assist in providing organized migration and planned relocation.’ Both references were taken out in later drafts.

To address the financial costs of new migration programmes, member states of regional groups could draw on green climate finance and other funds dedicated to helping states adapt to the adverse effects of climate change. This could build on work already achieved to distribute the financial cost of mitigation and adaptation more equitably. The ECOWAS-Sweden Programme on Climate Adaptability demonstrates one such measure to lighten the financial burden of adaptation on poorer countries. Under the programme, Sweden has indicated it will provide US\$6.7m over four years to help reduce West Africa's vulnerability to climate change and increase the region's capacity to pursue its climate change adaptation programmes. This pledge has been made alongside other pledges that, since 2010, total US\$331m in support of 54 countries.¹⁶⁴ As mentioned in the previous section, the Cancun Adaptation Framework clearly identified measures to address climate displacement as a form of adaptation, which means this sort of activity is eligible for adaptation funds established under the UNFCCC. However, there is a significant gap between the level of funding needed for adaptation and the level of funds actually available, and a project's eligibility for funding by no means ensures that it will be funded.¹⁶⁵

1.3.7 Case studies: using labour mobility to boost climate resilience

This section examines two cases where labour mobility arrangements were linked to the climate adaptation needs of local communities. In the first case study, Pacific communities demonstrate an approach to labour migration that supports longer-term climate resilience. In the second case, a pre-existing bilateral agreement on seasonal labour migration for workers from Colombia to Spain's agricultural sector was amended to target climate-affected communities in Colombia after a volcanic eruption. Both case studies also demonstrate how labour mobility arrangements can be structured to reflect climate dimensions in the process of migration.

In the Pacific, labour mobility is recognised as playing an important role in helping climate-affected communities adapt to rising sea levels, storm surges and other extreme weather events. The Pacific Climate Change and Migration Project, jointly implemented by the ILO, ESCAP and the UNDP was a three-year project (2013-2016) aimed at assisting Pacific Island countries to strengthen their capacity to address the labour market implications of climate change, in part through well-managed, rights-based migration schemes and policies. Regional projects targeted three of the most climate-vulnerable countries – Kiribati, Nauru and Tuvalu – and focused on strengthening data collection on labour migration to support evidence-based policies and practices and improve regional cooperation on labour mobility.¹⁶⁶ The ILO provided technical expertise on regulatory frameworks, statistics and rights-based bilateral and multi lateral schemes and assisted in Kiribati's development of a new national labour migration policy. A new project is now underway to build on this work among a number of Pacific Island Countries.

Another region where the concept of temporary migration has been linked to environmental issues is the migration corridor between Colombia and Spain. In 2001, Spain developed an agricultural worker scheme with Colombia based on a pre-existing bilateral arrangement initiated by Spain's main

164 Adaptation Fund, 'New Pledges for Adaptation Fund at COP21 Reach Nearly US\$75 Million' (2015) www.adaptation-fund.org/new-pledges-for-adaptation-fund-at-cop21-reach-nearly-us75-million/ accessed 29 March 2016.

165 United Nations Environment Programme, 'The Adaptation Finance Gap Report 2016' (UNEP, 2016).

166 Sophia Karagan, 'ILO Office for Pacific Island Countries' (2013) www.ilo.org/global/topics/labour-migration/projects/WCMS_226212/lang-en/index.htm accessed 29 March 2016.

trade union, Union de Pagesos (UP) to solve a labour shortage for harvesting fruit in Catalonia. After the Galeras volcano erupted in Colombia in 2006, the programme targeted workers from affected communities. Later, the programme increasingly targeted rural populations who had experienced crop failure due to drought and flooding. Temporary migration provided the workers affected with a reliable source of income while also allowing them to move off the land so that it could regenerate more quickly.

The programme, which has now been suspended, consisted of hiring labour migrants from Colombia (and also Morocco and Romania) for six to nine months to meet the temporary demand. Once the term had been completed, labour migrants returned to their home countries, with the possibility of being hired again for a new harvest during the following season. The beneficiaries included those displaced, women heads of household and people from areas at high risk of environmental impacts from volcanic activity. While the scheme apparently benefited these volcanic areas and could be adopted to benefit people in areas of particular environmental risk or where livelihoods are inadequate, such a scheme cannot provide a rapid response to particular hazard events.

As these examples demonstrate, labour migration schemes can be well aligned with climate adaptation needs if they provide workers with a reliable source of income, protect their rights and offer reliable opportunities to return. Contracts and arrangements should be evaluated to meet international labour standards and be based on adequate labour market information to ensure that genuine labour market needs are met and national workers are not disadvantaged.

1.3.8 Key challenges, opportunities and approaches

To coordinate a labour migration strategy which can also support regional adaptation and climate resilience, reliable labour market information will be required to identify genuine labour market needs and trends. In many countries, however, labour market information systems are weak. This presents a challenge in sharing data within a region. Furthermore, migration policies and labour policies are often developed in isolation. Labour ministers, workers organisations and employers are typically not included in the development of migration policies. If labour migration programmes are developed without tripartite consultation among workers, employers and government ministries, they risk simply replacing national labour for migrant labour and can lead to social dumping and unfair business competition, exchanging one development dilemma for another. Social dialogue is therefore an important precondition for the development of sustainable labour migration schemes. The ILO Multilateral Framework on Labour Migration clearly states, '[s]ocial dialogue is essential to the development of sound labour migration policy and should be promoted and implemented.'¹⁶⁷ Principle 7 highlights that governments and social partners should consult with civil society and migrant associations on labour migration policy.¹⁶⁸

The ILO has had decades of experience implementing employment intensive infrastructure programmes (PEP), including green works, many of which can have large social, economic and environmental effects on vulnerable communities – both in terms of national and migrant labour – by generating employment, income, and assets, and by restoring the natural resource base,

167 ILO, 'The ILO Multilateral Framework on Labour Migration: Non-Binding Principles and Guidelines for a Rights-Based Approach to Labour Migration' (ILO, 2006) 13.

168 'Bilateral Agreements and Memoranda of Understanding on Migration of Low Skilled Workers: A Review' (ILO, 2015) 27.

therefore reducing local impacts of climate change. Community infrastructure projects to construct and maintain climate resilience can be a source of decent work for climate-affected communities. Cross-border projects or projects in neighbouring countries that provide 'green' job opportunities can be considered doubly adaptive. Countries with labour shortages for this type of unskilled work could receive the labour required to boost adaptive capacity while migrant workers could gain practical skills in green construction and support resilience at home through remittances or through developing their skills to help rebuild their own communities.

Over the years, the ILO has used labour-based approaches in different countries, for example, Indonesia, Mali, Myanmar, Somalia, Sudan, South Sudan, Jordan and Timor-Leste, particularly in conflict-affected communities to offer livelihoods to internally displaced persons. In Jordan, the ILO has implemented green works in the agriculture sector, including the installation of sustainable irrigation systems. The project in Jordan is significant because it integrated both Jordanian and Syrian workers, demonstrating that labour-based approaches can be used to accommodate foreign workers, including refugees, as well as national workers.

Additionally, a local resource-based approach incorporating local skills, technology, materials and suppliers has been used to promote environmental protection and rehabilitation after a natural disaster or post-conflict crisis in Haiti, Indonesia, Nepal and the Philippines. Many large-scale national PEPs such as the Mahatma Gandhi National Rural Employment Guarantee Act 2005 in India and the Expanded Public Works Programme in South Africa, to which the ILO is providing technical support, are also using labour-based approaches to protect biodiversity and water, and contribute to natural resource management.

The ILO project on migration and environmental sustainability in the Sahel considered environmental degradation to be one of the causes of migration in West Africa. It aimed to generate opportunities for employment creation and green jobs in potential growth sectors, and to better guide policies to promote employment and productive investment for migrants. As a result, more than 2,000 young people participated in social and occupational orientation workshops. Hundreds of migrants and their families have had access to training and awareness-raising courses on investment opportunities, managing family finances and promoting the use of remittances.¹⁶⁹

In the IGAD region, the ILO is considering how climate change intersects with employment and migration. Under a project that aims to improve opportunities for regular labour mobility, research has been launched on the links between the three variables. It will lay a foundation for future interventions that address irregularity in climate-affected regions, while promoting safe and regular labour migration.

As these examples demonstrate, labour migration schemes can be well aligned with climate adaptation needs if they provide migrant and domestic workers with a reliable source of income and protected rights. Contracts and arrangements should be evaluated to meet international labour standards and be based on adequate labour market information to ensure that genuine labour market needs are met, and that decent job opportunities are created as to not disadvantage national workers.

169 For more information on this project: Bureau International du Travail, 'Adresser les Besoins en Termes de Formation' (21 December 2012) <https://bitmigrant.wordpress.com/>.

To meet these objectives, regional groupings could prioritise cooperation on developing robust labour market information and data sharing. Member states in ECOWAS, for example, are working to create a shared data platform in this regard. The database, developed by the ILO, the French public employment service, Pôle Emploi, GIP International, and the IOM, provides information on national and regional employment opportunities, trends and vacancies.

As regional labour migration systems are developed, regional economic communities will need to pay considerable attention to safeguards against abuse of migrant workers and social dumping. For example, establishing common criteria for skills recognition is an important means of protecting migrant workers. Appropriate matching of jobs to skills can protect migrant workers from deskilling and discrimination in wages and working conditions. At the same time, bilateral skills recognition is challenging to adopt due to the different education and professional qualifications systems even within the same region. Labour standards and protections may also vary between countries.

In this vein, bilateral agreements may be useful tools to ensure skills recognition or social protection, as well as fair recruitment processes. However, while many existing arrangements may stipulate conditions for labour mobility, they contain different levels of protection depending on the sending and receiving countries involved. A 2015 ILO review of over 150 bilateral agreements for low-skilled workers found that agreements do not fully protect migrant worker labour rights. Provisions for equal treatment in wages and working conditions, fair recruitment and ethical practices were not standard in certain regions.¹⁷⁰ ‘Ethical recruitment’, for example, was mentioned in only eight of the 358 agreements reviewed in Africa, Asia, Europe and the Americas.

A further consideration is whether regional mobility schemes can assure monitoring for exploitive practices. Reports from the EU provide evidence that seasonal workers are at a high risk for exploitation, non-payment, under payment, sexual harassment, over crowded accommodation and unsafe work conditions. In 2019, the International Labour Conference adopted the Violence and Harassment Convention (No 190) and Recommendation (No 206), the first set of international instruments that articulate the right to a world of work free from violence and harassment. Extending protection of labour rights to seasonal workers is an important step in ensuring that labour migration improves the lives of male and female workers and their families. As mentioned, under ILO’s normative framework, all labour standards presumptively apply to migrant workers. ILO Conventions on migrant workers (C97¹⁷¹ and C143¹⁷²) provide a specific foundation for applying and monitoring international labour standards, and the UN Convention on Migrant Workers provides additional protections. Many states, however, have still not ratified these conventions.

The issue of social protection is also an important consideration as it supports a healthier and more productive workforce. The ILO Social Protection Floors Recommendation 2012 provides suggested social security guarantees.¹⁷³

170 Wickramasekara (n 168).

171 Migration for Employment Convention (ILO Convention No 97) (adopted 1 July 1949, entered into force 22 January 1952).

172 Migrant v Workers (Supplementary Provisions) Convention 1975 (ILO Convention No 143) (adopted 24 June 1975, entered into force 9 December 1978).

173 ILO, ‘The ILO Social Protection Floors Recommendation,’ 2012 (No 202), www.ilo.org/dyn/normlex/en/?p=NORMLEXPUB:12100:0::NO:P12100_INSTRUMENT_ID:3065524, accessed 14 March 2020.

1.3.9 Conclusion

Despite labour migration's adaptive potential, it has yet to feature as a potentially positive component of national or regional climate change adaptation strategies. Where migration is already occurring from climate-affected areas, this may be a missed opportunity. Developing regular channels of migration to help those suffering economic hardship due to natural disaster or long-term climate damage can help to prevent climate-related migrants from entering the informal economy and could also help reduce exploitive forms of employment abroad. Additionally, well managed labour mobility can help to build the skills of youth through opportunities such as apprenticeships or entrepreneurship training. Harnessing these adaptive labour migration opportunities will require extensive efforts to connect existing labour policies, migration agreements and climate adaptation strategies.

Despite their potential, such efforts will never be able to provide an extremely effective solution. At present, migration is an option for a relatively small proportion of the population who may be suffering from the impacts of climate change. The option is only available for those that have the social and financial resources required. The poor generally have the fewest resources that would enable them to move.

To make labour migration a just option for climate-affected communities, it will be important to reduce the high cost of movement through many methods such as the elimination of exploitive recruitment practices. Information and support to people in climate-vulnerable communities can help them to understand how to access legal and regular migration pathways from where they live. Reducing the financial and social costs associated with legal or regular migration will provide an opportunity to multiply earnings sent back home to build resilience among migrants' families.

The 2030 SDGs view fair migration pathways as a positive contributor to development. A further exploration of how regional cooperation on climate change adaptation and labour mobility can be better linked is needed given the few examples or models. Pilot programmes in a bilateral or regional context would help to contribute guidance for good practice in this regard. Further important considerations for the development of such pilot programmes that link labour migration and climate adaptation strategies are summarised in Annex III.

1.4 Climate change and internal displacement

Much of the focus to date has been on shoring up gaps in the legal protection frameworks for those forced to flee their countries due to effects linked to climate change. However, empirical research indicates that the majority of human displacement resulting from climate change will be within state borders.¹⁷⁴ This is consistent with historic migration patterns that indicate far more people tend to migrate internally than internationally.¹⁷⁵

174 Vikram Kolmannskog, 'Climate Change, Disaster, Displacement and Migration: Initial Evidence from Africa' (Research Paper No 180, UNHCR, December 2009) 3, 16; www.unhcr.org/4b18e3599.html Andras Vag et al, 'Environmental Change and Forced Migration Scenarios: Synthesis Report' (Report 72, EACH-FOR, 2009) http://seri.at/wp-content/uploads/2010/06/EACH-FOR_Synthesis_Report_090515.pdf.

175 Walter Kälin, 'Conceptualizing Climate Change-Induced Displacement' in Jane McAdam (ed) *Climate Change and Displacement: Multidisciplinary Perspectives* (Hart Publishing, 2012) 81, 86.

The term ‘internal displacement’ refers to situations in which individuals and groups are: forced or required to leave and remain away from their homes; but remain within the borders of their own countries.¹⁷⁶ The need to assist and protect internally displaced persons (IDPs) arose from the recognition of the specific vulnerabilities and human rights challenges that confront persons who are forcibly displaced within their countries.

The effect of internal displacement on IDPs themselves, as well as on the local authorities and communities that host them, can be devastating. While in certain situations the act of displacement itself may breach the human rights of those affected (eg, when caused by conflict or persecution). Even when caused by natural hazards, the subsequent loss of access to homes, lands, livelihoods, personal documentation, family members, and social networks can negatively affect the ability of IDPs to assert and enjoy an entire range of fundamental rights.¹⁷⁷

Proposals to address legal protection gaps for those internally displaced in the context of disasters and climate change have centred on enhanced implementation of the 1998 UN Guiding Principles.¹⁷⁸ Drawn from humanitarian, human rights, and refugee law, the Guiding Principles outline the assistance and protection obligations of national governments with respect to persons ‘forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized state border’.¹⁷⁹ Two regional instruments have been adopted by African nations that reinforce the protection obligations outlined in the Guiding Principles: the 2009 Kampala Convention for the Protection and Assistance of Internally Displaced Persons in Africa (‘Kampala Convention’) and the 2006 Great Lakes Protocol on the Protection and Assistance to Internally Displaced Persons. The IASC Operational Guidelines on Human Rights and Natural Disasters also provide guidance for responding to displacement in natural disaster situations. Recognising the need for a normative framework to address climate change-related displacement within states, a group of climate change experts and international lawyers came together in 2013 to develop the Peninsula Principles.¹⁸⁰ Based on principles in international law, human rights obligations and good practice, the Peninsula Principles build on and contextualise the Guiding Principles to address the movement of people within a state due to the effects of climate change, ‘either alone or in combination with other factors’.¹⁸¹ The Peninsula Principles’ particular value is in articulating the rights of ‘climate-displaced persons’ especially their right to remain in place, as well as to initiate and undertake planned relocation. The Peninsula Principles also offer institutional planning guidance for many aspects of internal displacement such as participation and consent of affected individuals, land identification and post-displacement return.¹⁸²

More recent actions to address climate-related human mobility challenges have more explicitly focused on internal displacement. Among the recommendations of the UNFCCC Task Force

176 UNHCR, ‘Guiding Principles on Internal Displacement’ (n 53) para 2.

177 Brookings Institution and Bern University, ‘Project on Internal Displacement: Protecting Internally Displaced Persons: A Guide for Law and Policy Makers’ (Brookings Institution, October 2008) 2; www.unhcr.org/50f955599.pdf.

178 See Nansen Initiative, Protection Agenda (n 55) 39.

179 UNHCR, ‘Guiding Principles on Internal Displacement’ (n 53) para 2.

180 Displacement Solutions, ‘The Peninsula Principles’ (n 56).

181 *Ibid*, Principle 2(b).

182 *Ibid*, Principles 9-11, 17.

on Displacement is for states to ‘recall the guiding principles on internal displacement and seek to strengthen efforts to find durable solutions for internally displaced people when working to implement integrated approaches to avert, minimise and address displacement related to the adverse impacts of climate change, as appropriate’.¹⁸³

As discussed below, the Guiding Principles and other traditional approaches to internal displacement are in many ways ill-suited to address the more complex relationship between climate change and human mobility. The Peninsula Principles, which were drafted to provide a strong, human rights-based foundation to guide states in developing laws and policies to address climate change-related internal displacement, fill many of the gaps left open by the Guiding Principles, including the recognition of states’ obligation to manage climate displacement risk. As noted in the Nansen Protection Agenda, ‘[s]tate responsibility includes preparing for foreseeable disasters and take [sic] reasonable measures to prevent threats to the lives and property of people, including preventing displacement.’¹⁸⁴ Of course, neither the Nansen Protection Agenda nor the Peninsula Principles is binding on any state, and neither is accompanied by any enforcement mechanism. Furthermore, many if not most of the states that experience significant climate-induced displacement do not have the resources to fulfil the requirements of these documents. The Nansen Protection Agenda and the Peninsula Principles therefore represent commendable statements of aspiration, but there can be little confidence that they will typically be followed without substantial additional resources and external support.

As outlined below, in order to avert, minimise and address climate displacement as called for in the Paris Agreement and by the Nansen Protection Agenda, more focus is necessary on the enormous opportunities that exist to prevent displacement from happening in the first place. We further suggest a departure from traditional approaches to displacement that shift the focus from displacement response to approaches that proactively address climate displacement risk.

1.4.1 Shortcomings in the traditional approaches to displacement

(i) CONCEPTUAL CHALLENGES

Displacement and migration experts confronted with revising legal and policy frameworks in order to address climate change as a driver of displacement have been forced to confront several conceptual challenges. The first is the difficult task of untangling climate change effects as the ‘cause’ of displacement from myriad other factors that drive human mobility. While floods, storms, droughts and other weather-related hazards are responsible for displacing millions of people each year,¹⁸⁵ scientists are still working to better understand whether the intensity or likelihood of a specific event can be attributed to anthropogenic climate change as opposed to a naturally occurring event. Even in the case of anticipated increases in sea level that can be directly linked to climate change-induced melting of the Greenland and western Antarctic ice sheets, the displacement of populations from low-lying islands and coastal areas will be sped along by more extreme natural phenomena such as coastal

183 Executive Committee of the Warsaw International Mechanism for Loss and Damage Associated with Climate Change Impacts, Decision -/CP24 (n 144).

184 Nansen Initiative, ‘Nansen Initiative Global Conference Report’ (Geneva, 12–13 October 2015) 44.

185 IDMC, *A Complex Nexus* (n 45).

flooding, increased storm surge, and salt water inundation of fresh water resources long before these areas become submerged.¹⁸⁶

A 2018 report by the Bulletin of the American Meteorological Society found clear links between anthropogenic climate change and heat waves, droughts, and floods.¹⁸⁷ The report found some evidence linking anthropogenic climate change to wildfires. However, it acknowledged other factors such as natural variability can also influence the observed trends.¹⁸⁸ Yet, despite improvements in ‘event attribution’ science, in most cases available evidence linking specific events, hazards or changes that cause displacement to climate change will be scant. The indirect effects of climate change – especially on natural resources and livelihoods – are even more difficult to pinpoint as a ‘cause’ of displacement or migration. In short, it is unrealistic to require, as a prerequisite to developing a legal protection framework, proof that climate change was the primary cause of the displacement.

The approach taken by many scholars and institutions has been to focus instead on disaster-related displacement or more broadly ‘displacement in the context of disasters and climate change’, as was the approach adopted by the Nansen Initiative. (Another, even broader approach has been to focus on ‘environmental displacement’.) Disaster-induced displacement does indeed provide a good starting point. The Guiding Principles require governments to protect and assist those forced to flee not only conflict and persecution, but also ‘natural or man-made disasters’.¹⁸⁹ The Kampala Convention goes further to require states to protect and assist ‘persons who have been internally displaced due to natural or human made disasters, including climate change’.¹⁹⁰ Yet neither of these instruments proposes a satisfactory method for national governments to determine who or when someone is displaced by a climate change-related hazard or effect as opposed to a ‘disaster’.¹⁹¹

Disasters occur as a result of natural and human-made hazards that overwhelm the capacity of governments and individuals to respond. As defined by the UN International Strategy for Disaster Reduction (UNISDR) a ‘disaster’ is ‘[a] serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources’.¹⁹² In the case of climate change, the resulting hazards will vary widely in terms of intensity, scale, degree, and time frame. While the protection requirements are clear in the case of those displaced by largescale, extreme events such as acute flooding, superstorms and severe drought that are likely to overwhelm local coping capacities and give rise to a ‘disaster’, they are far more murky in the case of those affected by other climate change-related hazards like decreased seasonal rainfall, gradual coastal erosion or rising sea levels. The latter occurrences are not likely to be recognised as ‘disasters’. Whether or at what point the hazard becomes significant enough to trigger movement is likely to be highly subjective.

186 IPCC, *2014 Synthesis Report* (2014) www.ipcc.ch/report/ar5/syr/ accessed 16 May 2016.

187 Bulletin of American Meteorological Society, *Explaining Extreme Events of 2017 from a Climate Perspective* (2018).

188 *Ibid.*

189 UNHCR, *The Guiding Principles on Internal Displacement* (2004) www.unhcr.org/43ce1cff2.html.

190 African Union, *African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (Kampala Convention)* (2012) www.icrc.org/casebook/doc/treaty/au-idp-convention-assembly-final-10.23-pm-23-oct.pdf accessed 16 May 2016.

191 But See Act Protecting the Rights of Internally Displaced Persons and Penalizing the Actos of Arbitrary Internal Displacement, Senate Bill 2368, 16th Congress of the Republic of the Philippines, 19 August 2014 (defining ‘internal displacement’ to include ‘the involuntary movement or forced evacuation or expulsion of any person who flee or leave their homes or places of habitual residence, within the national borders, as a result of or in order to avoid or minimize the effects of ... natural, human-induced and man-made hazards.’) (emphasis added)

192 Terminology, UN Int’l Strategy for Disaster Reduction (30 August 2007), www.unisdr.org/we/inform/terminology accessed 16 May 2016.

Equally problematic for displacement and migration legal scholars is determining whether the movement within a state is voluntary or forced. From a legal protection perspective, this is important.¹⁹³ Where internal movement is considered voluntary, the national government's protection mandate is diminished. However, it is questionable whether the distinction between forced displacement and voluntary internal movement is even appropriate in the context of climate change. Especially as it relates to smaller-scale, recurrent or more slowly unfolding changes to the climate system – for example, where decreased rainfall and higher temperatures undermine agricultural yields – the decision to move may be primarily based on the climate change effect but influenced by a host of other considerations often at an individual household-level. Here the distinction between forced and voluntary becomes blurry.¹⁹⁴ Complicating matters further, recent empirical research has shown that the people most vulnerable to climate change may not be able to move at all and are consequently often referred to as 'trapped populations'.¹⁹⁵ A focus on those already on the move risks overlooking those who are most vulnerable to climate change impacts and in greatest need of assistance and solutions.

In addition, many of the more complex effects of climate change on displacement do not align with the bulk of experience and practice regarding IDPs, which has largely focused on responding to sudden, often en masse, forced movements in situations of armed conflict and largescale disasters. While most governments have civil protection authorities responsible for protecting IDPs in such situations, in the case of smaller-scale or more slowly unfolding climate-related hazards, it is unclear which government authorities are responsible for preventing and managing subsequent displacement.

In short, trying to fit climate change-related internal displacement into the traditional protection frameworks and operational practices has rendered somewhat tortured definitions and unsatisfactory results. This suggests that IDP law and policy are only partially helpful in meeting protection gaps and may not be the best starting point for national governments grappling with the problem. Rather, given the wide range of hazards that are anticipated to occur as a result of climate change, addressing the potential impacts on human mobility will require a more creative, multi-sector approach by national governments.

(ii) RESPONSIVE VERSUS PROACTIVE

A second shortcoming of using traditional laws, policies and operational practices on internal displacement as a starting point is that they are, for the most part, focused on responding to people already uprooted or on the move, and therefore fail to take advantage of the enormous opportunities to avoid or minimise climate change-related displacement. Although there is evidence that climate change is already dislocating vulnerable communities in different parts of the globe from Alaska

193 Kaelin and Schrepfer, (n 61), 28-30.

194 *Ibid.*

195 Ido Liven, 'Trapped Populations—Hostages of Climate Change' (2014) www.ipsnews.net/2014/11/trapped-populations-hostages-of-climate-change-2/ accessed 16 May 2016.

to Papua New Guinea,¹⁹⁶ the future effects of climate change threaten to have a far greater impact on displacement. The scale of future displacement will depend on the extent to which we act now to reduce carbon emissions substantially, build the resilience of vulnerable communities, mitigate climate risk and adapt to climate change effects. Therefore, any strategy aimed at addressing climate change-related displacement must place a premium on avoiding or minimising displacement, that is, on prevention.

While the Guiding Principles reinforce the ban on forced and arbitrary displacement, they do little in the way of providing guidance in terms of proactive measures states must take to mitigate or avoid natural disaster-induced displacement and migration. In this regard, the Kampala Convention proves somewhat more prescriptive. The Kampala Convention requires states both to protect and assist ‘persons who have been internally displaced due to natural or human made disasters, including climate change’ and to protect citizens from internal displacement. ‘States Parties shall devise early warning systems, in the context of continental early warning systems, in areas of potential displacement, establish and implement DRR strategies, emergency and disaster preparedness and management measures and, where necessary, provide immediate protection and assistance to internally displaced persons.’¹⁹⁷

While not yet formally endorsed by states or adopted into national legislation, the Peninsula Principles go further than the Guiding Principles by spelling out the obligations of states with respect to climate displacement risk management. Principle 9 provides that:

‘With regard to climate displacement risk management, monitoring, and modelling, States, using a rights-based approach, should:

- a. identify, design and implement risk management strategies, including risk reduction, risk transfer and risk sharing mechanisms, in relation to climate displacement;
- b. undertake systematic observation and monitoring of, and disaggregated data collection at the household, local, regional and national levels on, current and anticipated climate displacement;
- c. enhance sharing, access to and the use of such data at the household, local, regional and national levels, mindful of the need for data protection and predetermined use of data, and facilitate the assessment and management of climate displacement;

196 C Mooney, ‘A Remote Alaska Village that Needs to be Relocated Because of Climate Change’ *Washington Post* (24 February 2015) www.washingtonpost.com/news/energy-environment/wp/2015/02/24/the-remote-alaskan-village-that-needs-to-be-relocated-due-to-climate-change/ accessed 16 May 2016; Robin Bronen, ‘Forced Migration of Alaskan Indigenous Communities Due to Climate Change: Creating a Human Rights Response’ (University of Alaska, Resilience and Adaptation Program, 2010); Tamer Afifi and Jill Jäger (eds), *Environment, Forced Migration and Social Vulnerability* (Springer, 2010) 87, 89; Julia B Edwards, ‘The Logistics of Climate-Induced Resettlement: Lessons from the Cateret Islands, Papua New Guinea’ (2013) 32 (3) *Refugee Survey Quarterly* 52.

197 African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (‘Kampala Convention’) (adopted 23 October 2009, entered into force 6 December 2012) Art 4, para 2. The AU Model Law for the implementation of the Kampala Convention states that, in order to ‘prevent and avoid conditions that might lead to displacement of persons,’ Competent Authorities must take measures to address factors and prevent conditions that have the potential to result in displacement, review national legislation to ensure that it comports with IDP protections, and raise public awareness and undertake training and education on the causes, impact and consequences of internal displacement, means of prevention, early warning, disaster risk reduction and planned relocation. (AU Model Law, Ch II, Arts 6 and 9 further provides: ‘Competent authorities should take specific measures to integrate internal displacement in their contingency planning and national adaptation programs.’)

- d. model likely climate displacement scenarios (including timeframes and financial implications), locations threatened by climate change, and possible relocation sites for climate-displaced persons;
- e. integrate relocation rights, procedures and mechanisms, as defined in these Peninsula Principles, within national laws and policies; and
- f. develop institutional frameworks, procedures and mechanisms with the participation of individuals, households and communities that: (i) identify indicators that will, with as much precision as possible, classify where, at what point in time, and for whom, relocation will be required as a means of providing durable solutions to those affected; (ii) require and facilitate governmental technical assistance and funding; and (iii) outline steps individuals, households and communities can take prior to climate displacement in order to receive such technical assistance and financial support.¹⁹⁸

Given the need for a more comprehensive approach to managing cross-border displacement that considers root causes, the Nansen Protection Agenda also includes strengthening the management of disaster displacement risk in the country of origin among its three priority areas for action. According to the Nansen Protection Agenda, specific measures include the need to integrate human mobility within DRR, climate change adaptation strategies, and other relevant development processes. The Agenda also emphasises the need to improve the use of planned relocation for populations living in high-risk areas as a means to anticipate disaster displacement. It further prioritises the importance of ensuring that relevant laws and policies on disaster risk management (DRM) specifically address the needs of IDPs.¹⁹⁹

The increased focus on minimising displacement risk is reflected in more recent initiatives to address the effects of climate change on human mobility. For example, the UNFCCC Task Force on Displacement recommends that states take action ‘[t]o strengthen preparedness, including early warning systems, contingency planning, evacuation planning and resilience-building strategies and plans, and develop innovative approaches, such as forecast-based financing, to avert, minimize and address displacement related to the adverse impacts of climate change.’²⁰⁰

The GCM similarly includes among its 23 stated objectives taking action to ‘[m]inimise the adverse drivers and structural factors that compel people to leave their country of origin.’²⁰¹ Among the proposed actions states may take to realise this objective are numerous measures related to enhanced disaster risk reduction, building resilience, and addressing environmental degradation all of which are intended to address climate change-related adverse effects as drivers of international migration.²⁰² On a practical level, how climate-vulnerable countries will implement these recommendations and actions focused on minimising displacement remains to be seen.

198 Displacement Solutions, The Peninsula Principles (n 54) Principle 9.

199 IDMC collects annual global estimates of people displaced by disasters.

200 Decision -CP.24, https://unfccc.int/sites/default/files/resource/cp24_auv_ec%20wim.pdf?download accessed 25 March 2019.

201 Global Compact for Migration, ‘Global Compact for Safe, Orderly and Regular Migration’ (11 July 2018) Objective 2 [18]. www.un.org/pga/72/wp-content/uploads/sites/51/2018/07/migration.pdf (11 July 2018, adopted by adopted by 152 member states 19 December 2018).

202 *Ibid* Objective 2 [18] (h)-(l).

Rather than taking existing displacement and migration regimes as starting points, we propose that addressing climate change impacts on internal displacement requires a different paradigm that is both far more contextual and better integrated across other sectors and that uses climate displacement risk as its starting point. It is only by focusing on climate change-related risk that national and local governments will be able to take advantage of opportunities to implement more effective displacement prevention measures.

Outlined below are a series of recommendations for governments in addressing climate displacement based on the following core principles:

1. Improve understanding of climate displacement risk as a factor for hazard exposure, vulnerability and resilience.
2. Emphasise displacement avoidance/mitigation strategies.
3. Integrate displacement risk considerations into relevant laws, regulations and policies at the national, sub-national and local levels including DRR, land use planning, natural resource management and climate change adaptation.
4. Support institutional arrangements for managing climate displacement risk.
5. Empower local governments and communities with the resources and tools to manage and mitigate climate displacement risk.

1.4.2 Shifting the point of intervention: from climate-displaced to climate displacement risk

(i) THE STARTING POINT: UNDERSTANDING LOCAL-LEVEL CLIMATE DISPLACEMENT RISK

National government actions to address the impact of climate change on internal displacement should take as their starting point local-level climate displacement risk. In this context, ‘risk’ is based on the standard formulation of risk as the product of hazard, exposure and vulnerability. Such government actions will require an improved understanding of where, when, and why displacement occurs in relation to hazards that are linked to climate change.

Experience shows that in general people who are evacuated, who flee, or whose homes are destroyed due to floods, storms, and other rapid-onset, weather-related hazards are often able to return relatively quickly. The Internal Displacement Monitoring Centre (IDMC) prepares annual global estimates of people evacuated or forced to flee their homes due to rapid-onset hazards.²⁰³ However, little is known about the rates of return, the duration of displacement or the patterns of movement after initial flight, and there are no global estimates for the number of people living in protracted displacement after disasters,²⁰⁴ leaving ‘a significant knowledge blind spot that requires increased attention from governments, the UN, the International Red Cross and Red Crescent Movement and other international and civil society organizations’.²⁰⁵ Neither are there global estimates for people displaced by slow-onset hazards. There is also little understanding of other contributing push factors

203 IDMC collects annual global estimates of people displaced by disasters. See generally www.internal-displacement.org/

204 IDMC (2015), 80.

205 *Ibid*, 11.

in such situations despite the fact that drought and gradual environmental changes can be significant drivers of displacement and migration.²⁰⁶

The IPCC Fifth Assessment Report's Working Group II on Adaptation found that structural economic causes of social vulnerability may determine whether temporary displacement turns into permanent migration following disasters and climate-related events. For example, a study of post-Hurricane Katrina New Orleans found that most of the economically disadvantaged populations displaced in the immediate aftermath of the disaster never returned.²⁰⁷ The IPCC further cites studies showing no correlation between extreme events and displacement²⁰⁸ suggesting that protracted displacement following such events has more to do with socio-economic or political factors than the hazard itself. Another more recent study by the IDMC based on 34 cases of protracted displacement following disasters supports these findings. In some cases, the hazard itself became a barrier to return either because it persisted for a long time or because of the repeated impacts of frequent, short-lived hazards. In other cases, however, obstacles to return included lack of access to land and discrimination against vulnerable and marginalised groups.²⁰⁹

A 2011 study of displacement from hurricanes along the Gulf of Mexico in the US noted that '[i]n the context of disasters, much of the empirical research has focused on identifying places and populations that are vulnerable to catastrophic hurricane and flood disasters. However, there have not been parallel efforts to capture measures for displacement risk'. Analysing displacement risk from hurricanes in 158 counties in the US, the study's authors developed a displacement risk index (DRI) based on three components: vulnerability, resilience (understood as capacity to recover thereby offsetting vulnerability), and risk.²¹⁰

The vulnerabilities of certain groups to disasters have been well documented. For example, the International Federation of Red Cross defines 'vulnerability' in the context of disasters as 'the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of a natural or human-made hazard'.²¹¹ While vulnerability to disasters is most often associated with poverty, it can also arise when people are isolated, insecure and defenceless in the face of risk, shock or stress. Physical, economic, social and political factors determine people's level of vulnerability and the extent of their capacity to resist, cope with and recover from hazards. Examples of potentially vulnerable groups include specific groups within the local population, such as marginalised, excluded or destitute people; and young children, pregnant and nursing women, unaccompanied children, widows, elderly people without family support and disabled persons.²¹²

What is different about the DRI is that, rather than focus exclusively on vulnerability to the risk (eg, a hurricane or flood), the DRI looks at what makes people vulnerable to both the shock and the ability to achieve a durable solution to displacement. In other words, the DRI not only considers the physical

206 *Ibid.*, 79.

207 IPCC, AR5 Synthesis Report: Climate Change 2014 (n 36).

208 *Ibid.*

209 IDMC *A Complex Nexus* (n 45) 47.

210 Ann-Margaret Esnard, Alka Sapat and Diana Mitsova, 'An Index of Relative Displacement Risk to Hurricanes,' (2011) 59 *Natural Hazards* 833.

211 International Federation of Red Cross, 'What is Vulnerability?' (2020) www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/what-is-vulnerability/ accessed 16 May 2016.

212 *Ibid.* With respect to gender, the IFRC explains that, 'In a disaster, women in general may be affected differently from men because of their social status, family responsibilities or reproductive role, but they are not necessarily vulnerable. They are also resourceful and resilient in a crisis and play a crucial role in recovery. Gender analysis can help to identify those women or girls who may be vulnerable and in what way.'

vulnerability of people based both on the built environment (eg, type of housing) and exposure (eg, percentage of housing within the flood zone), but also incorporates socio-economic factors that heighten displacement risk. Such socio-economic indicators include income, race/ethnicity, age, affordable housing (ie, renters, but in other contexts this could be extended to those who lack secure land tenure), disadvantaged status, residence (ie, how long a person had lived in the area as an indication of access to social networks), and education. The index also looked at community resilience indicators including economic resilience, emergency response capacity, state performance/capacity and institutional resilience.

At the most basic level, the DRI provides percentile scores showing displacement risk for coastal and inland communities in the US. But the DRI analysis provides a host of other information relevant to policy makers for mitigating and addressing displacement risk. For example, it generated maps showing spatial patterns to increase awareness about displacement risk in the study area for local planners and policy makers as well as for the public. This not only allowed for enhanced mitigation levels at various levels of government (local, regional and state), but also aided proximate counties immediately inland that wished to enter mutual agreements on issues of evacuation and hosting of those displaced. The vulnerability component scores were also valuable for informing policy makers as to the household and community vulnerability factors that require attention. Similarly, the community resilience component includes policy indicators of community capacity, institutional strength, and state commitment – all of which can affect and reduce risk, vulnerability and potential displacement.²¹³

These studies indicate that in order to understand and identify climate displacement risk, governments will need to have procedures and institutions in place for: identifying climate hazard risk; mapping areas of exposure; identifying vulnerable populations based on both physical and socio-economic factors that make certain people vulnerable to displacement; and monitoring changes in risk, exposure and vulnerability over time. Annex IV sets out some relevant factors governments may need to consider when devising laws and policies to mitigate climate displacement risk.

(ii) MANAGING CLIMATE DISPLACEMENT RISK

(a) Incorporating climate displacement risk into disaster risk management law and policy

In contrast to national instruments on internal displacement,²¹⁴ almost all countries in the world have adopted laws and policies on disaster risk management or disaster risk reduction (DRR). The universal development of DRM laws and policies corresponds to the global trend upward in economic losses resulting from disasters (compounded by rapid population growth, urbanisation and climate change) and the realisation of the enormous potential of disasters to undermine development gains and human security.

Government commitments to and achievements in strengthening and improving DRM initially occurred within the context of the Hyogo Framework of Action for Disaster Risk Reduction 2005-

²¹³ Esnard et al, (n 210) 840.

²¹⁴ IDMC, 'Global Internal Displacement Database' (2019) www.internal-displacement.org/database. According to the database, only 12 countries have enacted laws on IDPs.

2015 (Hyogo Framework), an internationally agreed upon plan outlining the work required from all sectors and actors to reduce disaster losses. Based on progress and lessons learnt implementing the priorities and goals of the Hyogo Framework, in March 2015, 187 countries endorsed a successor instrument, the Sendai Framework for Disaster Risk Reduction 2015-2030 ('Sendai Framework').²¹⁵ Along with the 2030 SDGs and the Paris Agreement, the Sendai Framework represents a key contribution to and is critical to the achievement of the post-2015 development agenda.

The Sendai Framework acknowledges displacement risk in the context of the need for global and regional cooperation around shared resources such as river basins, as well as the need for national governments to respond better to disasters 'and related displacement'.²¹⁶ Moreover, while there is no specific reference to the need for governments to act at the national level to address displacement risk, the framework document does include, among its seven global targets, a substantial reduction in 'global disaster mortality' as well as in 'the number of affected people globally' by 2030.²¹⁷

An Open-Ended Intergovernmental Expert Working Group on Terminology and Indicators Relating to DRR has been set up and is currently undertaking the development of indicators for the Sendai Framework's global goals. Proposed indicators for Goal A on reduced disaster mortality include a reduction in the number of 'deaths, missing, injured, displaced or [evacuated]...', and for Goal B which relates to numbers of people 'affected', a reduction in the number of people 'evacuated, relocated and displaced due to hazardous events'.²¹⁸ If indeed indicators are adopted requiring countries to report on progress towards a reduction in the number of people displaced by disasters, it will be necessary for governments to identify strategies for meeting this target.

At present, it appears that few, if any, DRM laws include measures that specifically target preventing or mitigating displacement due to natural or human-made hazards. 'Early warning' systems, where effective, do prevent risk of harm and provide an opportunity for people to minimise disaster-related losses by safeguarding assets in advance of the hazard. However, early warnings and evacuations do not necessarily prevent or mitigate displacement. Therefore, in order to meet the Sendai Framework goals, it is likely that governments will need to revise their DRM laws and policies to ensure that they include mandates and processes for identifying and mitigating climate displacement risk.

(b) Strengthening institutional capacity to identify and manage climate displacement risk

Identifying and addressing climate displacement risk will require as a prerequisite strengthening institutional capacity to understand, identify and monitor climate displacement risk. At present, most countries have technical and scientific bodies such as national meteorological or hydrological services (NMHS) that provide weather, climate, hydrological and environmental monitoring and prediction services and which are responsible for identifying meteorological and hydrological hazards including severe storms, excessive heat, droughts and floods.²¹⁹ By providing early warnings of high-impact

215 United Nations Office for Disaster Risk reduction, 'Sendai Framework for Disaster Risk Reduction 2015-2030' (Third UN World Conference, Sendai, 18 March 2015) www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf.

216 *Ibid* [33] (h), [28] (d).

217 *Ibid* [18] (b).

218 Working Text on Indicators Based on Negotiations During the Second Session of the Open-ended Inter-governmental Expert Working Group on Indicators and Terminology Relating to Disaster Risk Reduction, (Geneva, 10-11 February 2016, issued on 3 March 2016, reissued with factual corrections on 24 March 2016) Global Target A-1, Global Target B-3 alt. and B-3 alt.bis.

219 The World Meteorological Organization (WMO) website collects a list of national hydro-meteorological or meteorological services, see World Meteorological Organization, 'Members' (GMO, 2020) <https://public.wmo.int/en/about-us/members> accessed 16 May 2016.

events and information on climate extremes and variability, NMHSs enable communities to prepare for and adapt to a changing climate better, through improved disaster risk reduction, community resilience, water resource management and food security strategies.

Especially in developing and least developed countries as well as small island developing states (SIDS), governments must incorporate into their DRM and climate change adaptation laws and strategies the goal to enhance the human, technical, and institutional capacities of NMHSs to deliver high-quality services and information relevant to climate hazards. Ensuring that NMHSs are able to deliver information that meets the needs of decision-makers will require requisite investments in core infrastructure, information and computing technologies and human resources development.²²⁰

(c) Empowering local communities to manage climate displacement risk

Experience with implementing DRM laws indicates that in addition to identifying climate hazards, it is imperative that processes are in place to facilitate mapping down to the local level and allow community participation in these systems and processes.²²¹ Channels must be put in place for sharing climate risk information with local actors (as well as other relevant institutions) so that such information can be used to identify communities or even households that are at risk of displacement from such hazards. Such information will also be helpful in avoiding and mitigating displacement by integrating climate displacement risk information into early warning systems and evacuation plans as well as development processes such as local land use planning and building codes. More broadly, to be effective, sufficient financial and human resources must be available to incorporate DRM into local governance.²²²

In addition, communities themselves as well as socially vulnerable groups must be empowered to support local DRM governance, which experience shows has been a challenge. To the extent that poverty, exclusion and other socio-economic vulnerabilities tend to heighten the risk of climate displacement of certain populations, DRM laws and regulations must specifically mandate and include mechanisms for the participation of women and certain vulnerable and marginalised groups in the management of climate displacement risk. As a prerequisite, DRM laws must include specific provisions for the participation of civil society and communities in DRM advisory and implementing institutions, such as local DRR committees, and must clearly articulate the roles of such stakeholders.²²³

(iii) INTEGRATING CLIMATE DISPLACEMENT RISK INTO OTHER RELEVANT LAWS AND POLICIES

The development of strategies for avoiding and mitigating displacement from climate-related hazards will need to go beyond DRM and be supported by other laws and policies across sectors. As a prerequisite, processes and mechanisms must be in place to ensure that up-to-date climate hazard

220 This is consistent with the strategic priorities of the World Meteorological Organization (WMO). See World Meteorological Organization, *WMO Strategic Plan 2016-2019* (2017) 11 http://library.wmo.int/pmb_ged/wmo_1161_en.pdf.

221 IFRC & UNDP, 'Effective Law and Regulation for Disaster Risk Reduction: A Multi Country Report' (June 2014), 33-34.

222 *Ibid.* A survey of DRM laws in more than 30 countries found that the key to effective local institutional DRM structures is that they have clear authority combined with mandated resources and capacity. '[T]he most important factor is whether the capacity and resources are adequate for the DRR mandate. It is relatively easy to create institutions on paper, but their effectiveness relies on them becoming part of the system of governance in a way that is most suitable to a country's culture, system of governance and resources.'

223 *Ibid.* 29-33.

information is communicated to national, regional and local authorities responsible for development processes such as land use planning, building and construction, natural resource management, agriculture, water management and climate change adaptation. National governments will need to identify climate displacement risk in context to determine how it must be integrated into other sectors in order to avoid displacement. For example, in countries prone to drought, laws and policies related to agricultural practices may be relevant. Where changes in livelihoods are likely, labour ministries and employers' and workers' organisations should also be involved in designing policies to manage climate displacement risk.

Below we outline two sectors that are likely to prove relevant to climate displacement risk management: land use planning and natural resource management.

(a) Land use planning and climate displacement risk

Land use planning, zoning and building and construction regulations can all play a key role in mitigating climate displacement risk. However, attempts to use such planning tools as strategies for avoiding displacement will face two significant challenges. The first is a lack of political will, especially where countervailing economic development and private property interests are strong. The second, related challenge is lack of enforcement.

In developing and least developed countries, especially in fast-growing urban areas, lack of effective enforcement of building and zoning codes or proper land use management is likely to substantially contribute to climate displacement risk. Inhabitants of informal settlements are likely to be particularly vulnerable to displacement from climate-related hazards. In many instances, informal settlements spring up on hazard-prone and marginal lands that are not otherwise desirable for residential or commercial purposes such as on steep hillsides, in flood plains, or along coastlines. Additional physical vulnerabilities that characterise informal settlements include poorly constructed housing and improper drainage. These are compounded by the socio-economic vulnerabilities of those living in informal settlements which leave them at risk of prolonged displacement from climate-related hazards (including small-scale recurrent hazards and medium hazards) either because they cannot afford to rebuild and recover or due to lack of secure land tenure.

Numerous governments have identified relocation of informal settlements as a strategy for avoiding and mitigating climate displacement risk. However, experience shows that especially when implemented following a disaster – and in the absence of social safety nets – relocation of at-risk communities as a risk management strategy often ends up exacerbating displacement. This risk is particularly acute for inhabitants of informal settlements who lack secure land rights. The destruction of housing by floods, storms or other acute weather-related hazards can be used by governments as a pretext for prohibiting evacuees from returning, for preventing those who lost their homes from rebuilding in such areas and for demolishing unsightly housing.

Sound and well-thought-out land use planning – especially in fast-growing urban areas and in coastal areas – is therefore the best strategy for addressing climate displacement risk. Nonetheless, as discussed below, relocation of informal settlements will, in many cases, be a necessary measure to protect vulnerable communities from displacement risk and will require national legal frameworks, institutional arrangements and social safety nets in order to be successful.

(b) Natural resource management and climate displacement risk

Improved management of natural resources can also serve to mitigate the risk of displacement from climate-related hazards. In coastal areas, natural barriers such as coral reefs, mangroves and salt marshes have proved particularly effective in reducing damage from storm surge, coastal flooding and storms and offer an attractive strategy for coastal communities at risk of displacement from climate-related hazards. The Nature Conservancy's Coastal Resilience project uses a network of practitioners and a web-based mapping tool to help communities understand their vulnerability to coastal hazards, reduce their risk, and examine the use of nature-based solutions to mitigate risk.²²⁴ The World Wildlife Fund has also developed several projects to integrate ecosystem-based DRR into development planning and climate change adaptation as well as pre- and post-disaster humanitarian action.²²⁵ The ecosystem-based DRR activities used by WWF such as stabilising hillsides with vegetation to avoid landslides caused by intense rain and creating open spaces to absorb flood waters also show promise as strategies for avoiding displacement risk.

(c) Relocation and climate displacement risk

The international legal framework for planned relocation of populations threatened by climate change emphasises the principle that when relocation remains within a particular country, it is considered to be primarily the concern of that individual state.²²⁶ Each country is responsible for the maintenance of all people within its boundaries and jurisdiction, and this obligation is understood to extend not only to remedial actions but to preventative ones as well. As such, each country bears the burden of limiting the necessity for planned relocation, providing it when it does prove necessary as a last resort, and, in either case, upholding the human rights of those involved.²²⁷

Even when planned, relocation policies remain complicated, time-intensive, and difficult.²²⁸ In order for future attempts to succeed, an overarching legal framework needs to be established that adequately foresees and responds to potential risks.²²⁹ This is especially true in light of the abysmal track record of planned resettlement of affected communities in the context of large-scale development projects. According to research by the International Consortium of Investigative Journalists, World Bank-financed infrastructure projects including dams, power stations, conservation programmes and other projects pushed an estimated 3.4 million people out of their homes or otherwise threatened their livelihoods despite the use of preventative safeguards.²³⁰

As clearly spelt out in the Peninsula Principles, relocation should only take place when absolutely necessary and provisions for incorporation of displaced people into their new environment will be paramount. Sustained relocation programmes must involve meaningful input and coordination from

224 See 'Coastal Resilience' (The Nature Conservancy, 2018) www.coastalresilience.org accessed 16 May 2016.

225 See World Wildlife Foundation, 'Disaster Reduction' (WWF, 2019) wwf.panda.org/what_we_do/how_we_work/people_and_conservation/our_work/disaster_risk_reduction/ accessed 16 May 2016.

226 Marine Franck, 'Planned Relocation as an Adaptation Strategy' (UNFCCC, Bonn, 4 June 2014). www.unhcr.org/543e78a89.pdf accessed 16 May 2016.

227 *Ibid.*

228 *Ibid.*

229 Brookings Institution et al, Guidance on Protecting People From Disasters and Environmental Change Through Planned Relocation (n 45).

230 Sasha Chavkin and Michael Hudson, 'New Investigation Reveals 3.4m displaced by World Bank,' *International Consortium of Investigative Journalists* (Washington, April 13 2015) www.icij.org/blog/2015/04/new-investigation-reveals-34m-displaced-world-bank accessed 16 May 2016.

local communities including the relocated citizens themselves as well as other affected parties and actors.²³¹

Given the significant human rights implications of undertaking planned relocation in the context of climate change, national governments will need to look closely at how to develop laws, policies and related institutional arrangements for undertaking planned relocation as a strategy to avoid displacement risk. National governments are encouraged to endorse the Peninsula Principles and incorporate them into a regulatory framework for addressing planned relocation. Experience from Alaska, where numerous Native American villages threatened by the sudden-onset of climate change effects have been trying for years to retreat inland, presents a microcosm of the numerous legal and institutional challenges governments are likely to confront in undertaking planned relocation.²³²

In 2015, based on extensive research and lessons learnt from displacement in the context of development projects, the Brookings Institution, Georgetown University's Institute for the Study of International Migration, and the Office of the UNHCR invited a group of experts to partake in a project to develop consolidated best practices for government-led planned relocation and apply them to a climate change context. The resulting *Guidance on Protecting People from Disasters and Environmental Change through Planned Relocation* is intended to assist states seeking to orchestrate planned relocation as a form of mitigating displacement and adapting to climate change. The project is now hoping to bring the guidance into operation by including specific examples of practices and measures that will help states turn the Guidance Principles into concrete policies and programmes.²³³

1.4.3 State obligations to address climate displacement risk

One of the most challenging aspects of mitigating climate displacement risk will be articulating institutional responsibility among myriad government agencies at the national, regional and local level for managing climate displacement risk. Despite the clear human rights commitments of national governments to protect their citizens from known, imminent hazards, in the complex and ever-evolving world of climate change effects, taking proactive measures to address displacement risk becomes far more complicated especially as it runs up against other rights including freedom from forced eviction, private property rights, freedom of movement, the right to self-determination and certain cultural rights associated with place, not to mention the lack of financial, technical and managerial resources.

In order to manage climate displacement risk, states will need to integrate displacement prevention and mitigation into relevant laws and policies. As indicated above, numerous government agencies are implicated in the management of climate displacement risk, especially in the context of DRM, land use and development planning and climate change adaptation. Particularly in the absence of a central agency responsible for addressing the impacts of climate change on communities, coordinating various near- and long-term strategies for avoiding or mitigating displacement from sudden- and slow-onset climate hazards will need to take place at the local level and be driven by at-risk communities themselves in order to be successful.

231 *Ibid.*

232 Robin Bronen, 'Climate-Induced Community Relocations: Using Integrated Social-Ecological Assessments to Foster Adaptation and Resilience' (2015) 20(3) *Ecology and Society* 36.

233 Brookings Institution et al (n 43) *Guidance on Protecting People From Disasters and Environmental Change Through Planned Relocation*.

1.4.4 Conclusion

Given the fact that the majority of climate-related displacement will occur within national borders and that enormous opportunities currently exist to avert and minimise displacement, we endorse a more proactive approach that shifts the focus away from responding to those already on the move and towards addressing local-level displacement risk. Identifying climate displacement risk will require consideration of not only hazard exposure, but also of socio-economic factors that bear on the ability of certain people to return following a disaster, to find a durable solution elsewhere, or to move at all (a significant problem for trapped populations).

The UNFCCC, WIM ExComm (and its Climate Displacement Task Force), the Platform on Disaster Displacement (the follow-on to the Nansen Initiative),²³⁴ provide useful fora for state action and cooperation on the development of strategies to address climate displacement risk, as does the newly-adopted GCM, and the work of the UN Migration Network. In addition, the Green Climate Fund, the Least Developed Countries Fund, and related financial instruments aimed at promoting adaptation and resilience should be used to aid displacement mitigation efforts. With current global trends such as rapid urbanisation, population growth, and poverty all acting to put increasingly vulnerable people in harm's way, a far more proactive approach to managing climate displacement risk by governments at all levels, as well as by humanitarian response and development agencies, will be crucial.

1.5 Summary of key recommendations

Despite labour migration's adaptive potential, it has yet to feature as a potentially positive component of national or regional climate change adaptation strategies. Where migration is already occurring out of climate-affected areas, this may be a missed opportunity. Developing regular channels of migration for those suffering economic hardship due to natural disaster or long-term climate damage can help to prevent climate-related migrants entering irregular channels of migration, or being forced to take jobs in the informal economy, where they can face high recruitment costs and exploitive forms of employment abroad. In order to harness the adaptive capacity of labour migration, states and other stakeholders in the international community could consider the following:

- Link existing employment and migration policies, bilateral or multilateral migration agreements or arrangements and climate adaptation strategies through better coordination and collective efforts.
- Make labour migration a just option for climate-affected communities by reducing the high cost of movement, including through progressive elimination of exploitative recruitment practices in line with ILO Fair Recruitment Guidelines.
- Further explore how regional cooperation on climate change adaptation and pilot programmes regarding implementation in a bilateral or regional context as a basis for the development of 'good practice' guidance can better link labour mobility to regional strategies.

²³⁴ See Disaster Displacement, 'Platform on Disaster Displacement' (2020) www.disasterdisplacement.org accessed on 24 May 2016.

It is further recommended that states consider acting on the enormous opportunities that exist to avert or minimise internal displacement of vulnerable populations from climate change effects by adapting laws and policies to address climate displacement risk. In order to do so, we recommend that states consider the following:

- Improve understanding of climate displacement risk and vulnerability at a local level and develop indicators of displacement risks based on a range of physical, socio-economic and other relevant factors.
- Revise DRM laws and policies to ensure that they include mandates and processes for understanding and identifying climate displacement risk and ensure that technical and scientific bodies responsible for providing weather, climate, hydrological and environmental monitoring and prediction services have sufficient human, financial and technical capacity.
- Use a multi-sector approach to develop strategies for mitigating displacement risk at the local, regional and national level.
- Ensure that systems are in place to communicate climate hazards at the local level and empower local governments and communities, as well as vulnerable and disenfranchised groups, to be involved in their own risk management, including managing climate displacement risk.

Lastly, it would be important for states to endeavour to address the extremely difficult questions regarding where people will settle if they are displaced across borders but are unable to return home for many years or perhaps ever. The recent crisis of mixed migration and refugee flows of those seeking to reach Europe highlights the enormous challenges states are likely to confront in the absence of planning for climate-displaced persons. We recommend that states implement all the commitments under the aforementioned GCM, particularly related to relocation for those unable to return home.

Chapter 2: Food security

2.1 Introduction

The UN Committee on World Food Security ('CFS') defines food security as the condition in which all people, at all times, have physical, social, and economic access to sufficiently safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.²³⁵ While the global community has made remarkable strides in reducing the prevalence of hunger and chronic malnutrition,²³⁶ it is clear that the global community struggles with food security. The estimated prevalence of chronic malnutrition in children, in particular, has decreased from 40 per cent to 26 per cent.²³⁷ Yet, in 2010, nearly one billion people experienced hunger, and were often unable to access sufficient micronutrients, such as protein, fats, and carbohydrates.²³⁸ It is estimated that another one billion persons suffer from 'hidden hunger', with diets lacking critical micronutrients increasing the risk of physical and mental impairment.²³⁹

There are enormous human and socio-economic costs associated with malnutrition, with the greatest costs being generally borne by those who are already disadvantaged by poverty.²⁴⁰ Children who experience malnutrition or under nutrition early in life are more likely to become ill or face early death; they often struggle with school studies; and they frequently struggle to make full social and economic contributions to their households later in life.²⁴¹ The literature regarding global malnutrition demonstrates the dire challenges at hand.

On top of that, many individuals are heavily reliant on small-scale farming for their daily subsistence. The World Bank estimates that 47 per cent of the world's population lives in rural areas, and 70 per cent of these persons base their household income in agriculture.²⁴² It is estimated that 500 million small-scale farmers nourish almost two billion people, mainly in Asia and Sub-Saharan Africa, producing around 80 per cent of the food they consume.²⁴³ The viability of these farmers is essential to the broader food security of the many populations who depend on them.

235 Committee on World Food Security (CFS), 'Coming to Terms with Terminology' (39th Session of CFS, Rome, October 2012); see also International Food Policy Research Institute, 'Food Security' (2020) www.ifpri.org/topic/food-security.

236 According to the UN Millennium Development Goals Report 2015, one billion people have been lifted out of poverty since 1990, and the number of undernourished persons in lower income countries has been halved UN, The Millennium Development Goals Report (2015) ('MDG Report') 4. The report regarding the achievements in meeting the MDGs states that: 'Extreme poverty has declined significantly over the last two decades. In 1990, nearly half of the population in the developing world lived on less than \$1.25 a day; that proportion dropped to 14 per cent in 2015; Globally, the number of people living in extreme poverty has declined by more than half, falling from 1.9 billion in 1990 to 836 million in 2015. Most progress has occurred since 2000; The number of people in the working middle class—living on more than \$4 a day—has almost tripled between 1991 and 2015. This group now makes up half the workforce in the developing regions, up from just 18 per cent in 1991; The proportion of undernourished people in the developing regions has fallen by almost half since 1990, from 23.3 per cent in 1990-1992 to 12.9 per cent in 2014-2016.' MDG Report, 4.

237 WFP, 'Climate impacts on food Security and nutrition: A review of existing knowledge' (2012).

238 P Krishna Krishnamurthy, Kirsty Lewis & Richard J Choularton, 'Climate Impacts on Food Security and Nutrition: A Review of Existing Knowledge' (Met Office and WFP, 2012) <http://documents.wfp.org/stellent/groups/public/documents/communications/wfp258981.pdf>.

239 *Ibid.*

240 Susan Horton et al, 'Scaling Up Nutrition: What Will It Cost?' (The World Bank, 2010) <https://openknowledge.worldbank.org/bitstream/handle/10986/2685/518350PUB0nutr101Official0Use0only1.pdf?sequence=1&isAllowed=y>.

241 David Nabarro, 'Introducing the Policy Brief 'Scaling Up Nutrition: A Framework for Action'' (Special Representative of the UN Secretary General for Food Security and Nutrition, April 2010) <http://siteresources.worldbank.org/NUTRITION/Resources/042410DavidNabarroIntroducingtheSUN.pdf>.

242 The World Bank, 'Agriculture & Rural Development' (2019) <http://data.worldbank.org/topic/agriculture-and-rural-development>.

243 International Fund for Agricultural Development (IFAD) and UNEP, 'Smallholders, Food Security, and the Environment' (IFAD, 2013).

Food security remains an elusive goal. Almost 800 million people worldwide suffer from hunger every year (790 million in developing countries), despite the fact that, at a global level, more than enough food is produced per capita to feed the global population adequately. Population growth, urbanisation, and extreme poverty exacerbate food insecurity, particularly in parts of Africa and South Asia. While the world ‘has accumulated more wealth than ever before [...] inequality is rising, natural resource pressures are increasing, human-induced shocks are occurring more frequently, and the impact of extreme weather events due to climatic changes is being felt by more and more people.’²⁴⁴ This last part – a changing climate – is critical. Despite the great progress that the global community has made in achieving Goal 1 of the MDGs, which aims to reduce extreme poverty, hunger, and malnutrition,²⁴⁵ studies have shown that ‘climate change could potentially slow down or reverse progress towards a world without hunger.’²⁴⁶

The IBA Task Force called on the Adaptation Working Group to identify and analyse the current legal protections related to food security in the context of climate change with a view to making recommendations on how to integrate a rights-based approach into the climate change regime.²⁴⁷ Following this mandate, this chapter first explores the inter-linkages between climate change and food security and then analyses ways to respond to pressing food security challenges through climate change adaptation efforts. The chapter closely examines the legal and governance structures that pertain to climate change adaptation and identifies opportunities – particularly within a human rights-based approach – to address the two challenges jointly and synergistically. These challenges and opportunities are further illuminated through a case study on food security and fisheries in the Indian Ocean.

2.2 The inter-linkages between climate change and food security

Climate change increases the risks of hunger and malnutrition, jeopardising food security in new ways, while exacerbating recurring threats. Large-scale climate disasters may destroy crops, other food supplies, basic infrastructure, and vital community assets.²⁴⁸ At the same time, fluctuations in temperatures and rainfall exact a regular – in many instances, daily – toll as certain crops fail to thrive. In various African countries, rising atmospheric temperatures and variable precipitation are expected to depress the production of staple crops by up to 50 per cent by the year 2020.²⁴⁹ In this respect, it is important to emphasise that the UN’s definition of food security requires not only ‘sufficient safe and nutritious food’, but also food that meets the ‘food preferences’ of the relevant persons.²⁵⁰ As people in certain countries increasingly confront the disappearance of key staple crops that are a central part of their daily meals and culture, merely replacing those crops with other ‘more durable’ substitutes falls short of the promise of food security.

244 Food and Agriculture Organisation of the United Nations (FAO), *The Right to Food: ‘Past Commitment, Current Obligation, Further Action for the Future: A Ten-Year Retrospective on the Right to Food Guidelines’* (FAO, 2014).

245 According to The World Bank statistics, there has been an important reduction of poverty and hunger in developing countries as a whole, but many disparities remain. Furthermore, there are still 20% of countries that have not reached the target. Juan Feng, ‘MDG 1: Uneven Progress in Reducing Extreme Poverty, Hunger and Malnutrition’ *The Data Blog* (7 May 2015) <http://blogs.worldbank.org/opendata/mdg-1-uneven-progress-reducing-extreme-poverty-hunger-and-malnutrition>.

246 Tim Wheeler and Joachim von Braun, ‘Climate Change Impacts on Global Food Security’ (2013) 341 *Science* 508, 509.

247 IBA Taskforce Report (n 43) 183-185.

248 WFP, ‘Climate Impacts on Food Security and Nutrition: A review of existing knowledge’ (2012).

249 IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability* (Cambridge University Press, 2007).

250 See FAO, ‘Trade Reforms and Food Security: Conceptualizing the Linkages’ (FAO, 2003) 26-29.

The precise toll of climate change on particular persons and communities remains, in many instances, a ‘known unknown’. The impacts of climate change on the food security of persons are unclear but will most certainly not be uniform. Certain climate change beneficiaries may emerge, particularly in the short term to medium term.²⁵¹ The warming of temperatures on a global basis may result in localised advantages in certain temperate climates, including potentially increased food production in these areas.²⁵²

However, over the longer term, the net effects of climate change are likely to be overwhelmingly negative from a food security perspective, particularly for people who live in SIDSs and other coastal regions, and for those already vulnerable to health risks, such as children and the elderly.²⁵³ In most of the countries that already suffer from high hunger and malnutrition rates, populations depend heavily on local agriculture systems for their survival and are not equipped to respond to events that destabilise their already-weak balance of life. Their vulnerability is likely to be worsened by extreme climate events, such as droughts, flooding, hurricanes, or tropical cyclones, causing harmful effects on local harvests, livestock and fisheries. As the Special Rapporteur on the right to food, Hilal Elver, made clear, ‘climate change is undermining the right to food, with disproportionate impacts on those who have contributed least to global warming and are most vulnerable to its harmful effects’.²⁵⁴

The Committee on Economic, Social and Cultural Rights (CESCR) has defined the necessary elements required for the human right to food as the following: availability, accessibility and adequacy.²⁵⁵ Climate change poses threats to all three of these elements.

2.2.1 Availability of food

Food availability refers to whether there is sufficient food available to meet the needs of the population, whether from natural resources or for sale on the market.²⁵⁶ Production, trade and food storage levels all affect the availability of food.²⁵⁷ Climate change is likely to reduce food availability in all of these respects by harming crop yields, livestock, and fisheries on a global basis.²⁵⁸ As mentioned, certain crops are more or less able to tolerate temperature fluctuations and water availability. On the whole, overall crop yields worldwide are expected to decrease by more than five per cent in the years beyond 2050.²⁵⁹ Heavy rainfall and other extreme weather events are also likely to have adverse effects on food stores, agricultural lands, and food distribution logistics.²⁶⁰ The regions of the world that are likely to experience the most dramatic impacts of food security include Asia and Sub-Saharan Africa. In Asia, climate change-related events are expected to seriously affect local agriculture, putting

251 JB Ruhl, ‘The Political Economy of Climate Change Winners’ (2012) 97 *Minnesota Law Review* 206, 207-215.

252 *Ibid.*

253 WHO, ‘Climate Change and Health’ (1 February 2018) www.who.int/news-room/fact-sheets/detail/climate-change-and-health.

254 UNGA, ‘Interim Report of the Special Rapporteur on the Right to Food’ (5 August 2015) UN Doc A/70/287 [3].

255 *Ibid* [6].

256 UNGA, ‘Interim Report of the Special Rapporteur on the Right to Food’ (n 254), [7].

257 EC-FAO Food Security Programme, ‘An Introduction to the Basic Concepts of Food Security’ (FAO, 2008) www.fao.org/docrep/013/a1936e/a1936e00.pdf.

258 UNGA, ‘Interim Report of the Special Rapporteur on the Right to Food’ (n 268) [7].

259 *Ibid.*

260 *Ibid* [8].

‘around 49 million more people at risk of hunger by 2020’.²⁶¹ In Sub-Saharan Africa, droughts already pose – and will continue to pose – a key threat to food security.

Climate change will also exact a heavy toll on the oceans, with ocean warming, deoxygenation, acidification, and other anthropogenic stressors interrupting natural ocean processes.²⁶² Oxygen plays a direct role in biogeochemical cycling of carbon, nitrogen, and many other vital elements; it is fundamental for all aerobic life in the ocean.²⁶³ When there is reduced concentration of oxygen in the oceans, local economies suffer, with effects spilling over to the regional and global levels.²⁶⁴ The oceans may also confront other disruptions from climatic changes, as certain species may become extinct while others may flourish in overabundance. The net results are likely to create profound imbalances in the delicate biological conditions in our oceans.

Population growth places an additional strain on the availability of food resources. According to UN Food and Agriculture Organization (FAO) data, as the world’s population grows over the next two decades, the global demand for agricultural products will increase by 50 per cent by the year 2030.²⁶⁵ The population in Sub-Saharan Africa is likely to continue to grow, even in the face of food scarcity and diseases.²⁶⁶ Vulnerable areas that already suffer from hunger and undernourishment are likely to experience the impact of population growth in a pronounced manner.²⁶⁷ Vulnerable areas will also confront negative indirect effects as the prices of food products and inputs rise due to an increased strain on already-limited resources.²⁶⁸ Ultimately, certain communities may experience a downward vicious cycle of poverty and illness due to over population and food scarcity,²⁶⁹ given that ‘[a]griculture is not only a source of the commodity food but, equally importantly, also a source of income.’²⁷⁰ Smallholder farmers are still expected to produce 80 per cent of all the food consumed in the Sub-Saharan region and, will therefore be key stakeholders to participate in, and contribute to, adaptation policies.²⁷¹

2.2.2 Accessibility of food

Food security not only requires ‘[a]n adequate supply of food at the national or international level’,²⁷² but is also predicated on food *accessibility*. Accessibility, in the right to food context, means both physical and economic access to food. As the Special Rapporteur has emphasised, physical accessibility means that food should be accessible to all persons, including children, the elderly,

261 IFAD, *Climate Change Impacts in the Asia/Pacific Region* (2009).

262 Kirsten Isensee and Luis Valdes, ‘GSDR 2015 Brief: The Ocean is Losing Its Breath’ (IOC-UNESCO, 2015), <https://sustainabledevelopment.un.org/content/documents/5849The%20Ocean%20is%20Losing%20its%20Breath.pdf>.

263 *Ibid.*

264 *Ibid.*

265 Jelle Bruinsma (ed), *World Agriculture: Towards 2015/2030, An FAO Perspective* (FAO and Earthscan 2003).

266 Alliance for a Green Revolution in Africa (AGRA), ‘Africa Agriculture Status Report 2014: Climate Change and Smallholder Agriculture in Sub-Saharan Africa’ (AGRA, September 2014) 29.

267 See Wheeler and von Braun (n 246) 511.

268 The scarcity is derived from changes in the methods of production and from population growth. Michael D Mastrandrea et al (eds), ‘IPCC Experts Meeting on Climate Change, Food, and Agriculture: Meeting Report’ (IPCC, 2015).

269 FAO, *Climate Change and Food Security: Risks and Responses* (FAO, 2016).

270 Josef Schmidhuber and Francesco N Tubiello, ‘Global Food Security under Climate Change’ (2007) 104 *Proceedings of the National Academy of Sciences* 19703, 19703.

271 See IFAD and UNEP (n 257) 11.

272 See EC-FAO Food Security Programme (n 257).

and persons with a disability.²⁷³ Economic accessibility means that food should be affordable to persons and should not require them to forego other essential needs such as healthcare, housing, or education.²⁷⁴

Climate change threatens all of these dimensions of food accessibility. As food becomes scarcer, economically and socially vulnerable groups will have less access to it. Certain groups of persons may have to fundamentally alter their diets and substitute less nutritious, poorer quality food items.²⁷⁵ And it seems reasonably certain that food prices will rise substantially by the year 2050.²⁷⁶

One of the most destabilising issues for food security in developing countries is the high variability of food prices.²⁷⁷ Scarcity alone does not affect food prices. Rather, a series of public policy decisions also influence prices. Biofuel subsidies provide a prime example of this. In many countries, especially developed countries, biofuel subsidies were initially designed as one policy measure to reduce GHG emissions by incentivising a switch away from fossil fuel combustion; it is far from clear whether they have made a significant positive contribution towards the achievement of that objective, but they have been a causative factor in recent serious food crises.²⁷⁸ Concerns about climate change and energy policies also have led many countries to promote bioenergy, which in turn has had a noticeable effect of diverting land from food crops towards energy crops, consequently further distorting food prices globally.

Climate change is also likely to result in the movements and displacements of persons and communities, which will place pressure on other areas that may be less directly affected by climate change. As individuals move from drought-affected or flood-affected areas to more stable and fertile land or urban areas, their migration is likely to place pressure on persons in these other communities.²⁷⁹ Such migration may also increase conflict and tension within the host communities.²⁸⁰ In this way, climate change is likely to cause further destabilisation of many communities, even those not directly affected by extreme weather events. All of these pressures will generate further strain on the availability of food supplies.

2.2.3 Adequacy of food

Food must also be adequate, in that it must satisfy individuals' dietary needs, taking into account their age, health, and living condition, among other factors, and must be safe for consumption, nutritious, and culturally acceptable.²⁸¹ Food adequacy helps assure a group's overall 'nutritional security'.²⁸²

273 See UNGA, 'Interim Report of the Special Rapporteur on the Right to Food' (n 254) [12].

274 *Ibid.*

275 *Ibid* [13].

276 IPCC, AR5 Synthesis Report: Climate Change 2014 (n 36) 512.

277 See FAO, *Climate Change and Food Security* (n 269) 21-23.

278 A biofuel subsidies policy has not increased energy security, nor has it reduced greenhouse gas emissions that contribute to climate change. On top of that, the increasing demand for these types of crops provoked dramatic growth in food prices. For more information, see Kimberly Elliot, 'Biofuels and the Food Price Crisis: A Survey of Issues' (Working Paper No 151, Centre for Global Development, August 2008); Kimberly Elliot, 'Subsidizing Farmers and Biofuels in Rich Countries: An Incoherent Agenda for Food Security' (CGD Policy Paper 032, Center for Global Development, September 2013).

279 Nils Petter Gleditsch et al, 'Climate Change and Conflict: The Migration Link' (Coping With Crisis: Working Paper Series, International Peace Academy, May 2007) 4-7.

280 *Ibid.*

281 UNGA, 'Interim Report of the Special Rapporteur on the Right to Food' (n 268) [15]

282 Wheeler and von Braun (n 246) 512.

Food adequacy also extends to providing for food sovereignty. According to the Declaration of Nyéléni (the Declaration of the Forum for Food Sovereignty agreed on by representatives from more than 80 countries at the first global forum on food sovereignty held in Nyéléni Village, Mali in 2007): ‘Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations.’²⁸³

Climate change implicates all of these components of food adequacy. In its *Fifth Assessment Report*, the IPCC concluded with high confidence that climate change will have a substantially negative impact on the nutritional quality of food.²⁸⁴ Indeed, drought conditions can have severe detrimental effects on human nutrition, while increased carbon dioxide emissions can significantly reduce the nutritional content of staple crops, causing conditions such as zinc deficiency, which leads to a range of diseases.²⁸⁵ With heavy rains, crops also become more susceptible to fungal infections, which further lower nutritional quality.²⁸⁶

New challenges related to food use are emerging, resulting from economic development and globalisation,²⁸⁷ such as ‘the shift from traditional diets’ to more caloric ones that are adopted from Western patterns of life. Very little attention has yet been paid to this problem, so there is limited knowledge regarding the potential ways that climate change affects it.²⁸⁸ However, it is very likely that as communities’ traditional sources of foods – such as fruits, vegetables or fish – diminish, these communities will increasingly resort to alternative diets that may have lower overall nutritional content.²⁸⁹ This is a critical issue, for example, for small island states, whose diets largely depend on fish and, yet, will confront severely limited access to fish resources as climate change progresses.²⁹⁰

The challenges confronting food security are therefore vast, extremely complex and present at all levels of the global food chain. It is no surprise that food insecurity has climbed the global political agenda and has led to a deep rethinking of the governance regime in place to deal with it effectively.

283 Forum for Food Sovereignty, Declaration of Nyéléni (Selingue, 27 February 2007) <https://nyeleni.org/IMG/pdf/DeclNyeleni-en.pdf>.

284 UNGA, ‘Interim Report of the Special Rapporteur on the Right to Food’ (n 254) [16].

285 *Ibid.*

286 *Ibid.*

287 P Shetty, ‘Nutrition Transition and Its Health Outcomes’ (2013) 80 *Indian Journal of Pediatrics* 21-27.

288 Wheeler and von Braun (n 246) 512.

289 FAO, *Climate Change and Food Security* (n 269).

290 *Ibid* 33. Food security concerns are not limited to small island states or lower-income countries. In middle-income and higher-income countries as well, a growing body of literature demonstrates that increasing prices of food may reduce the nutritional quality of food, thereby exacerbating obesity challenges. According to the WHO, worldwide obesity has more than doubled since 1980, and in 2014, more than 1.9 billion adults worldwide were overweight. Increasing food prices amplify health inequalities between those who can access more nutritious—and often more costly—foods and those who cannot. WHO, ‘Obesity and Overweight’ (WHO, 16 February 2018) www.who.int/news-room/fact-sheets/detail/obesity-and-overweight. Additionally, new crops and livestock species and new pathogens may emerge, posing risks of contamination to food products. Iain R Lake et al, ‘Climate Change and Food Security: Health Impacts in Developed Countries’ (2012) 120 *Environmental Health Perspectives* 1520, 1522. Even climate change mitigation strategies may take their toll, as states increasingly encourage the consumption of foods whose production reduces GHG emissions. Iain R Lake et al 1522-23. This may lead to reduced consumption of red meat, which has positive effects on saturated fat but, if not properly replaced by items with equal levels of nutrients, may have negative effects on zinc and iron intake. Iain R Lake et al 1523. While certain countries have complex legal structures in place to help ensure food safety, the effectiveness of these structures will vary considerably between countries, and it remains unclear how they will specifically address the challenges presented by climate change. Iain R Lake et al 1523, 1525.

2.3 Food systems impact on climate change

We have examined the dramatic impact that climate change will have on food systems and overall food security. Yet, it is important to emphasise that the relationship between climate change and food systems is not one-directional. Rather, countries' and communities' food production decisions may significantly impact the course of climate change.

Both industrial and traditional forms of meat production provide a prime example of this two-way interrelationship between climate change and food systems. Over the past half-century, as the economy in certain (primarily Western) countries has grown, industrial-style agricultural practices have replaced more traditional small-scale farming practices.²⁹¹ Industrialised agriculture led to greater yields of commodity crops and this helped reduce prices for many daily food products. It also transformed meat – previously, an occasional meal – into a daily product of consumption.²⁹² Over time, however, the true costs of industrial agriculture have become more evident. The UN has reported that the livestock sector is one of the top two to three largest contributors to present-day environmental challenges.²⁹³

Meat production leads to various stresses on the environment, including deforestation, overuse of freshwater and inefficient use of energy. However, perhaps the most dramatic impact of meat production has been its effect on climate change. While precise estimates of the impact vary, most studies agree that between ten and 35 per cent of all global GHG emissions are due to agriculture.²⁹⁴ According to one study, a household's consumption of one kilogram of domestic beef represents automobile use for a distance of approximately 160 kilometres (99 miles) in terms of GHG emissions.²⁹⁵ The types of emissions associated with agriculture are also distinct from those of other GHG sources. The largest proportion of GHG emissions in agriculture comes not from carbon dioxide but from methane and nitrous oxide, both of which have a high global warming potential.²⁹⁶

Other forms of meat and dairy production also contribute to climate change and should therefore be factored into any comprehensive approach to climate change mitigation. Of course, as mentioned, any reductions in meat and dairy consumption must be accompanied by commensurate increases in consumption of other products containing similar key nutrients. If not, reduced meat and dairy consumption could lead to malnutrition challenges.

In this respect, it is important to note that while significantly reducing aggregate meat and dairy production and consumption would greatly help reduce overall GHG emissions, there are ways to reduce emissions even while keeping production levels constant.²⁹⁷ Indeed, the FAO has put forward five region-specific case studies that demonstrate how GHG emissions can be greatly reduced by improving overall production practices, even while production levels remain constant.²⁹⁸ For instance,

291 UNEP Global Environmental Alert Service, 'Growing Greenhouse Gas Emissions Due to Meat Production' (UNEP, October 2012) <http://unep-iesd.tongji.edu.cn/index.php?classid=933&action=download&id=389> 1.

292 *Ibid.*

293 *Ibid.*

294 *Ibid* 4.

295 *Ibid* 6.

296 *Ibid* 4.

297 P J Gerber et al, *Tackling Climate Change Through Livestock: A Global Assessment of Emissions and Mitigation Opportunities* (FAO, 2013) www.fao.org/docrep/018/i3437e/i3437e.pdf.

298 *Ibid* 59-81.

the FAO reports that in South Asian mixed dairy farming systems, GHG emissions can be reduced by up to 38 per cent through making improvements to feed and feeding practices, and to animal health and husbandry practices.²⁹⁹ However, many developed economy countries, while recognising agriculture as a major contributor of GHG emissions, are not devising or implementing effective rules, policies or controls to counter this in their jurisdictions. In many of these countries, the agricultural sector has a powerful and effective lobby.

2.4 The complexity of food security as a climate change adaptation issue

Climate change will undoubtedly continue to undermine food security through impacts on ecosystems (land degradation, water and air contamination, water scarcity), and increased incidences of diseases affecting humans, animals and plants and forests. According to the FAO, '[t]he effects of climate change on ecosystems are already severe and widespread, and ensuring food security in the face of climate change is among the most daunting challenges facing human kind.'³⁰⁰

The issues underlying food security and climate change adaptation are highly complex individually, not to mention collectively. Food security and climate change adaptation each involve a distinctive set of policy decisions and stakeholders. The legal regimes governing food and climate change issues have largely been siloed at the international, national and local levels.³⁰¹ By purely focusing on one challenge, actors risk potentially subverting attainment of the other. As an extreme example, short-term solutions to food security crises may result in increasingly industrialised, centralised endeavours that, in turn, may thwart longer-term and more durable, localised adaptive measures.

Despite the challenges underlying the integration of food security issues and climate change adaptation, clear intersections remain. The intersections and commonalities are particularly evident when each issue is viewed against the backdrop of the goal of achieving long-term resilience to climate change and food stresses. Indeed, climate change adaptation measures may be tested and strengthened by closely evaluating their impact on food stability.

Climate change adaptation and food security both pose the greatest challenges and risks to persons who are already disadvantaged and underprivileged by socio-economic, geographic, or other status. In the Netherlands, people are investing in homes which can float on water.³⁰² The Swiss Alpine ski sector is investing in artificial snow-making machines, while in the Horn of Africa, 'adaptation' means that women and young girls walk further to collect water.³⁰³ Adaptation strategies themselves pose the risk of exacerbating existing inequities. This is one of the reasons why a human rights lens has to be brought to bear.³⁰⁴

Both climate change adaptation and food security issues require multi-layered solutions that enable responses at the international, national, and local levels. Looking at the challenges in an integrated

299 P J Gerber et al (n 311) 62.

300 FAO, *Climate Change and Food Security* (n 269) 1.

301 One notable counterexample is the international human rights regime, which has long acknowledged intersection between different rights.

302 UNDP, 'Human Development Report 2007/2008, Fighting Climate Change: Human Solidarity in a Divided World' (UNDP, 2007) http://hdr.undp.org/sites/default/files/reports/268/hdr_20072008_en_complete.pdf 13.

303 *Ibid.*

304 See, eg, Margaux J Hall and David C Weiss, 'Avoiding Adaptation Apartheid: Climate Change Adaptation and Human Rights Law' (2012) 37 *Yale Journal of International Law* 309.

manner, the literature increasingly points towards the importance of adopting a food systems approach at the global level.³⁰⁵ On the one hand, international action is imperative to successfully coordinate and plan for adaptation and food security. Yet, many studies have found that some of the most promising (and human rights-framed) approaches to both issues are likely to occur at a highly local level, as communities themselves identify adaptive strategies that reflect their particular needs and circumstances.³⁰⁶ As we examine the legal and governance regimes that are brought to bear in responding to both of these challenges, they too must operate at all of these levels: for instance, prompting international solidarity and cooperation, while also allowing for localised accountability for decisions regarding how to allocate resources.

Finally, long-term answers to both challenges will require building and reinforcing durable institutions, particularly legal and governance institutions. While we can anticipate certain legal and governance issues that will arise in the course of addressing climate change and food security, many issues are yet unknown and difficult to anticipate. It is therefore essential that the international, national, and local communities have in place solid institutions that are able to review and respond to evolving challenges. These institutions will ultimately be responsible for balancing competing rights claims, determining how to allocate limited resources, and potentially enjoining certain activities that may exacerbate harm.

2.5 The global regime complex for food security within global governance

This section, together with sections 2.6 and 2.7, will examine whether and to what extent existing governance and legal frameworks that have been designed to support climate change adaptation can also promote food security and ensure respect for the right to food in light of a number of important challenges. Section 2.5 explores the global regime complex for food security in order to understand whether and to what extent it can ensure protection of the right to food in light of a number of important challenges. Section 2.6 considers the increasing degree of alignment among international regimes on food security issues. Section 2.7 discusses the definition and boundaries of the fundamental right to food in light of climate change. Section 2.8 provides a number of recommendations for increasing the degree of alignment between the current global regime for food security and the right to food in the context of climate change.

2.5.1 The goals of the regime complex for food security

The key goal of the global governance regime for food security is arguably to ensure that all people at all times have physical, social and economic access to nutritious, safe and sufficient food in conjunction with adequate sanitation, health services and care. It can be argued that food security constitutes the public policy dimension of the right to food; therefore, a global governance regime for food security has the right to food at its core. In achieving the abovementioned goal, the food

305 See, eg, John Ingram, 'A Food Systems Approach to Researching Food Security and Its Interactions with Global Environmental Change' (2011) 3 *Food Security* 417-431.

306 For example, see Hall and Weiss (n 304) 321-322; Robin Kundis Craig, 'Stationarity is Dead'—Long Live Transformation: Five Principles for Climate Change Adaptation Law' (2010) 34 *Harvard Environmental Review* 9, 29; Elizabeth C Black, 'Climate Change Adaptation: Local Solutions for a Global Problem' (2010) 22 *Georgetown International Environmental Law Review* 359, 364-82 (focusing on municipal efforts to include adaptation in planning decisions).

regime complex must also take into account the impacts – both positive and negative – on other systems, both socio-economic and environmental. The goal can therefore be reformulated as follows:

- ensuring stability and transparency of food commodity markets at global, regional, national and local levels;
- protecting the human rights of those involved in the activities of the food system (eg, by ensuring small-scale producers' access to land, seeds and fisheries, and guaranteeing compliance with international labour standards across the entire supply chain); and
- promoting the environmental sustainability of food systems and the protection of biodiversity and the climate system.

2.5.2 The structure of the regime complex for food security

The global food governance system can be characterised as a regime complex: a collection of institutions loosely connected with each other in a mix of hierarchical and non-hierarchical interdependencies and which are related by a (partly) common set of objectives.³⁰⁷ Institutions included within a regime complex can be both public and private and act at global, national, subnational, regional and/or local levels. Within a regime complex, composed of many different actors with partially overlapping and partially conflicting agendas, reflecting partially different or even opposing interests, and subject to different power balances, institutional fragmentation is the norm, and opportunities for cooperation and conflict abound. A critical note of regime complexes is that they are not the result of conscious choices made by international policy makers. Rather, they emerge as a result of institutional proliferation at the international level, the rescaling of national authorities to the global and transnational levels, and a tendency for mission 'creeping' among existing institutions to reach into new policy domains. This means, among other characteristics, that authority is diffused among a large number of institutions, reducing clarity about which institutions are in charge of which dimension of any particular (global) challenge.³⁰⁸ Furthermore, several regime complexes can interact, compounding opportunities for cooperation and conflict. For instance, the food regime complex interacts with other regime complexes such as those on climate change, energy security, or international trade in various complicated ways, compounding the number of institutions involved and/or having a direct or indirect influence on food security globally.

(i) KEY PARTICIPANTS

Due to the highly globalised nature of all the activities covered by the regime complex for food security (production, processing and packaging, distributing and retailing, and consumption), there is no global governing body with full competence to govern the entire food system. Instead there is a large number of public and private stakeholders involved in delivering the various elements of food

307 Robert O Keohane and David G Victor, 'The Regime Complex for Climate Change' (2011) 9 *Perspectives on Politics* 7, 8, 9.

308 Matias Margulis, 'The Evolving Global Governance of Food Security' (Research Paper, Foreign Affairs and international Trade Canada, January 2011) www.fao.org/fileadmin/user_upload/fsn/docs/Global_Governance/PolicyResearchPaper_EvolvingGlobalGovernanceFoodSecurity_Margulis_2011.pdf 3.

security.³⁰⁹ In principle, a specialised agency of the UN (the FAO) oversees the governance of food and agriculture at a global level. The FAO is an intergovernmental organisation with 194 members, two associate members and a regional organisation (the EU). Representatives from the member states gather every two years to review global governance policy issues and international frameworks. Its focus is squarely on governance, acknowledging that:

‘Processes affecting food security and nutrition, livelihoods, and the management and sustainable use of natural resources confront increasingly complex governance challenges. Broader, more flexible and responsive, and more capable governance institutions and mechanisms are necessary to improve effective coordination among diverse stakeholders, enabling problem-solving while working towards the achievement of multiple, and sometimes conflicting, objectives.’³¹⁰

The FAO does not however have the power to adopt comprehensive, legally binding, instruments to achieve its goals. Rather, it works by deploying its capacities across a number of key areas. First, it serves as a knowledge network, generating and disseminating knowledge to support development. Second, it helps countries design agricultural policy, support planning, draft legislation and create national strategies to achieve rural development and hunger alleviation goals. Third, it provides a setting where rich and poor nations can come together with the food industry and non-profit organisations to discuss ways to strengthen the food sector. Fourth, it implements field projects throughout the world, including dealing with crisis situations to protect rural livelihoods and help people rebuild their lives. Finally, it develops mechanisms to monitor and warn various stakeholders about multi-hazard risks and threats to agriculture, food and nutrition. Therefore, even if the FAO plays a crucial role within the food regime complex, it is doubtful whether that role provides it with enough influence to act as the central plank of the global regime complex for food security.

Other international organisations with their core focus being food governance are the International Fund for Agricultural Development (IFAD) and the WFP. The IFAD is a specialised agency of the UN, established in 1974 as a result of the World Food Conference, together with the CFS. Its mission is to finance agricultural development projects primarily for food production in developing countries, acknowledging that the most important causes of food insecurity and famine are not failures in food production but structural problems relating to poverty and large concentrations of poor populations in the rural areas of developing countries. The WFP is part of the UN system and is funded through voluntary contributions. It acts as the food aid arm of the UN and its mandate is to ensure access to food of the poorest and of those in critical circumstances. Because of their narrow mandates and their inability to adopt legally binding instruments, IFAD and WFP cannot play more than an ancillary role within the global food regime complex.

The CFS was set up as an intergovernmental body to serve as a forum for review and follow up of food security policies. It is the only UN body specifically tasked with dealing with food security and nutrition policy and receives its funding from FAO, IFAD and WFP. The CFS is made up of member states (those parts of the FAO, IFAD, WFP and non-FAO states that are UN members) and other participants (UN agencies with a specific mandate in food security and nutrition, civil society and

309 Rob Vos, ‘Thought for Food: Strengthening Global Governance of Food Security’ (CPD Background paper No 29, UN Department of Economic and Social Affairs, November 2015) www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/bp2015_29.pdf.

310 FAO, ‘Who We Are’ www.fao.org/about/meetings/user-rights/who-we-are/en/.

NGOs, private sector associations and philanthropic foundations, international agricultural research systems and international and regional financial institutions). Yet, the decision-making power remains fully within the member states. The CFS reports to the UNGA through the UN Economic and Social Council. In 2009, following the global food crisis, the CFS underwent a reform process to enhance its contribution to the prevention of future food security crises. As a result, its core mission is currently composed of four goals: (1) to serve as the most inclusive international and intergovernmental platform for all key stakeholders concerned with food security and nutrition to work together in a coordinated fashion to ensure food security globally; (2) to promote policy convergence by encouraging exchanges of information, views and experiences; (3) to provide support and advice to countries, regions and observers through assisting in the implementation of concrete solutions and the building up of empirical evidence and scientific analysis, respectively; and (4) to encourage accountability.

The CFS has been instrumental in developing a number of recommendations and standalone guidance documents to help member states mainstream food security across different policy sectors. For instance, in 2004 the FAO adopted the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (Right to Food Guidelines), which provide practical guidance on ways to implement the right to adequate food in a wide range of policy and programme areas.³¹¹ Despite not being legally binding, the Right to Food Guidelines nevertheless contain authoritative commentary on the links between food security and the human right to food. Moreover, the Right to Food Guidelines were instrumental in shifting the dominant, technically-oriented approach to food security and nutrition into one more sensitive to food security as a human right. The ten-year review of the Right to Food Guidelines has led the FAO to claim that the Guidelines are seen by many as the ‘most authoritative and complete guiding document available for building a sound, national human rights-based food security and nutrition [...] framework’.³¹² In particular, the Right to Food Guidelines define what is known as an enabling environment for food security, which includes strong commitment by government and other key stakeholders, a common understanding of the problem and its solutions, the availability of reliable data and information, adequate capacity in the analysis, planning and implementation of policies and programmes, an effective accountability system with systematic progress monitoring and impact evaluation, as well as access to legal, quasi-judicial and administrative grievance mechanisms. In 2013, the CFS adopted the Global Strategic Framework for Food Security and Nutrition to improve coordination and guide synchronised implementation of the Right to Food Guidelines.

The CFS has also officially endorsed the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, which aims at improving the governance of tenure systems for the benefit of all, particularly the most disadvantaged within developing countries.³¹³ Furthermore, the CFS adopted in 2014 Principles for Responsible

311 FAO, Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (Adopted by the 127th Session of the FAO Council, FAO, 2005).

312 FAO, *The Right to Food: Past Commitment, Current Obligation, Further Action for the Future* (n 244) 2.

313 CFS, Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (FAO, 2012).

Investment in Agriculture and Food Systems,³¹⁴ which outline the role that investment can have in promoting the right to food and address a variety of stakeholders.

These guidelines are extremely important as they acknowledge climate-related threats to food security. In particular, the impact of the Right to Food Guidelines cannot be underestimated. However, none of these guidelines are legally binding and the CFS does not have the power to adopt legally binding decisions. A legally binding regime in this area is somewhat unrealistic, at least in the foreseeable future.

This generates the question about how the CFS relates to other powerful actors within the regime. Indeed, other powerful actors within the regime complex include the G8/G20, the World Bank, and the World Trade Organization (WTO). The private sector is also involved, through organisations such as the GCM and the International Agri-Food Network. At the regional level, development banks such as the Inter-American Development Bank and the Asian Development Bank, regional organisations such as the EU, the AU, or the North American Free Trade Agreement (NAFTA), all have a say in food security.

(ii) COORDINATION WITHIN THE REGIME COMPLEX

At the height of the global food crisis of 2008, the UN Chief Executives Board for Coordination created a High Level Task Force on Global Food and Nutrition Security ('HLTF'), bringing together the heads of the UN specialised agencies, funds and programmes, the UN Secretariat, the World Bank, the International Monetary Fund, the Organisation for Economic Co-operation and Development (OECD) and the WTO. The main goal of the HLTF was to ensure a unified approach to the crisis, through the development and implementation of a plan called the Comprehensive Framework for Action, which would aim at addressing the short-term needs of the most vulnerable while increasing long-term resilience to future shocks.³¹⁵

In 2009, the CFS was then reformed, as discussed above, to become the central tenet of the global food regime complex. Its reform was promoted by the G77 to become an inclusive forum where all voices could be heard and the technical managerial fixes preferred by the HLTF and the G8 balanced. Since then, the CFS has developed its Global Strategic Framework,³¹⁶ as well as various guidelines, but has not been able to put in place a state accountability mechanism, and has become a focus of contestation for power among developed and developing states and transnational corporations (TNCs), over the food system.³¹⁷ This may be related to some major shortcomings of the CFS, chiefly related to its capacity to deliver effectively its mandate, given the fact that it lacks

314 CFS, 'Principles for Responsible Investment in Agriculture and Food Systems' (41st Session, Rome, 13-18 October 2014) UN Doc CFS 2014/41/4 Rev1.

315 The High Level Task Force (HLTF) sought to provide a range of public and private stakeholders with a mix of policies and measures to increase food security. The G8 has since acknowledged the coordinating role of the HLTF, and in 2009, agreed to reimburse US\$ 22 billion over a three-year period to invest in agriculture with a view to implementing the plan of the HLTF. This pledge enabled the creation of the Global Agriculture and Food Security Program Trust Fund, a multilateral funding mechanism managed by the World Bank to help achieve the MDG focusing on the eradication of hunger (MDG 1). In reaction to the food price crisis that emerged within the broader context of the global financial crisis, the AMIS was set up and its secretariat located at FAO, to increase food market transparency and encourage international policy coordination.

316 CFS, 'Global Strategic Framework for Food Security & Nutrition (GSF)' (42nd session, Rome, 12-15 October 2015).

317 *Ibid* 333.

delegated authority to enforce its decisions, but also to its inability so far to make substantial progress on the challenges of ensuring the sustainability of food systems.³¹⁸

Given the enormous challenges facing the global food system, and the fragmented nature of its governance, the issue of establishing an integrated and effective food security regime will remain the core challenge of the food governance system for years to come.

2.5.3 Exploring conflicts of norms and rules

Another important challenge facing the global food system in promoting food security is the large number of institutions at the international, regional, national and local levels with different compositions and competences that generate uncoordinated or incompatible norms and rules. This fragmentation is of course a well-known problem in international law, having to do with increasing functional differentiation among regimes and the lack of one overarching authority.³¹⁹ This section will briefly consider three areas of potential conflict, particularly by looking at interactions between institutions, norms and rules, and regime building processes.

(i) FOOD SECURITY IN THE CLIMATE CHANGE REGIME COMPLEX

The climate change regime – itself arguably a regime complex – has at its core for the past few decades the UNFCCC (and, since, December 2015, the Paris Agreement).³²⁰ The climate change regime can affect food security in a number of ways. Climate change mitigation policies must focus on reducing emissions from all sectors, including the agricultural sector, but mitigation may exacerbate food insecurity if it leads to reductions in food production as a result of changes in energy policies, eg, more investment in renewable energy leading to higher energy prices or removal of land used for food production to produce energy. Climate change adaptation policies are critical in ensuring that climate change does not reduce food security, since climate change has the potential to increase food insecurity by disrupting all the parts of the global food system from production to transportation and distribution to consumption.

However, the current climate change framework does not pay too much attention to food security, both in relation to mitigation and to adaptation.³²¹ While it is true that articles 4(1) (a) and (b) of the UNFCCC require states to report to the COP their national inventories of anthropogenic GHG emissions and policies addressing emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol, including those coming from agriculture,³²² it is also the case that National Communications detailing policies and measures to mitigate emissions provide

318 Michelle Metzger, 'Thinking Forward in Global Food Governance—Synthesis Paper' (2015) 2 Canadian Food Studies 345, 347.

319 This is a well-recognised issue in international law. See, eg, UNGA, 'Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law' (Report of the Study Group of the International Law Commission, 13 April 2006) UN Doc A/CN.4/L.682.

320 The core goal of the UNFCCC is to achieve the stabilisation of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, and to do so within a time frame sufficient to allow ecosystems to adapt naturally to climate change, *to ensure that food production is not threatened* and to enable economic development to proceed in a sustainable manner. See (n 3), Paris Agreement. The climate change regime complex, of course, includes many other organisations and institutions besides the UNFCCC, which have functioned at cross-purposes at times. See Keohane and Victor (n 307).

321 See Jonathan Verschuuren, 'The Paris Climate Agreement: Agriculture and Food Security' (Australian Center for Climate and Environmental Law Conference, Sydney, February 2016) https://pure.uvt.nl/portal/files/10163370/ACCEL_paper_Verschuuren_Paris_Agreement.pdf.

322 Annex I parties have more stringent obligations, since they have to report also on policies and measures implemented to reduce their emissions (Art 4(2)) and that includes information on carbon stocks, including GHG emissions by sources and removals by sinks in agricultural soils and land-use change and forestry, per Art 3(4) of the Kyoto Protocol.

generally very little information about measures adopted for the agricultural sector – indeed, Article 3(1) of the Kyoto Protocol does not require states to include land use, land-use change and forestry therein. Even the CDM has played a very limited role in fostering mitigation within the agricultural and forestry sectors, as attested by the very small number of agriculture-related projects that have been developed. The situation is different, however, in relation to Nationally Appropriate Mitigation Actions (NAMA) adopted by African countries, where there is a strong focus on the agricultural sector. In reflecting on the reasons underlying this state of affairs, some commentators have suggested that states parties to the UNFCCC and the Kyoto Protocol did not want to place a significant mitigation burden on the agricultural sector due to large variations across agro-ecosystems and farming methods, the large number of farmers that would need to be involved, and challenges related to measuring, reporting and verification.³²³ Taking into account that land-use changes (primarily deforestation), mono-cropping-based industrial agricultural practices and industrial livestock are the main sources of GHG emission within the sector, it follows that large interventions might be perceived as having potentially negative impacts on food security.³²⁴

The story is rather different in relation to adaptation, with almost all National Communications and NAPAs focusing on agriculture. Cooperation between states, as per Article 4(1) of the UNFCCC, on adaptation in the agricultural sector is mostly aimed at developing countries, though progress remains rather slow.³²⁵

The recently adopted Paris Agreement³²⁶ only makes reference to food security in its Preamble: ‘[r]ecognizing the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change.’ This isolated reference falls well short of what might have been expected in the lead-in to the Agreement, with the EU having announced that it would promote ‘climate friendly and resilient food production, while optimising the sector’s contribution to greenhouse gas mitigation and sequestration.’³²⁷ The fact that the Paris Agreement hardly mentions food security does not mean that it will not have an important impact on the global food system. Achieving the mitigation goal formulated within Article 4 of the Paris Agreement³²⁸ will necessitate an important reduction in GHG emissions from the agricultural sector globally; moreover, adapting to the impacts of climate change, particularly in developing countries, will require much larger volumes of financial resources and transfers of technology.³²⁹

323 Ulrich Hoffman, ‘Assuring Food Security in Developing Countries under the Challenges of Climate Change: Key Trade and Development Issues of a Fundamental Transformation of Agriculture’ (UNCTAD Discussion Paper No 201, 2011) http://unctad.org/en/Docs/osgdp20111_en.pdf.

324 Purdue University Center for Global Food Security, ‘Climate Mitigation Policies and Food Security’ www.purdue.edu/discoverypark/food/research/index.php.

325 The Subsidiary Body for Scientific and Technological Advice covers issues such as development of early warning systems, assessment of risks and vulnerabilities to climate change, identification of adaptation measures, identification and assessment of agricultural practices and technologies to enhance productivity in a sustainable manner, food security and resilience, and constant review of the scientific state of the art. Transfer of technology plays an important role in adaptation and food security, and thus the increase in the patenting of climate change adaptation crops has led to concerns about accessibility to those crops by developing country farmers. Bruce Campbell et al, ‘Agriculture and Climate Change: A Scoping Report’ (Meridian Institute 2011) https://projects.merid.org/SITECORE_DOCS/Agriculture%20and%20Climate%20Change%20Scoping%20Report.pdf 39.

326 Paris Agreement (n 2).

327 Verschuuren (n 321).

328 Paris Agreement (n 2), Art 4.

329 Paris Agreement (n 2), Arts 7, 9, 10, 11.

Therefore, while the text of the Paris Agreement does not place increased focus on the inter-linkages between food security and climate change mitigation, large players, such as the EU and Australia,³³⁰ have taken a relatively strong stance towards the implementation of measures that will build resilience to climate change and reduce GHG emissions, and others may well follow suit within the next few years.

(ii) FOOD SECURITY AND THE ENERGY REGIME COMPLEX

The central goal of the global energy regime complex can be defined as seeking to ensure security of an energy supply of a high quality and in a sustainable manner for all and at all times. But even agreeing on a common definition of energy security of supply is not possible by looking at the various institutions involved in the global energy regime complex.³³¹ Furthermore, it is well understood that there is no single institution at a global level that can guarantee a comprehensive and coordinated approach to energy policy,³³² let alone guarantee that the climate change and energy regime complexes are coordinated in seeking their goals.³³³ Indeed, guaranteeing energy security in the short term may require investing in fossil fuel-based energy, as has been the case in the US with the increase in shale gas production, or more generally with the substantial subsidies to the generation of fossil fuel-based electricity throughout most OECD countries.³³⁴

There are a number of inter-linkages between the energy and food regime complexes. First, the combustion of fossil fuels is a major contributor to climate change, which in turn will have negative effects on food systems. Second, as energy is critical in the production, processing, distribution and consumption of food, energy policies may have a negative impact on food security when they lead to higher food prices, which will have the greatest impact on the poorest. Third, the challenge of achieving energy security and combating climate change has led to a race for biofuels that has had a negative impact on food production, and consequently on food prices, even before considering the associated negative environmental impacts. The FAO has undertaken substantial work in understanding the so-called 'Water-Energy-Food Nexus', which is in turn an important element of the UN-led Sustainable Energy for All initiative. The academic literature is beginning to focus on the nexus between energy and food governance regimes,³³⁵ but much more study and attention is needed in this area.

(iii) FOOD SECURITY AND THE GLOBAL TRADE REGIME COMPLEX

The WTO's central mission is to promote global trade to ensure that it flows as smoothly, predictably and as freely as possible, and in that regard, it has the potential to affect almost any conceivable

330 Australia's Carbon Credits (Carbon Farming Initiative) Act 2011.

331 Benjamin K Sovacool, 'Introduction: Defining, Measuring and Exploring Energy Security' in Benjamin K Sovacool (ed), *The Routledge Handbook of Energy Security* (Routledge 2011) 1, 3-6.

332 Thijs Van de Graaf and Jeff Colgan, 'Global Energy Governance: A Review and Research Agenda' (2016) 2 Palgrave Communications www.nature.com/articles/palcomms201547.

333 Javier de Cendra de Larragán, 'Tying the Knot of Energy Security and Climate Change Mitigation: A Tale of Solidarity?' (2011) 22 *Yearbook of International Environmental Law*, 76.

334 OECD, *OECD Companion to the Inventory of Support Measures for Fossil Fuels 2015* (2015) www.oecd.org/environment/oecd-companion-to-the-inventory-of-support-measures-for-fossil-fuels-2015-9789264239616-en.htm

335 Cullen S Hendrix and Idean Salehyan, 'Climate Change, Rainfall and Social Conflict in Africa' (2012) 49 *Journal of Peace Research*, 35-50; Golam Rasul and Bikash Sharma, 'The Nexus Approach to Water-Energy-Food Security: An Option for Adaptation to Climate Change' (2016) 16 *Climate Policy*, 682-702.

domestic policy. At the same time, the agreement establishing the WTO seeks to reconcile the goal of promoting free trade with other important concerns, in particular, the environment.³³⁶ The WTO has an important role to play in connection with climate change mitigation and adaptation.³³⁷

The potential for conflict between the trade regime and the climate regime has been the subject of extensive analysis, including the potential for many climate policies to create trade barriers that may be incompatible with WTO law.³³⁸ From an institutional perspective, the WTO takes part in the HLTF on the global food security crisis, contributed to the development of the CFS, and is part of the Agricultural Market Information System (AMIS). That said, the relationship between the WTO and the FAO has been complicated. A frequent criticism of the WTO trade rules is that they reduce the policy space of governments to devise food security programmes to feed their populations.³³⁹

For example, it has been claimed that the Agreement on Agriculture operates unfairly against developing countries, since it does not require developed countries to eliminate agricultural subsidies that damage economies in developing countries and increase emissions of GHGs, which contribute to climate change, the effects of which are felt most acutely in developing countries.³⁴⁰

(IV) THE PLACE OF PRIVATE ACTORS

The role that private actors play at all the steps of the vertically integrated global food chain, including production, processing, distribution, and retail activities, is highly significant. As mentioned above, large TNCs have been central actors in the development of the global food system. Large TNCs often operate in many countries and across several levels of the value chain, taking the space left by states that have withdrawn in many countries from interference in production activities and the functioning of markets. It has been said that this increasingly globally-oriented corporate role in the food system is resulting in a privatisation of the area of food security, within which agriculture is subordinated to capital.³⁴¹ While the reasons for this globalisation and commoditisation of the global

336 Agreement Establishing the World Trade Organization (15 April 1994) 1867 UNTS 154 ('Recognizing that their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development ...'). www.wto.org/english/docs_e/legal_e/04-wto_e.htm

337 'The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties. . . Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.' UNFCCC (29 May 1992) 1771 UNTS 107, 3(5).

338 WTO Appellate Body Report, 'Canada—Certain Measures Affecting the Renewable Energy Generation Sector' WT/DS412/13, adopted 24 May 2013; see generally WTO and UNEP, Trade and Climate Change: A Report by the World Trade Organization and the United Nations Environment Programme (2009), www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf

339 The most recent example of this issue can be seen in the dispute between the US and India on account of the latter's food security program, which includes three main elements: (i) public procurement of food commodities by the government at guaranteed prices; (ii) stockholding of food; and (iii) distribution of subsidised food to targeted populations. It is particularly the first element of this program that has been cited by the United States as being potentially in breach of the Agreement on Agriculture and its rules on subsidies. But adding to the overall contention are the counterclaims that the US and the EU have traditionally protected their own agricultural industries by deploying the same tools that India has adopted, namely large subsidies to their agricultural sectors. The US for instance provides government-set minimum price guarantees for many commodities, recently reauthorised through the 2014 Farm Bill), public stockholdings of food, public food assistance programs, and other measures such as barriers to imports. See Gawain Kripke, 'Food Fight: What the Debate about Food Security Means at the WTO' (2015) 2 Canadian Food Studies 77, 82; Jennifer Clapp, 'Trade and Sustainability Challenge for Global Food Governance' (Global Governance/Politics, Climate Justice & Agrarian/Social Justice: Linkages and Challenges colloquium, Hague February 2016, 4-5. www.iss.nl/fileadmin/ASSETS/iss/Research_and_projects/Research_networks/ICAS/1-ICAS_CP_Clapp.pdf

340 Carmen Gonzalez, 'Climate Change, Food Security, and Agrobiodiversity: Towards a Just, Resilient, and Sustainable Food System' (2011) 22 Fordham Environmental Law Review 493, 507.

341 Myriam Vander Stichele, 'How Financialization Influences the Dynamics of the Food Supply Chain' (2015) 2 Canadian Food Studies 258-266.

food system are complex,³⁴² it is clear that there have been critiques on the impact of this trend on food security, small-farmer livelihoods, environmental quality, food safety, and consumer sovereignty. Indeed, some TNCs are able to exert considerable pressure on all the actors across the supply chain, eg, on farmers,³⁴³ not only through pricing but also through the imposition of requirements on sustainability and safety.³⁴⁴

This concentration in the global food market generates important questions regarding the role that TNCs are playing and should play in addressing the challenges of ensuring food security. There are a number of ways in which TNCs exert influence, including through the framing of problems, the proposition of possible solutions and the participation in the key institutions and settings within which solutions are adopted and implemented.

Given that a number of the problematic outcomes of the global food system, as described in section 2.3 above, have their origin in the food industry, issues of governance and regulation are paramount in this regard. So far, the reaction of governments to corporate power in the food system has been fragmented. However, there is a recent trend towards developing standards on corporate reporting requirements and transparency more generally, as well as efforts to demand that TNCs respect human rights, including the right to food. Instruments, such as the UN Guiding Principles on Business and Human Rights ('UNGP'), endorsed by the UNHRC Resolution 17/6 of 16 June 2011, the OECD Guidelines on Multinational Enterprises, the Sustainability Framework of the International Finance Corporation, and the FAO Principles on Responsible Investment, seek to encourage respect of human rights by TNCs. That said, there is not yet a legally binding instrument at the international level to ensure that TNCs respect fundamental human rights at all times and everywhere. But, as Olivier De Schutter has argued, international human rights law has already gone a long way towards recognising duties of states to: (1) regulate activities of corporations to ensure that they do not cause violations of human rights; (2) extend those duties to extraterritorial situations, in which the damage occurs in the territory of another state; and (3) impose on all states a duty to cooperate with one another in transnational situations in order to prevent violations, end violations, and provide remedies to victims.³⁴⁵

Beyond legal responses, the literature has suggested a number of policy measures to deal with the challenges, which include promoting the organisation of small producers to deal with buyer-driven value chains, providing state support for building up small producers' capacity, facilitating farmers' participation in setting standards and codes of conduct – including on sustainability, using competition policy to prevent the negative effects of buyers of farmer's produce, increasing the accountability of global food processors and retailers through the adoption of codes of conduct, increasing civil society oversight over TNC practices and removing market distortions caused by existing agricultural subsidies in developed countries.³⁴⁶

342 See, eg, Carmen Gonzalez, 'Markets, Monocultures, and Malnutrition: Agricultural Trade Policy Through an Environmental Justice Lens' (2006) 14 Michigan State Journal of International Law 345.

343 Jennifer Clapp and Doris Fuchs, 'Agrifood Corporations, Global Governance, and Sustainability: A Framework for Analysis' in Jennifer Clapp and Doris Fuchs (eds), *Corporate Power in Global Agrifood Governance* (MIT Press 2009) 1-20.

344 Bill Vorley, 'The Chains of Agriculture: Sustainability and the Restructuring of Agri-food Markets' (International Institute for Environment and Development 2001) 4-5, <http://pubs.iied.org/pdfs/11009IIED.pdf>.

345 Olivier De Schutter, 'Regulating Transnational Corporations: A Duty under International Human Rights Law' (Human Rights and Transnational Corporations: Paving the Way for a Legally Binding Instrument workshop, Geneva, 11-12 March 2014) 6. www.ohchr.org/Documents/Issues/Food/EcuadorMtgBusinessAndHR.pdf.

346 *Ibid* 6.

To the challenges created by the globalisation of food systems, it is necessary to add those created by the increasing financialisation of the global food system. The term financialisation refers to the growing importance of financial markets and actors (including banks, pension funds, investment funds, agricultural commodities trading firms, etc) along the agrifood supply chains.

This financialisation has had a number of impacts on the food markets. First, it has led to the listing on stock markets of many companies that produce, trade, and distribute seeds, inputs, produce, and processed food, subjecting those companies to the interests of shareholders and financial advisors, which often focus on achieving high returns in the short term, to the detriment of environmental and social concerns, including the right to food. These pressures have also led to a process of increasing concentration within global food markets, in an effort to stave off competitors and extract increased profits, sometimes with negative impacts on the most vulnerable (eg, through the selling of low-price, high-energy-intensity processed foods that cause obesity among the disadvantaged).³⁴⁷

Second, it has shaped the structure of the food supply chain through the creation of a relatively obscure layer of intermediaries within the global agrifood commodity chains that reduce the role of traditional participants in the market, eg, by creating complicated agricultural commodity derivative products that only experts can understand and so reduce the powers of producers and consumers within the chain, and by crowding out small-scale and agro-ecological farming, which cannot easily get loans from financial institutions, given their risk profile. Alternative financing instruments, such as long-term contracts with large retailers and derivative products, can reduce further the sustainability of small producers.³⁴⁸

Third, large investments in the agrifood sector have had the effect of locking in large-scale industrial farming methods, with attendant social and ecological effects.³⁴⁹ Sometimes, the creation of specific investment instruments by financial players, such as hedge funds, private equity funds, insurance companies, sovereign wealth funds, investment management companies, and others, have been linked to the large-scale acquisition and exploitation of land around the world, including illegal ones (so-called 'land grabbing').³⁵⁰ Pressures to generate high returns in a very short time span understandably lead to few incentives to promote the long-term interests of local communities and of the environment. Indeed, the increased associated investment generates additional externalities, such as price volatility, which tend to affect the most vulnerable actors within the system.³⁵¹

Fourth, and related to the former, is the generation of a wide range of complex financial services, products, and investments that open up space for speculators to profit from investing in the sector, while leaving the interests of local, vulnerable populations unprotected. According to a World Bank publication, the food crisis of 2007-2008, during which food prices rose to historic highs, led to social

347 For a study on the relation between poverty and obesity, see Cate Burns, 'A Review of the Literature Describing the Link Between Poverty, Food Insecurity and Obesity with Specific Reference to Australia' (Victorian Health Promotion Foundation 2004), http://secondbite.org/sites/default/files/A_review_of_the_literature_describing_the_link_between_poverty_food_insecurity_and_obesity_w.pdf

348 Oane Visser, Jennifer Clapp, and S Ryan Isakson, 'Introduction to a Symposium on Global Finance and the Agri-Food Sector: Risk and Regulation' (2015) 15 *Journal of Agrarian Change*, 541-548.

349 Jennifer Clapp, Annette Aurélie Desmarais, and Matias E Margulis, 'Financialization in the Food System' (2015) 2 *Canadian Food Studies*, 256-257.

350 Stichele (n341) 260.

351 Jennifer Clapp, 'Financialization, Distance and Global Food Politics' (2014) 41 *The Journal of Peasant Studies*, 797-814.

unrest and civil conflict in over 40 countries.³⁵² In addition, from 2008-2009, the number of people in hunger rose from around 896 million to over 1.023 billion. Already in 2010, Olivier De Schutter, then UN Special Rapporteur on the right to food, concluded in a report that one of the main causes of the rise in prices of basic food commodities leading to the food crisis had to do with the entry into markets of derivatives based on food commodities by large, powerful institutional investors such as hedge funds, pension funds and investment banks, whose core interests are not aligned with agricultural market fundamentals.³⁵³ Moreover, such entry was made possible by deregulation in important commodity derivatives markets starting in early 2000.³⁵⁴ However, other research has concluded that the link between financial speculation and the high food prices, which were a feature of food crises, cannot be proved; and indeed, it has been suggested that financial speculation may even contribute to making the agricultural markets function better.³⁵⁵ The UN Special Rapporteur recommended in his report that states should ensure that dealing with food commodity derivatives is restricted as far as possible to qualified and knowledgeable investors who deal with such instruments on the basis of expectations regarding market fundamentals, rather than mainly on speculative reasons.

In an effort to promote food security globally, in 2011 the G20 Agriculture Ministers adopted an Action Plan on Food Price Volatility and Agriculture.³⁵⁶ Another G20 initiative is the AMIS, as well as its associated Rapid Response Forum, which has three objectives: (1) improve the information base on crops production, trade, utilisation and stocks and to disseminate this information in a transparent manner; (2) build capacity to produce detailed food commodity market data; and (3) facilitate policy dialogue and coordination in response to events or developments affecting agriculture in commodity markets. Moreover, states within the G20 agreed to improve the regulation of financial commodity markets to address excessive price volatility as an important step in reducing poverty, achieving food security, budget stability and strong growth that is both sustainable and inclusive, including setting up a robust position limits system. In addition, the US has taken action through the adoption of the Global Food Security Act of 2016, and the EU through amendments to the Markets in Financial Instruments Directive II (MiFID II).³⁵⁷ MiFID II introduces position limits in the commodity derivatives markets by restricting the amounts that companies can bet on commodity prices. The European Securities and Markets Authority has, in the exercise of its competences under the Directive, proposed to lower the position limits for derivatives with foodstuffs to 2.5 per cent, in order to limit speculation and possible effects on food prices.³⁵⁸

352 Vera Songwe, 'Food, Financial Crises, and Complex Derivatives: A Tale of High Stakes Innovation and Diversification' (The World Bank 2011) <http://siteresources.worldbank.org/INTPREMNET/Resources/EP69.pdf>.

353 Olivier De Schutter, 'Food Commodities Speculation and Food Price Crises: Regulation to Reduce the Risk of Price Volatility' (OHCHR 2010), 1. www2.ohchr.org/english/issues/food/docs/Briefing_Note_02_September_2010_EN.pdf

354 *Ibid.*, 1.

355 Gardien Meijerink, 'Speculation and Volatile Food Prices: An Overview of Debate and Research' (UNCTAD Seventh Multi-year Expert Meeting on Commodities and Development, Geneva, 15-16 April 2015), <http://unctad.org/meetings/es/Presentation/SUC%20MYEM2015%20Gardien%20Meijerink.pdf>.

356 Action Plan on Food Price Volatility and Agriculture (Meeting of G20 Agriculture Ministers, Paris, 22-23 June 2011), www.g20.utoronto.ca/2011/2011-agriculture-plan-en.pdf.

357 Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU [2014] OJ L 173/349.

358 European Securities and Markets Authority (ESMA), 'ESMA Amends MiFID II Standards on Non-Equity Transparency and Position Limits' (ESMA, Press Release, 2 May 2016), www.esma.europa.eu/sites/default/files/library/2016-566_press_release_-_mifid_ii_rts.pdf

In summary, even if there is a level of debate around the nature of the link between increased speculation by index funds and the increase in prices and volatility,³⁵⁹ some countries and regions have decided to act to prevent such speculation;³⁶⁰ but it is important to appreciate that there are a number of drivers of price spikes and volatility. These include: demand growth (for both food and industrial use); a slowdown in yield growth and access to land; the correlation between agricultural, energy, and other commodity prices; changes in stocks; the effects of agricultural trade restrictions; and the adverse or beneficial effects of weather events.³⁶¹

So far, the main thrust of the regulatory response rests on securing financial stability. However, the externalities generated by the financialisation of the sector, and borne by communities and the environment have not yet been addressed. More work is needed to ensure that the financial sector works for the agricultural sector in supporting its real objectives, particularly as agriculture is increasingly impacted by climate change. The socially responsible investment approach is one response to this concern,³⁶² as well as more generally the reporting instruments mentioned in the previous section.³⁶³ For instance, banks are increasingly expected to assess the social and environmental impacts of their loans, as well as being required to report on the material environmental and social impacts of their activities (so-called non-financial information) that helps shareholders make more informed choices and society in general to exert pressure on banks' lending operations. There are also initiatives, such as 'impact investing', that look specifically to promote the public (social, environmental and other) goods dimension of investments beyond the financial returns. Beyond those changes within the financial sector, there are social movements around sustainable agriculture sprouting up all over the world, which expressly seek to retain the bundle of goods that agriculture is capable of offering, and which emphatically avoid looking at financial returns beyond basic life sustenance returns.³⁶⁴

2.6 Seeking increased coherence in global governance for food security and climate change

2.6.1 Global governance and the Sustainable Development Goals

Based on the previous section, the following observations can be made about the interactions between the examined governance regimes. First, while the CFS can be considered the regime's 'centre of gravity', it faces important limitations in that, even if it purports to be inclusive in terms of stakeholder representation, it lacks the capacity to legislate at a global level to promote food

359 Meijerink (n 355) (2015).

360 For instance, the EU.

361 EU Agricultural and Markets Briefs, 'Global Food Security: Challenges and Options' (EC 2015) https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/trade/documents/agri-market-brief-09_en.pdf, 3

362 Benjamin J Richardson, 'Financial Markets and Socially Responsible Investment' in Beate Sjøfjell and Benjamin J Richardson (eds), *Company Law and Sustainability: Legal Barriers and Opportunities* Cambridge University Press (2015), 226-273.

363 *Ibid.* 267-268 (referring to instruments, such as the UN Guiding Principles on Business and Human Rights, the OECD Guidelines on Multinational Enterprises, the Sustainability Framework of the International Finance Corporation, and the FAO Principles on Responsible Investment, which seek to encourage respect of human rights by TNCs).

364 One example is the 'Terre de Liens' initiative in France, where individual investors buy up land from retiring farmers and make them available to young or poor farmers for rent, supporting them in making profits from sustainable agriculture. https://orfc.org.uk/wp-content/uploads/2014/08/Case-Study_Terre-de-Liens.pdf

security.³⁶⁵ It also has no real capacity to address the interactions between the energy regime complex and the food security complex, which is made even more complicated because the energy regime complex does not even have a recognisable centre of gravity. While the UNFCCC and the Paris Agreement can be considered a centre of gravity of sorts for the climate change regime, it is clear that the climate change regime complex encompasses many other instruments and institutions. Furthermore, the global trade complex arguably has at its centre the WTO, which has experienced a loss of momentum in recent years, while bilateral and multilateral treaties have flourished.³⁶⁶ Notwithstanding a certain degree of coordination between the main regime complexes relevant to food security, the compounded complexity arising from the multiple interactions not only creates a fragmented picture, but also generates potential for real problems. These are due to both real as well as perceived conflict, as is clear from the contention between the US and India on subsidies, and from the differing views (on the relationship between multilateral trade rules and the food system) held by the WTO's former Director-General and the former UN Special Rapporteur on the right to food.³⁶⁷

All these interactions are complex, and yet they only engage a very limited subset of governance regimes. When attention is drawn to the long list of other important challenges currently facing the global community, the scale of the predicament is evident, as are the shortcomings of global governance: understood as the totality of institutions, policies, norms, procedures and initiatives through which states and their citizens try to bring more predictability, stability and order to their responses to transnational challenges. Those limitations include:

- the inability to deal satisfactorily with growing economic integration and interdependence among countries;
- severe irregularities in access to and outcomes from global governance between developed and developing countries;
- regulatory asymmetries, where some areas of common interest are overregulated by global governance rules and regulations while others remain underregulated;
- a widespread perception that global governance and global rules have reduced available policy space for national governments, particularly in developing countries, to adopt policies that promote their own interests and needs; and
- limited capacity to control the impact of TNCs on global challenges, including food security.³⁶⁸

In recognising these challenges, recent literature on global governance has sought to develop a conceptual framework that can help mitigate conflict among a large number of regime complexes so

365 Nora McKeon, 'Global Food Governance in an Era of Crisis: Lessons from the United Nations Committee on World Food Security' (2015) 2 *Canadian Food Studies*, 328-334.

366 This trend may undermine the core pillars on which the WTO has been developed, such as most favoured nation treatment.

367 UN Special Rapporteur on the right to food, Olivier De Schutter, 'The World Trade Organization and the Post-Global Food Crisis Agenda', (November 2011) www.wto.org/english/news_e/news11_e/deschutter_2011_e.pdf; Pascal Lamy, 'Lamy Rebutts UN Food Rapporteur's Claim that WTO Talks Hold Food Rights 'Hostage'' (WTO 14 December 2011), www.wto.org/english/news_e/news11_e/agcom_14dec11_e.htm.

368 UN Committee for Development Policy, 'Global Governance and Global Rules for Development in the Post-2015 Era' (Report on the 18th Session, Official Records of the Economic and Social Council, Supplement No 13 (E/2014/33), 2014). www.un.org/en/development/desa/policy/cdp/cdp_publications/2014cdppolicynote.pdf

as to promote all their goals in a coherent and systematic manner.³⁶⁹ At its simplest, the conceptual framework is composed of three elements: (1) the identification of a number of principles that are common to all regime complexes; (2) the adoption of a set of goals that should be promoted or at least respected by all regime complexes; and (3) the development of the necessary governance instruments to ensure that those goals are furthered in a cohesive manner.

The UNDP has concluded that the principles that are common to a large number of regime complexes include: (1) common but differentiated responsibilities; (2) subsidiarity; (3) inclusiveness, transparency and accountability; (4) coherence; and (5) responsible sovereignty.

Moreover, the UNDP argues that the goals that all regime complexes must pursue are captured by the 17 SDGs that were adopted by the UN in 2015.³⁷⁰ In other words, these are goals that should be pursued, or at least not compromised, by all the regime complexes in which both public and private actors might engage over time at a global level, since they express, in a succinct and non-legally binding manner, the core challenges faced by the international community.

Lastly, the instruments of governance that are common to all challenges seek to involve all levels of governance, from the local to the global, within a policy chain that includes setting goals, designing and implementing policies, monitoring, reviewing and verifying progress at all levels of governance, and taking decisions to aid actors to improve their performance and or to review the instruments adopted. For instance, the SDGs themselves are subject to several layers of control, including a first one at which governments implement policies, follow up on them and monitor their effectiveness, while collecting quality, accessible and timely data that can be used at a global level for aggregate review. At a global level, monitoring of compliance is done through the application of almost 300 indicators for the 17 SDGs, annual progress reports are produced, and decisions on facilitating implementation aid through financial resources, capacity building and technology are adopted.

This conceptual framework, while highly abstract and not without challenges, seeks to overcome the tendency toward fragmentation and confrontation that pervades current regime complexes, and therefore potentially enable the identification of synergies and the prevention of conflict.

2.6.2 Increasing the alignment of regime complexes for food security

While the SDGs are useful in capturing the essence of global challenges and in charting a path towards achieving them, they face important limitations in that they are not legally binding and are (necessarily) expressed through soft, aspirational language. That said, SDG 2, entitled ‘end hunger, achieve food security and improved nutrition and promote sustainable agriculture’ is worded in notably stronger terms, resolving, eg, to end hunger, ensure access for all people and end all forms of malnutrition by 2030. More importantly, food security considerations are present, directly or indirectly, in many other goals, including SDG 1 on poverty reduction, SDG 6 on water, SDG 12 on sustainable consumption and production, SDG 13 on climate change mitigation and adaptation and SDG 15 on land use and ecosystems. Taken together, these goals could involve a number of reforms

369 *Ibid*; Frank Biermann, Norichika Kanie, and Rakhyun E Kim, ‘Global Governance by Goal Setting: The Novel Approach of the UN Sustainable Development Goals’, in Eduardo Brondizio, Opha Pauline, William Solecki, (eds). *Current Opinion in Environmental Sustainability* (Elsevier, 2017)26-27.

370 UNGA, *Sustainable Development Goals*, 3 (n 139).

to the regime complexes on food, climate, energy and trade that, together, would make an important contribution towards food security.³⁷¹ These include:

- Large investments in agriculture in rural areas targeting smallholders are needed to raise incomes and increase food security. Private investment will require governments to put the necessary framework conditions in place.
- Developed and major emerging economies need to eliminate trade-distorting policies that generate negative spill-over effects in developing countries, including poorly considered subsidies for bioenergy.
- Agricultural policies need to contribute to climate change mitigation while promoting adaptation to their climate impact. This involves removing incentives and subsidies for energy and agricultural inputs that are insensitive to or incompatible with climate policy goals. Also, investment in research and development, technology development and skills is needed to promote sustainably-increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing and/or removing greenhouse gas emissions, where possible.
- Fisheries policies worldwide need reform to ensure that overfishing, combined with pollution and climate change, do not reduce the fisheries' capacity to feed the global population.

The SDGs have some capacity to align the various regime complexes that affect each goal. Nevertheless, such alignment requires specific improvements to each one of the regimes, and the concept of food security, particularly the right to food, could help generate that alignment.³⁷² Olivier De Schutter has suggested three areas for work to improve the contribution of global governance to food security:

1. Investing in smallholder agriculture. According to the former Special Rapporteur on the right to food, the promotion for a number of decades of export-led agriculture has been at the expense of smallholders producing food crops for local consumption. This has meant that many low-income countries have focused on the exportation of raw commodities (otherwise known as cash crops) while becoming net importers of food for local consumption. The disadvantageous terms of trade have further impoverished those countries, leading them to rely on food aid and making them unable to invest in local food production and processing.
2. Reforming agricultural policies of middle-income and high-income countries by eliminating the large subsidies granted to local food producers and to exports of food, which have led, over the years, to large agribusiness corporations dominating global food markets and perpetuating an unjust system.
3. Supporting local food systems, particularly small-scale food producers that can sell on local markets food that is fresh, diverse, nutritious and therefore healthier, and doing so by means

371 Jonathan Brooks, 'Food Security and the Sustainable Development Goals' (OECD Insights, 6 April 2016), <http://oecdinsights.org/2016/04/06/food-security-and-the-sustainable-development-goals>.

372 Olivier De Schutter, 'Submission to the G20 Development Group Food Security Review' (UN Office of the High Commissioner for Human Rights, 2014) www.srfood.org/images/stories/pdf/otherdocuments/20140404_UNSR%20RTF_G20%20DWG%20Food%20Security%20Review.pdf.

of social innovations that seek to reconnect producers and consumers through bottom-up approaches that may increase both legitimacy and efficiency.

As Olivier De Schutter points out, these reforms, which are very similar to those put forward by Jonathan Brooks,³⁷³ are built on the foundations provided by the human right to food.

2.7 The right to food and climate change

2.7.1 *Contours of the right to food: respect, protect, and fulfil in light of climate change*

In the 1996 Rome Declaration on World Food Security and Plan of Action of the World Food Summit,³⁷⁴ the international community committed to halving the number of undernourished people in the world by 2015. In 2000, the international community adopted the MDGs, which also included a commitment to halve the proportion of undernourished people by 2015.³⁷⁵ Some authors have criticised the existing structural injustice that leads to a total inability to fulfil this commitment.³⁷⁶ Worse still, climate change will render the achievement of the goals on food security even more challenging. In 2002, states and the FAO decided to make a paradigm shift in the fight to promote food security by focusing, at the World Food Summit of 2002, on the right to food.³⁷⁷ At the Summit, 179 states asked the FAO to develop voluntary guidelines (Right to Food Guidelines) to support the progressive realisation of the right to adequate food in the context of national food security.³⁷⁸ The guidelines were adopted unanimously within the FAO Council in 2004.

Food security is therefore a policy goal that works as a precondition for the exercise of the right to food. However, as a political rather than a legal objective, it cannot impose specific obligations on states or afford rights to individuals. In contrast, the right to food is a fundamental human right recognised in the 1948 Universal Declaration of Human Rights (UDHR) as part of the right to an adequate standard of living, enshrined in the 1966 International Covenant on Economic, Social and Cultural Rights (ICESCR) and protected in a number of regional treaties and national constitutions. The right to food is closely connected to the right to life, which in itself is well recognised in international and regional law and through a large number of national constitutions, and therefore justiciable at national level. The right to food can be defined as:

‘The availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture.’

The UN Special Rapporteur on the right to food has further defined the right to food as:

‘[...] the right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding

373 Brooks (n 371).

374 Rome Declaration on World Food Security and World Food Summit Plan of Action (adopted 13 November 1996) UN Doc WFS 96/3.

375 The SDGs were launched in 2015 when the MDGs expired.

376 Thomas Pogge, ‘Are We Violating the Human Rights of the World’s Poor? Responses to Four Critics’ (2014) 17 *Yale Human Rights and Development Journal*, 74-87.

377 Christopher Golay, ‘The Right to Food and Access to Justice: Examples at the National, Regional and International Levels’ FAO 2009 7 www.fao.org/docrep/016/k7286e/k7286e.pdf.

378 *Ibid* 7.

to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear.³⁷⁹

As discussed in section 2.2 above, there are three well-recognised dimensions of the right to food: availability, accessibility and adequacy. The right to food is not to be equated with a right to be fed, but rather with the right to live with dignity, which includes the ability to feed oneself in accordance with the various dimensions of the right to food. The right to food, on the one hand, provides entitlements to individuals and, on the other, imposes obligations on states to overcome hunger and ensure adequate food for all. The right to food, moreover, addresses states' obligations beyond their borders, as in Article 11 (2) (b) of ICESCR, which mandates states to take 'into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.' While certainly that provision does not mandate a specific model to achieve that goal, it nevertheless requires states to ensure that their policies concerning food production, trade, environment and energy, work to promote or at least not hinder that goal.

2.7.2 *The core elements of the right to food*

The right to food imposes three types of obligations on states: to respect, protect and fulfil the right to food.³⁸⁰ The first UN Special Rapporteur on the right to food suggested the right to food also includes an obligation for states to ensure that their practices and those within their jurisdiction do not violate the right to food of people in other countries.³⁸¹

(i) RESPECTING THE RIGHT TO FOOD

States may not enact any measure that prevents access to food, nor suspend laws and policies that provide access to food (such as adequate social welfare legislation and nutrition-related programmes) unless adequately justified. The obligation to respect the right to food also requires that states regularly monitor their national policies and programmes to make sure that they effectively respect the right to food for everyone.

(ii) PROTECTING THE RIGHT TO FOOD

Under this obligation, states must protect the right from violations by third parties (individuals, groups, enterprises and other states), which could take place when crops are destroyed, water, soil, and air polluted, or food quality and safety standards breached. States must both prevent those actions and fully incorporate the right to food in the agreements they enter into with other states and international organisations.

(iii) FULFILLING THE RIGHT TO FOOD

This includes both an obligation to *facilitate* and an obligation to *provide*. The obligation to facilitate is very broad and refers to laws and policies that strengthen people's access to and use of resources

379 OHCHR, Special Rapporteur on the right to food, www.ohchr.org/EN/Issues/Food/Pages/FoodIndex.aspx

380 UN Committee on Economic, Social and Cultural Rights (CESCR) General Comment No 12: The Right to Adequate Food (12 May 1999) UN Doc E/C12/1999/5, [15].

381 UN Commission on Human Rights, 'Report of the Special Rapporteur on the Right to Food' (24 January 2005) UN Doc E/CN.4/2005/47.

to ensure their livelihoods, including food security. This would include such measures which ensure sufficient food production domestically, while taking into account the impact of those measures abroad; food and nutrition programmes; and the promotion of information to populations about their human rights. The obligation to provide arises whenever citizens or populations, for reasons beyond their control, are unable to secure their right to food. The state must provide assistance, for example, in instances of environmental catastrophes or wars.

2.7.3 *Implementing the right to food*

(i) A MINIMUM CORE OF THE RIGHT TO FOOD

While all states have an obligation to ensure the right to food, a distinction is usually made between a core content of the right that cannot be violated (obligations of immediate effect) and a periphery of the right that states can fulfil progressively. The core of the right to food comprises the following elements:

- A ban of discrimination in access to food and related resources on the basis of race, colour, sex, language, age, religion, political, or other opinions, etc.
- An obligation to take steps towards the full realisation of the right to food. This is a procedural obligation, including steps such as periodic assessments of the state of enjoyment of the right to food, the formulation of strategies and plans that establish clear objectives that can be measured, adopting or amending laws and policies that enable or restrict the realisation of the right, establishing adequate institutional mechanisms, regularly monitoring progress and establishing judicial mechanisms to provide remedies for the violation of the right.
- The prohibition of retrogressive measures or measures that worsen the status quo regarding the right to food, unless they are force majeure reasons justifying it.
- Protection at all times of a minimum level of the right to food, a ‘minimum core obligation’, which frees people from hunger, even when natural disasters or conflict strikes.³⁸²

(ii) APPLYING THE MINIMUM CORE BEYOND BORDERS

An important question is whether states have an obligation to respect, protect and fulfil the right to food beyond their borders. As has been shown above, many challenges to food security, and consequently the right to food, are global in nature, including climate change, but also international trade, global energy policies and global financial markets. Article 2 of the ICESCR requires states to take steps to ensure the right to food, including through international cooperation. Article 11(2) of the ICESCR obliges states to take measures, including through international cooperation, to improve methods of production, conservation and distribution of food and to ensure an equitable distribution

382 OHCHR, ‘Special Rapporteur on the Right to Food’, www.ohchr.org/EN/Issues/Food/Pages/FoodIndex.aspx; OHCHR, ‘Fact Sheet No 34: The Right to Adequate Food’ (2010), www.ohchr.org/Documents/Publications/FactSheet34en.pdf.

of food supplies.³⁸³ Furthermore, the CESCR in its General Comments has suggested that states assume certain obligations of an extraterritorial nature.³⁸⁴

International human rights experts have developed tools such as the 2011 Maastricht Principles on Extraterritorial Obligations of States in the Area of Economic, Social and Cultural Rights, which, without purporting to establish new elements of human rights law, clarify extraterritorial obligations of states on the basis of standing international law.³⁸⁵ Many other international legal instruments refer to international assistance and cooperation in that regard.³⁸⁶ States have put in place international organisations such as the FAO to coordinate efforts and support the realisation of the right. In addition, states have subscribed to the MDGs, and later (since 2015) to the SDGs,³⁸⁷ in order to make further progress. States are also required to ensure that others do not infringe the right to food, including multinationals. However, certain developed countries have resisted an extraterritorial dimension to their human rights obligations, and consequently there is, as yet, no clear consensus on the extraterritorial application of the ICESCR.³⁸⁸ Despite these contrasting views, Olivier De Schutter has expressed the opinion that states have extraterritorial obligations regarding the protection of human rights as a matter of international human rights law.³⁸⁹

Indeed, another crucial question is whether legal obligations attach to TNCs to uphold the right to food in the course of activities. TNCs have a very large influence on the realisation of the right to food since most food globally is produced, processed, distributed and traded across borders and within borders by private entities. Corporations therefore have a crucial contribution to make to ensure food security.³⁹⁰ While international human rights treaties do not directly address obligations of private parties to protect human rights, there is an increasing momentum in that direction. The UNHRC and international and regional soft-law instruments recognise that corporations have a responsibility to protect human rights, including the right to food, wherever they operate. Indeed, there are many emerging standards for non-state actors under international law that are being incorporated under domestic law, such as, for example, the UNGPs that implements the UN ‘protect, respect and remedy’ framework,³⁹¹ under which businesses should:

383 International Covenant on Economic, Social and Cultural Rights (1966) 993 UNTS 3.

384 CESCR, General Comment No 8: The Relationship between Economic Sanctions and Respect for Economic, Social and Cultural Rights (12 December 1997) UN Doc E/C 12/1997/8, [7]; CESCR, ‘General Comment No 15: The Right to Water’ (20 January 2003) UN Doc E/C.12/2002/11, [33]; CESCR, ‘General Comment No. 12: The Right to Adequate Food (Art. 11 of the Covenant) (1999) www.fao.org/fileadmin/templates/righttofood/documents/RTF_publications/EN/General_Comment_12_EN.pdf [35].

385 Maastricht Principles on Extraterritorial Obligations of States in the Area of Economic, Social and Cultural Rights (Maastricht Centre of Human Rights and International Commission of Jurists Conference, Maastricht, 26-28 September 2011), www.maastrichtuniversity.nl/file/2180/download?token=ABzkHYaY.

386 Charter of the United Nations (26 June 1945) 1 UNTS XVI, 1(3), 55, 56; UNGA Resolution 217 A (III), Universal Declaration of Human Rights (10 December 1948) UN Doc A/RES/3/217 A, 22, 28; Convention on the Rights of the Child (20 November 1989) 1577 UNTS 3, 4, 24, 27; Convention on the Rights of Persons with Disabilities (13 December 2006) 2515 UNTS 3, 32; Rome Declaration on World Food Security (n 374)

387 UNGA, Sustainable Development Goals (n 139).

388 Matthew Craven, ‘The Violence of Dispossession: Extra-Territoriality and the Economic, Social, and Cultural Rights’ in Robert McCorquodale and Mashood Baderin (eds), *Economic, Social and Cultural Rights in Action* (OUP 2007) 77.

389 De Schutter (n 358)3-5.

390 Benjamin J Richardson, ‘Financial Markets and Socially Responsible Investment’ in Beate Sjäffell and Benjamin J Richardson (eds), *Company Law and Sustainability: Legal Barriers and Opportunities* (CUP 2015), 267. Their activities have the potential to undermine food security in many ways, eg, by marginalising small-scale producers and vendors, by overusing and polluting water, air and soil, by destroying biodiversity, by speculating in world agrifood markets, by breaching labor laws in producing countries, and by undermining or breaching health and safety laws. Conversely, corporations can make crucial positive contributions to promoting the right to food.

391 UNHRC Resolution 17/4, Human Rights and Transnational Corporations and Other Business Enterprises (6 July 2011) UN Doc A/HRC/RES/17/4.

- respect and protect, at a minimum, human rights in the UDHR, the International Covenant on Civil and Political Rights (ICCPR), the ICESCR and the ILO Declaration on Fundamental Rights and Rights at Work;³⁹²
- safeguard human rights in their operations;³⁹³
- carry out human rights due diligence;³⁹⁴ and
- provide or cooperate in the remediation of those impacts through legitimate processes when businesses affect human rights.³⁹⁵

The UNGPs include a section on access to remedies that requires states to take appropriate steps to make sure, through judicial, administrative, legislative, or other appropriate means, that those affected by abuses within their territory and/or jurisdiction have access to remedies.

2.7.4 *Climate change and the justiciability of the right to food*

The right to food includes at least three levels of obligation, according to General Comment No 12 of the CESCR, to the ICESCR, namely to respect, to protect and to fulfil (facilitate and provide).³⁹⁶ While the difference between those three levels of obligation is well accepted within international human rights law, so that the obligation to respect a given right is logically stronger than that of fulfilling it, it still remains important to delineate as precisely as possible the core of the right that can be deemed justiciable: that is, able to cause the annulment of laws, regulations or decisions that disrespect it.

The Intergovernmental Working Group established under FAO auspices to develop the Right to Food Guidelines set out to examine whether and how various aspects of the right to food might be justiciable at the national level, by reviewing the practice of diverse judicial and quasi-judicial bodies.³⁹⁷ One important conclusion from that review is that the very concept of justiciability is elusive, for a number of reasons, including: (1) the arguable vagueness of the concept of the right to food, the contours of which still remain somewhat underdeveloped; (2) the fact that full respect for the three levels of obligation of the right to food require for their complete fulfilment a high level of available resources and complex policy choices; and (3) the ensuing margin of discretion that courts must afford policymakers and legislative bodies, also in keeping with the principle of separation of powers. While it is generally considered that the obligations ‘to take steps’ and ‘not to discriminate’ are justiciable, the obligation to fulfil (provide) is subject to a reasonableness or proportionality test. In recognition of this state of affairs and to help increase the effectiveness of the right to food, the

392 John Ruggie, ‘Report of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises’, (UNHRC 2011); John Ruggie, ‘Guiding Principles on Business and Human Rights: Implementing the United Nations ‘Protect, Respect and Remedy’ Framework’ (21 March 2011) UN Doc A/HRC/17/31 (UN Guiding Principles on Business and Human Rights) Principles 11, 12.

393 *Ibid* Principle 13.

394 *Ibid* Principles 17-21.

395 *Ibid* Principle 22.

396 CESCR (n 384) [15].

397 Intergovernmental Working Group for the Elaboration of a Set of Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security, ‘Recognition of the Right to Food at the National Level’ (FAO, 2004) www.fao.org/docrep/MEETING/007/J0574E.HTM.

FAO has produced a series of *Right to Food Handbooks*, which seek to assist states in guaranteeing a higher respect for the right through policy, regulatory and legal action.³⁹⁸

The abovementioned elusiveness is somewhat aggregated when considering that climate change can negatively affect food security and therefore the right to food. A key question that arises when considering the impacts of climate change on food security and the right to food is whether the negative effects of climate change and of climate change mitigation and adaptation activities on the enjoyment of the right to food and other human rights can be qualified as violations of human rights in a strict legal sense, and if so, under which circumstances.³⁹⁹

One important difficulty in this regard stems from the fact that such a violation of the right to food would be at best indirect, since inaction on climate change mitigation or actions to mitigate and adapt may have more or less unforeseen impacts on the enjoyment of the right to food. Therefore, the first problem that arises is that of establishing causation between the action and the violation of the right. The second challenge has to do with attribution of the violation to a specific state or corporation, considering that the damage caused by climate change is caused in turn by a large number of emitters, and when it comes to policies, it may often not be clear who is actually responsible for the violation. Another problem has to do with the applicable standard of liability, whether it is based on negligence or recklessness.⁴⁰⁰

Taking into account the difficulties of providing a clear answer to that question, the UN Office of the High Commissioner for Human Rights (OHCHR) has been reluctant to issue a clear declaration on the obligations that governments or other actors have in dealing with the human rights implications of climate change.⁴⁰¹ Nevertheless, the UNHRC has, through a number of resolutions, clarified that indeed some obligations do exist in relation to tackling climate change that stem from the obligations to respect, protect and fulfil the right to food security in the face of climate change.⁴⁰² In addition, a *2013 Report of the Independent Expert on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment* outlines a number of human rights obligations, under international law related to climate change, which can be classified in procedural and substantive obligations. Among the procedural obligations, it is possible to identify:

- securing access to information and to conduct Environmental Impact Assessments (ICCPR Article 19, UDHR Article 19);
- securing public participation in environmental decision-making (UDHR Article 21, ICCPR Article 25); and
- securing access to administrative, judicial and other remedies.

398 FAO, 'Right to Food Handbooks', www.fao.org/righttofood/knowledge-centre/right-to-food-handbooks/en.

399 UNEP and Columbia Law School Sabin Center for Climate Change Law, *Climate Change and Human Rights* (2015) 13, http://web.law.columbia.edu/sites/default/files/microsites/climate-change/climate_change_and_human_rights.pdf

400 These obstacles are common to a wide range of climate change-related legal claims.

401 UNHRC, 'Report of the Office of the United Nations High Commissioner for Human Rights on the Relationship between Climate Change and Human Rights' (15 January 2009) UN Doc A/HRC/10/61 www.refworld.org/docid/498811532.html

402 UNHRC Resolution 10/4, *Human Rights and Climate Change* (25 March 2009) UN Doc A/HRC/RES/10/4 https://ap.ohchr.org/documents/E/HRC/resolutions/A_HRC_RES_10_4.pdf; UNHRC Resolution 18/22, *Human Rights and Climate Change* (30 September 2011) UN Doc A/HRC/RES/18/22 www.ohchr.org/Documents/Issues/ClimateChange/A.HRC.RES.18.22.pdf; UNHRC Resolution 26/27, *Human Rights and Climate Change* (15 July 2014) UN Doc A/HRC/RES/26/27 <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G14/083/51/PDF/G1408351.pdf?OpenElement>; UNHRC Resolution 29/15, *Human Rights and Climate Change* (22 July 2015) UN Doc A/HRC/RES/29/15 <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G15/163/60/PDF/G1516360.pdf?OpenElement>

Among the substantive obligations, it is possible to identify the following:

- adoption of adaptation measures to protect right to life, health and adequate standard of living (ICCPR, Article 6; ICESCR, Article 11), including urban planning and warning systems, plans for displacement and resettlement, and securing access to food;
- mitigation obligations under international and national law;
- international cooperation obligations;
- obligations to address transboundary harm;⁴⁰³ and
- mitigation and adaptation activities that protect human rights.

While there are some examples of effective litigation-based enforcement of the right to food at a national level,⁴⁰⁴ it is clear that climate change creates systemic risks for food security, which cannot only or even mainly be solved through the enforcement of the right to food at the national level. Rather, it is at the global governance level where decisions will have a fundamental impact on the protection of the right to food.

2.8 Recommendations to strengthen existing governance and legal frameworks

In order to increase the contribution that the human right to food can make towards increasing food security at the global, regional and local level in the midst of climate change, we provide the following recommendations.

2.8.1 The right to food can help increase the level of coordination among governance institutions across different regimes

Section 2.5 has discussed the emergence, within recent years, of a certain rejection of globalisation and a trend towards the bottom-up development of regional governance systems and processes in an attempt to regain some of the lost legitimacy. The recent reform of the CFS and its goals and working methods clearly suggest that it emerged as a reaction to prior, top-down attempts to deal with food security. The process of adoption of the Paris Agreement within the UNFCCC suggests a similar trend towards a more bottom-up approach within the international climate change negotiations, made evident in the target-setting process; the setting up of a facilitative dialogue to take stock of the collective progress towards the long-term goal; the design of the enhanced transparency framework for action and support; and the facilitating of implementation and compliance mechanisms.

This move towards more bottom-up approaches in regime development, coupled with the observation that different instruments within regime complexes might be working partially at cross-purposes has the potential to aggravate the situation. Thus the recent efforts to promote the use of system approaches to mitigate that risk. Doing this requires, as seen in section 2.6, identifying

403 Whether the obligation to address transboundary harm includes an independent obligation to protect human rights extraterritorially is less clear.

404 For example, in the 'Right to Food' case, the Supreme Court of India explicitly established a constitutional human right to food and issued a series of orders that facilitated the introduction of a range of social protection programs. Sajjad Hassan, 'Rights, Activism and the Poor in India: Supreme Court and the 'Right to Food Case'' (Institute for Development Studies Social Protection for Social Justice Conference, Sussex, 13-15 April 2011) www.ids.ac.uk/files/dmfile/Hassan2011TherighttofoodcaseinIndiaCSPconferencedraft.pdf.

the principles and goals that all instruments within and between regime complexes must promote or at least not undermine, and putting in place the governance instruments that will ensure the achievement of that goal.

The effort to agree on and implement the 17 SDGs is a recognition of the need to do just that with a view to focusing and galvanising the international community around a number of key challenges that threaten the ability of states to respect, protect and promote fundamental rights. Indeed, while only one of the SDGs deals explicitly with food security, other SDGs are directly relevant to promoting food security. The fact that the right to food is part and parcel of the SDGs provides the vision and shows a way to increase the alignment within the food security regime complex.

2.8.2 *The right to food can align the goals and norms of different regimes*

Fundamental human rights express deeply held and widely shared convictions about human dignity and equality. As such, they constitute the bedrock on which international law and governance have developed⁴⁰⁵ and can therefore inspire goals and norms across different governance regimes to promote their protection and fulfilment. In particular, in order to promote alignment within the regime complex for food security, we recommend the adoption of some measures that must fully respect, and will help promote, the right to food:

- Large investments in agriculture in rural areas targeting smallholders are needed to raise incomes and increase food security. To make sure they respect and promote the right to food, it is important that the international community introduces some changes to the regulatory frameworks applicable to global financial markets, for example by further developing and implementing socially responsible investment frameworks, by enforcing transparency requirements and by putting in place public law frameworks that make it easier for small investors to raise money in financial markets.
- Developed and major emerging economies need to eliminate trade-distorting policies that generate negative spill-over effects in developing countries. This section has referred to concerns regarding how large developed countries and regions such as the US and the EU still use various measures to promote domestic agriculture, including through subsidies linked directly or indirectly to production, subsidies to favour exports and trade barriers to imports that have the effect of reducing food security in developing countries.⁴⁰⁶ Also, subsidies to bioenergy have had deleterious impacts on food security and need to be eliminated.
- Agricultural policies need to contribute to climate change mitigation while promoting adaptation to its impacts, which requires removing policy incentives to market distorting, environmentally harmful practices, such as subsidies to energy generation and agricultural inputs that propagate the causes of climate change. Also, investment in research and development, technology

405 'These great texts are the bedrock of sound governance. In them lives the world's hope for peace.' These were the final words of the UN High Commissioner for Human Rights, Zeid Ra'ad Al Hussein, in his remarks at the opening of the ceremony celebrating the 50th anniversary of the unanimous adoption of the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights, on 1 March 2016. See 'Human Rights Treaties are 'Bedrock of Sound Governance,' Says Top UN Official Marking 50th Anniversary' (*UN News Centre* 1 March 2016), www.un.org/apps/news/story.asp?NewsID=53347#.WK_EfdKQKKx.

406 Melaku Gebeye Desta, 'The European Union Common Agricultural Policy: Contributing Towards the Millenium Development Goal on the Reduction of Hunger?' in Joseph A McMahon and Michael N Cardwell (eds), *Research Handbook on EU Agriculture Law* (Edward Elgar Publishing Ltd 2015) 463-484.

development and skills is needed to green agriculture to make it sustainable; this has not yet happened in any significant way, either in the US⁴⁰⁷ or in the EU.⁴⁰⁸ If the challenges are daunting, the solutions are, at the most fundamental level, conceptually straightforward: (i) increase productivity in existing farms and/create new farms; (ii) increase efficiency in the use of resources within the agrifood system; (iii) reduce waste within global food chains; and (iv) introduce changes in diets globally.⁴⁰⁹

- The international climate change regime needs to increase its focus on food security. Even if it currently makes an explicit mention to the right to food, such mention has not yet had sufficient effects on the obligations of parties to the UNFCCC, particularly in the context of the National Communications submitted to the UNFCCC. The climate change framework should make a stronger link to food security and to the human right to food in a way that recognises all the dimensions of both terms and in a way that promotes or does not hinder other SDGs.
- Fisheries policies worldwide need reform to ensure that overfishing combined with pollution and climate change do not reduce the capacity of the fisheries to feed the global population.

2.8.3 The right to food can direct policy-making and law-making procedures, their implementation and enforcement to promote food security

In addition to the elements to the right to food identified by the CESCR (food availability, food accessibility and food adequacy) and to the three types of obligation the right gives rise to for states (obligation to respect, to protect and to fulfil), another helpful frame for understanding its scope and meaning is to look at its procedural and substantive aspects.

Procedurally, the right requires that all policies and laws are not only assessed *ex ante* with a view to their impact on the right to food but also designed with a view to promoting food security. In that vein, strategic environmental assessment and project-specific environmental impact assessment (EIA), if performed systematically, can help detect and prevent or minimise potential negative environmental impact with associated human rights impact. The International Court of Justice has held that states are required to conduct transboundary EIAs as a matter of international customary law,⁴¹⁰ and instruments such as the Convention on Environmental Impact Assessment in a Transboundary Context ('Espoo Convention')⁴¹¹ mandate the carrying out of EIAs under certain circumstances.

No less than (and perhaps even more so than) with other rights, meaningful enjoyment of the right to food demands procedural guarantees. These include the right of individuals and groups to have access to information held by public authorities, the right to participate in decision-making processes on public policy and the right of access to justice. Particular manifestations of those rights in relation to the climate change regime include consultation on mitigation policies, such as bioenergy projects

407 William S Eubanks, 'Achieving a Sustainable Farm Bill' in Mary Angelo, Jason Czarnezki and William S Eubanks (eds), *Food, Agriculture, and Environmental Law* (Environmental Law Institute, Washington DC 2013) 263-280.

408 Christian Häberli, 'The Story of Community Preference for Food Security' in Joseph A McMahon and Michael N Cardwell (eds), *Research Handbook on EU Agriculture Law* (2015) 437-462.

409 'Global Food Security: Challenges and Options' (n 361)

410 *Pulp Mills on the River Uruguay (Argentina v Uruguay)*, 2010 ICJ 14 (20 April 2010) [204].

411 Convention on Environmental Impact Assessment in a Transboundary Context (25 February 1991) 1989 UNTS 310.

and projects under the CDM, as well as the various projects financed through climate-related funds. Most critical is ensuring access to justice, which has been discussed in section 2.7, particularly in light of a number of conceptual and practical barriers to access justice in many jurisdictions and at the international level.

Substantively, states have an obligation under international law to mainstream human rights, including the right to food, into all their related laws and policies, such as on trade, environment, agriculture and the financial sector. Looking at the international climate change regime through the lens of human rights, it seems clear that states must develop their National Communications with human rights in mind, including both mitigation and adaptation policies. This is, currently, patently not the case,⁴¹² and it remains to be seen whether the Paris Agreement, which includes the first reference to human rights within a climate change treaty, will change this state of affairs.⁴¹³ Also, financial transfers and transfers of technology must be assessed from the perspective of their impact on human rights, mainly the right to food. Particularly in the context of climate financing, instruments such as the CDM, the mechanism for reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries (REDD+), the Green Climate Fund, the Adaptation Fund and various other funds should operate with an eye constantly towards their impact and influence on human rights.⁴¹⁴

The climate change regime must fully incorporate the right to food. The UN human rights system has institutions and mechanisms that can play an important role in monitoring the impact on human rights of policies adopted by states, whether on climate change, energy, trade, or others. Chief among these is the UNHRC, as well as the Special Rapporteurs it appoints – in particular, the Special Rapporteur on the right to food⁴¹⁵ and the Special Rapporteur on human rights and the environment.⁴¹⁶ The Special Rapporteur on human rights and the environment has actively engaged various international mechanisms, in particular, the COP to the UNFCCC.⁴¹⁷

Each of the UN human rights treaties also has a monitoring committee made up by experts elected by states that are parties to those treaties. Those committees clarify normative obligations of states and review the periodic reports submitted to them by states. The rapporteurs and committees have raised

412 UNEP and Columbia Law School Sabin Center for Climate Change Law (n 399) 30-31.

413 Benoit Mayer, 'Human Rights in the Paris Agreement' (2016) 6 *Climate Law* 109-117.

414 These mechanisms and funds will play important roles in helping states achieve the goals of the Paris Agreement. Paris Agreement, 'Governments See CDM as Crucial for Paris Goals: New Portfolio Launched in Marrakech' (UNFCCC 8 November 2016), <http://newsroom.unfccc.int/paris-agreement/governments-see-cdm-as-crucial-for-paris-goals>; Jennifer Ferguson-Mitchell, 'Forests and REDD+ Recognized as Key Components of Landmark Climate Deal Agreed in Paris, (UN-REDD Program 13 December 2015), www.unredd.net/announcements-and-news/2334-forests-included-in-landmark-climate-deal-agreed-in-paris.html; The Green Climate Fund was formally established by the COP in Cancun in 2010. It is intended to be the centerpiece of long term financing under the UNFCCC, including for technology transfer for adaptation. See Green Climate Fund, 'Green Climate Fund', www.greenclimate.fund/home; UNFCCC, 'Green Climate Fund' http://unfccc.int/cooperation_and_support/financial_mechanism/green_climate_fund/items/5869.php; Adaptation Fund, 'Countries Affirm in Closing Hours of COP22: The Adaptation Fund Should Serve the Paris Agreement' (19 November 2016), www.adaptation-fund.org/countries-affirm-closing-hours-cop22-adaptation-fund-serve-paris-agreement.

415 Hilal Elver has served as the Special Rapporteur on the right to food since 2 June 2014. She was appointed in May 2014 as successor to Olivier De Schutter.

416 John Knox was appointed as the first Special Rapporteur on human rights and the environment in 2015. He served as the first Independent Expert on Human Rights and the Environment following his appointment by the UNHRC in 2012.

417 Special Procedure Mandate-holders of the UNHRC, 'A New Climate Change Agreement Must Include Human Rights Protections for All: An Open Letter from Special Procedures Mandate-Holders of the Human Rights Council to the State Parties to the UN Framework Convention on Climate Change on the Occasion of the Meeting of the Ad Hoc Working Group on the Durban Platform for Enhanced Action in Bonn' (OHCHR 17 October 2014), <https://unfccc.int/sites/default/files/human-rights-open-letter.pdf> (describing engagement with the UNFCCC).

awareness about the impact of climate change on food security and the right to food and have sought to clarify obligations of states in that regard.

Additionally, under the UN system, states are subject to two types of reporting obligations: the Universal Periodic Review; and reports to specific treaty bodies. These reports offer a perfect venue for states to highlight the links between climate change and the right to food,⁴¹⁸ and to receive recommendations in that regard.⁴¹⁹ Of course one important limitation of the process is that states do not have to accept the outcomes of the review process, but they are an important source of influence towards effecting change.

2.8.4 The right to food can protect individuals and communities from abuses and injustice from public and private entities

Notwithstanding that the actions of states and TNCs sometimes undermine human rights and that there is ongoing debate about the precise meaning and application of certain rights, fundamentally there is a strong level of agreement on the important role of human rights in guiding and controlling state behaviour. No international agreement may disregard the duty to respect, protect and fulfil fundamental human rights. As regards the right to food, this Chapter has shown that challenges to the human right to food may come from many sources, including the development and effects of international legal regimes, breaches of obligations contained within those legal regimes (whether isolated or systemic), as well as other factors such as poverty, civil and military strife, abuses of dominant positions, the financialisation of the food system and so on. The picture is therefore complex, as are the solutions. Among them is of course, the justiciability of the right to food in order to enforce it against those, whether states or corporations, that violate it through act or omission.

While the duty of states to respect, protect and fulfil the right to food within their territories is well established under international law, the duty to do the same beyond their borders is more contested. The capacity of international human rights law to ensure that victims of human rights violations by TNCs and other businesses or enterprises have access to effective remedies even when the violation takes place outside of the territory of the state of those enterprises is even less clear. According to Olivier De Schutter, there has been a gradual strengthening of opinion regarding the existence of extraterritorial duties of states in the area of human rights, including the duty to regulate the activities of corporations whose conduct they can influence.⁴²⁰ Also, under international human rights law, states have an obligation to cooperate in transnational situations to make sure that victims of human rights violations caused by non-state actors have access to effective remedies, preferably of a judicial nature, to seek redress. Of course, access to justice is often difficult to secure in practice, and frequently, the most vulnerable are unable to benefit from the protection that international human rights law affords them. Justice Brian Preston, Chief Judge of the Land and Environment Court of New South Wales, has called attention to the range of conditions that, if absent, make access to justice

418 Columbia Law School Human Rights Institute, *Climate Change and the Right to Food: A Comprehensive Study* (Heinrich Böll Stiftung Publication Series on Ecology, 2009) 102-104, www.boell.de/sites/default/files/Series_Ecology_Volume_8_Climate_Change_and_the_Right_to_Food_0.pdf

419 OHCHR, 'Human Rights Council's Universal Periodic Review Working Group Concludes Twenty-First Session After Reviewing the Human Rights Records of 14 More States' (30 January 2015), www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=15528&LangID=E; Harro van Asselt, Håkon Sælen, and Pieter Pauw, 'Assessment and Review under a 2015 Climate Change Agreement' (Nordic Council of Ministers 2015) 42-43.

420 Olivier De Schutter, 'Towards a New Treaty on Business and Human Rights' (2015) 1 *Business and Human Rights Journal* 41.

often impractical for the purpose of defending rights.⁴²¹ Those include: adequate (environmental) laws; availability of willing and able plaintiffs; knowledgeable, experienced and willing lawyers; funding; standing to sue; simple and affordable procedures to start litigation; court practices and procedures that do not generate additional barriers to justice; absence of long delays in determining the litigation; and independent, impartial and competent courts, and adequate remedies. When one or several of those conditions are missing, access to justice might become almost impossible for those affected by a breach of their rights. Therefore, in addition to the remarks made in section 2.7 on access to justice at international, regional and national levels, it is of the utmost importance that states create the necessary conditions of access to mechanisms for securing and vindicating a meaningful enjoyment of the right to food.

2.9 Case study: food security and fisheries in the Indian Ocean

This Section closely examines fisheries in the Indian Ocean to further illuminate the challenges and opportunities identified in the previous sections pertaining to climate change adaptation and food security.

The Indian Ocean region is vast, spanning three continents and stretching from South Africa to Australia. The countries of the region include about a third of the world's population and a quarter of the global landmass. A significant proportion of international trade passes through the Indian Ocean and regional shipping is of considerable commercial value.⁴²²

The Indian Ocean rim countries are geographically, environmentally, politico-legally, economically and socio-culturally diverse. Although many of them have historic ties to each other, most commonly by their connection with the sea,⁴²³ the great differences among the countries have contributed to the lack of regional cohesion and late development of regional institutions. While the legacy of European exploration and colonisation is apparent in the common and civil law legal systems of the region, customary law and Sharia law also feature.

The Indian Ocean countries face a number of challenges but one of the most significant is ensuring food security, including access to and availability of seafood. Although the region is rich in natural resources, including fish, upon which much of the population depends for food, livelihoods and economic development, food security will become a more significant issue as populations continue to expand. Yet many of the species relied on migrate in and out of the inshore areas and Exclusive Economic Zones (EEZ) of multiple countries and into international waters, making governance problematic.

Many nations also face a common challenge of adapting to the impacts of climate change. Direct effects will be felt as sea levels rise and more extreme weather events hit coastal communities. In

421 Brian J Preston, 'Environmental Public Interest Litigation: Conditions for Success' (Towards an Effective Guarantee of the Green Access: Japan's Achievements and Critical Points from a Global Perspective symposium, Awaji Island, 30 March 2013), www.lec.justice.nsw.gov.au/Documents/preston_environmental%20public%20interest%20litigation.pdf.

422 Brahma Chellaney, 'Indian Ocean Maritime Security: Energy, Environmental and Climate Challenges' (2010) 6 *Journal of the Indian Ocean Region* 155.

423 Regarding South Africa, see Thean Potgieter, 'South Africa and Maritime Power in the Indian Ocean' (2011) 7 *Journal of the Indian Ocean Region* 52.

addition, ocean acidification will contribute to declines in fisheries already under pressure from overfishing and environmental degradation.

It is in this context that it is critical to explore law and policy frameworks for marine protection, food security and climate change, and to make recommendations to ensure sustainable fisheries management across the region. This region has not been a strong focus of international law and policy efforts, which have been limited or have had restricted effect. Much then rests on the regional institutions and national governments in terms of ensuring food security in this changing environment. This case study explores regional diversities and the existing and anticipated impacts of climate change, as well as different jurisdictional responses drawing on a selection of case study countries.

2.9.1 *The region*

(i) OVERVIEW

While the Indian Ocean region has a rich diversity of peoples and of natural and cultural heritage, it ‘has the most adverse ratio or balance between land size, population and natural resources.’⁴²⁴ The countries are also ranged across the spectrum of development, which makes regional cooperative arrangements less likely to form than in other regions. Furthermore, the broad array of legal systems has not assisted the development of common approaches to shared challenges. Although there have been significant regional developments in the first decade of this century, including the establishment of the Indian Ocean Rim Association (IORA), the region ‘is far away from becoming a community of common values or even developing shared concerns over maritime security-related issues’.⁴²⁵

Although it is difficult to make generalisations, it is clear that most countries are faced with increasing urbanisation, industrialisation and unplanned population migration to coastal areas, with resultant overexploitation of land and resources.⁴²⁶ In the Seychelles, for example, significant urbanisation is exerting immense pressure on limited land resources and the coastal environment, with climate change exacerbating this developing crisis.⁴²⁷ Growing coastal populations mean that sustainable livelihoods for people and food security are paramount. The situation is complicated by frequent incidences of poor governance and lack of the rule of law across the region, as well as broader security concerns which in relation to the marine environment have translated into overfishing and illegal, unregulated and uncontrolled fishing. Although food security is recognised as a significant issue, access to seafood sits alongside energy, maritime and other security agenda.

Appropriate natural resource and environmental management, supported by effective law and policy, is and must remain a critical concern, particularly in the context of a changing climate. It is often

424 Chellaney (n 422) 166.

425 *Ibid* 155.

426 David Chemane, Helena Motta, and Mussa Achimo, ‘Vulnerability of Coastal Resources to Climate Changes in Mozambique: A Call for Integrated Coastal Zone Management, (1997) 37 *Ocean & Coastal Management* 63, 77; Julian Clifton et al, ‘Marine Conservation Policy in Seychelles: Current Constraints and Prospects for Improvement’ (2012) 36 *Marine Policy* 823-831.

427 Republic of Seychelles and European Community, ‘Country Strategy Paper and National Indicative Programme for the Period 2008–2013’ (2007) 16, www.gfmd.org/files/pfp/mp/scanned_sc_csp10_en.pdf. The Seychelles is one of the most urbanised countries in the Indian Ocean region.

the case that the impacts of climate change on food security, livelihoods and people are considered predominantly in relation to agriculture and land use. It is clear, however, that coastal areas and marine ecosystems will be greatly affected by climate change. A number of cities and communities around the Indian Ocean (including both mainland and island nations) are in low-lying areas where rising sea levels are a real threat, as is the increase in extreme weather events. Furthermore, many of the Indian Ocean regional peoples, societies and economies are reliant on fish and other marine living resources.

(ii) FOOD FROM THE OCEANS

Food security, including sustainable food sources from the ocean, is a global challenge and one that is already being affected by climate change.⁴²⁸ Although global yields from capture fisheries have stabilised in recent years and been supplemented by aquaculture, sustainability of fish stocks is an issue in South and Southeast Asia, and the supply of fish in Africa has been described as being in crisis.⁴²⁹

Across the Indian Ocean there is heavy dependence on fisheries for ecosystem goods and services, including food and livelihoods. The importance of local inshore fisheries for sustenance in the region cannot be understated, as developing countries tend to have weak purchasing power in importing food from global markets. In some cases a commercial fisheries sector has emerged, but in many instances fisheries remain subsistence or artisanal endeavours.⁴³⁰ Both contribute significantly to economic development.⁴³¹ Commercial fisheries are largely operated by foreign fishing vessels and focus on tuna or tuna-like species, whereas artisanal fisheries involve local fishers and multiple species.⁴³² Artisanal fisheries exist throughout the region and involve coastal communities accessing the ocean and resources for local livelihoods and subsistence. For example, in East Africa, fish is the most significant form of animal protein;⁴³³ in Tanzania, fish caught locally by small-scale fisheries form an important part of the protein intake of local people and many households undertake both fishing and farming for livelihoods and sustenance.⁴³⁴

Although many countries (for example in eastern Africa) also have strong agricultural production, this sector is predicted to suffer due to climate change-related reduced rainfall, which will place increasing pressure on food from the oceans.⁴³⁵ Therefore, if fisheries are not properly managed, climate change is likely to lead to significant food security concerns (including famine), as well as

428 UNGA, 'The Role of Seafood in Global Food Security' Report of the Secretary-General Oceans and the Law of the Sea (21 March 2014) UN Doc A/69/71, https://sustainabledevelopment.un.org/content/documents/12504DOALOS_A_69_71_role%20of%20seafood%20in%20food%20security.pdf.

429 *Ibid.*

430 Matthew Bunce, Katrina Brown, and Sergio Rosendo, 'Policy Misfits, Climate Change and Cross-Scale Vulnerability in Coastal Africa: How Developing Projects Undermine Resilience', (2010) 13 *Environmental Science & Policy* 485.

431 R P van der Elst et al, 'Nine Nations, One Ocean: A Benchmark Appraisal of the South Western Indian Ocean Fisheries Project (2008-2012)' (2009) 52 *Ocean and Coastal Management* 258, 258.

432 *Ibid* 259.

433 Benedict P Satia, 'An Overview of the Large Marine Ecosystem Programs at Work in Africa Today' (2016) 17 *Environmental Development* 11-19.

434 James Tobey and Elin Torell, 'Coastal Poverty and MPA Management in Mainland Tanzania and Zanzibar' (2006) 49 *Ocean and Coastal Management* 834, 842.

435 Chris Funk et al, 'Warming of the Indian Ocean Threatens Eastern and Southern African Food Security But Could be Mitigated by Agricultural Development' (2008) 105 *Proceedings of the National Academy of Sciences* 11081. Although in other regions such as southern Asia climate change may not have the same impacts on agricultural production, see Chris C Funk and Molly E Brown, 'Declining Global Per Capita Agricultural Production and Warming Oceans Threatens Food Security' (2009) 1 *Food Security* 271, 287.

economic distress. This economic reliance on effective marine management is clear throughout many Indian Ocean countries, as will be explored below. In addition, countries such as the Seychelles and Maldives depend economically on marine resources for tourism as well as fisheries.⁴³⁶ Furthermore, there are also important socio-cultural linkages to the oceans evident in many countries, and the impact of climate change may well further destabilise communities in these circumstances.

(iii) CLIMATE CHANGE IMPACTS AND CHALLENGES

It is now well accepted that climate change will have broad global impacts. Most often considered is rising sea levels due to warming and an increase in extreme weather events. The Indian Ocean is home to the flattest country on Earth, the Maldives, as well as many other low-lying areas, for example in Bangladesh, which face catastrophic impacts.⁴³⁷ The impacts of climate change are likely to be so extreme as to involve the relocation of climate-displaced peoples. For example, India may well face inward migration from Bangladesh as saltwater inundates land areas, and the Maldivian population may have to relocate away from its islands as sea levels continue to rise.⁴³⁸ Although the small island states do not contribute to GHG emissions to any material extent, eight of the world's top 20 GHG emitters are located in the Indian Ocean region: Australia, India, Indonesia, Iran, Malaysia, Saudi Arabia, South Africa and Thailand.⁴³⁹ In addition, the region includes some of the world's highest per capita emitters of carbon dioxide: Qatar, Saudi Arabia and the United Arab Emirates.

Accepting that climate change will have a range of effects, it has been observed that human security is likely to be the main impact in the region as food becomes scarcer, livelihoods are disrupted and extreme weather events and human migration all eventuate.⁴⁴⁰ Fisheries are already suffering from overall degradation of the marine environment through pollution and other impacts, such as overfishing and illegal, unregulated and uncontrolled fishing. These impacts have destabilised ecosystems and have negatively affected species populations.⁴⁴¹ While they are directly related to human activities over a number of decades, climate change will further affect the oceans and fisheries, further stressing resources. Clark, for example, opines that the impact of climate change is likely to be at least as great as uncontrolled human exploitation.⁴⁴²

It can be seen, therefore, that climate change exacerbates existing issues and is a contributing factor to degradation of fisheries. In particular, climate change causes ocean warming, acidification and deoxygenation, as well as other indirect effects on the oceans such as increasing stratification and interruptions to nutrient cycling particularly at the surface.⁴⁴³ Loss of coastal habitats, such as mangroves and wetlands through erosion and inundation, will also damage juvenile nursery grounds, hampering reproduction and recruitment.⁴⁴⁴ Changing weather patterns may have a less direct,

436 Clifton et al (n 426).

437 Chellaney (n 422).

438 *Ibid* 162.

439 Dennis Rumley, 'Ideology, Carbon Emissions and Climate Change Discourses in the Indian Ocean Region' (2010) 6 *Journal of the Indian Ocean Region* 147, 150.

440 Chellaney (n 422) 163.

441 Jelle Bijma et al, 'Climate Change and the Oceans—What Does the Future Hold?' (2013) 74 *Marine Pollution Bulletin* 495, 495.

442 Barry M Clark, 'Climate Change: A Looming Challenge for Fisheries Management in Southern Africa' (2006) 30 *Marine Policy* 84, 85.

443 Bijma et al (n 441) 495 (in relation to changes already noted in African waters); Clark (n 422) 85-87 (in relation to changes already noted in African waters).

444 F J Gable, D G Aubrey, and J H Gentile, 'Global Environmental Change Issues in the Western Indian Ocean Region' (1991) 22 *Geoforum* 401, 401.

but equally damaging effect. These variations will have biological effects, including the alteration of species ranges, extinctions or depletions, and invasions of non-native species.⁴⁴⁵ The result is likely to be poleward migration of species seeking warmer water; however, colder waters acidify faster.⁴⁴⁶ Furthermore, effects on marine species are likely to include restricted annual productivity and abundance of individual species, as well as cascading changes and damage to food webs.⁴⁴⁷ For example, acidification will affect shellfish, resulting in declining harvests, as well as damage to coral reefs of importance as fish habitats and for tourism.⁴⁴⁸

While the protection of marine ecosystems in the context of climate change is a significant issue in itself, damage to fish stocks could be catastrophic for those peoples dependent on the oceans for food and livelihoods. In the Indian Ocean region, just as fishery resources are already affected by environmental degradation, so too are communities made vulnerable by socio-economic and environmental pressures.⁴⁴⁹ Worse still, it is clear that poor communities suffer greater consequences of environmental pressures, including climate change. Clark, in his analysis of the impacts of climate change in southern Africa, notes that the impacts on fisheries are likely to affect all fishers (from subsistence to commercial) particularly those around coral reefs and estuaries.⁴⁵⁰ Other commentators suggest that traditional fisheries will be the most vulnerable to climate change because impacts will be great but the ability to adapt is quite low.⁴⁵¹

Many of the issues referred to above are not new and much attention was drawn in the 1990s to the same problems that are now so prominent in the climate change literature. While this has led to law and policy initiatives focused on both sustainable fisheries management and food security, the ability to adapt to the further stress of climate change is likely to be limited.⁴⁵² The level of economic development in many countries in the region, particularly the Western Indian Ocean, means that there are few institutions, finances and technical resources to deal with the challenges.⁴⁵³

2.9.2 Law and policy framework

The international community has recognised the need to address food security in the context of environmental pressures, including climate change.⁴⁵⁴ While there is no global legal framework in this regard, the matter was a focus at 1995 Kyoto Conference and the adopted Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security.⁴⁵⁵ The issues were again raised at the World Food Summit in 1996 and the Rome Declaration on World Food Security.⁴⁵⁶ These conferences and instruments emphasised the need for scientific data, sustainable management and mechanisms

445 Bijma et al (n 441) 496.

446 *Ibid* 496.

447 *Ibid* 497.

448 Bunce, Brown, and Rosendo (n 430) 493.

449 *Ibid* 485.

450 Clark (n 442) 90.

451 Elayaperumal Vivekanandan, Rudolf Hermes, and Chris O'Brien, 'Climate Change Effects in the Bay of Bengal Large Marine Ecosystem' (2016) 17 *Environmental Development* 46-56.

452 Gable, Aubrey, and Gentile (n 444) 414.

453 *Ibid* 414.

454 'The Role of Seafood in Global Food Security' (n 428).

455 Kyoto Declaration and Plan of Action on the Sustainable Contribution of Fisheries to Food Security (International Conference on the Sustainable Contribution of Fisheries to Food Security, Kyoto, 4-9 December 1995).

456 Rome Declaration on World Food Security (n 386).

to ensure supply. More recently, the global community in Agenda 2030 has linked the issues of food security, climate change, human rights and oceans through the SDGs.⁴⁵⁷ Importantly, SDG 14 focuses on the oceans: conserve and sustainably use the oceans, seas and marine resources for sustainable development. The majority of work undertaken has been under the auspices of a variety of intergovernmental organisations and includes the development of law and policy.⁴⁵⁸ In order to ensure food security, law and policy must address four key pillars: availability, access, utilisation, and stability.⁴⁵⁹

In responding to the challenges posed by climate change in managing ocean resources for food security, nations in the region face varying difficulties depending on their socio-economic context, financial, legal, and technical capacity (or lack of it) to respond, their proximity to the sea, and respective levels of existing and predicted environmental degradation.⁴⁶⁰ For example, Australia is the wealthiest and most developed nation in the region with a relatively low population and large land area. It can therefore afford to respond to climate change in a variety of ways at the national level – if the political will to do so is evident. Other nations in the region, such as the Maldives, are developing countries, SIDSs, or LDCs. Some states have historically been less politically stable, have begun to consider socio-economic issues only recently and have yet to address complex environmental concerns. The Arab states, also on the Indian Ocean rim, have economic interests associated with oil production that, when combined with less serious impacts such as rising sea levels, make them less inclined to take aggressive regulatory measures. Nevertheless, the majority of states in the region participate in international environment laws and organisations, as well as the fledgling regional bodies, and have adopted some relevant national law and policy. These areas are explored below.

(i) INTERNATIONAL LAW

A number of different international law subfields are relevant to food security, including international environmental law (which addresses conservation and sustainable use of marine resources), natural resources law (including the regulation of fisheries) and human rights law (including the right to adequate food).⁴⁶¹ The focus here is on oceans governance and fisheries regulation in particular.

The majority of Indian Ocean states have ratified the key international environmental treaties: the UNFCCC, Convention on Biological Diversity (CBD), Convention on Migratory Species, Convention on International Trade in Endangered Species, UN Convention on the Law of the Sea (UNCLOS), and the Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Identifying common international commitments among Indian Ocean countries demonstrates ‘convergent and mutual expectations on the accepted international principles, norms, rules, and procedures of the international regimes’ and provides a common platform for law and policy developments.⁴⁶² For example, the UNFCCC, CBD and UNCLOS provide a basis for protected area management. There has however, been relatively little regional

457 UNGA, Sustainable Development Goals (n 139).

458 ‘The Role of Seafood in Global Food Security’ (n 428) 21.

459 CFS (n 254).

460 Chellaney (n 422) 165.

461 On the right to food, see Anniken Skonhoft, Ambra Gobena, and Dubravka Bojic Bultrini, ‘Fisheries and the Right to Food: Implementing the Right to Food in National Fisheries Legislation’ (FAO 2009), www.fao.org/docrep/016/ap553e/ap553e.pdf.

462 Aldo Chircop et al, ‘Governance of Marine Protected Areas in East Africa: A Comparative Study of Mozambique, South Africa, and Tanzania’ (2010) 41 *Ocean Development & International Law* 1, 3; Gable, Aubrey, and Gentile (n 444).

collaboration or coalitions that might identify and enhance cooperative opportunities to meet these international obligations.

Under the UNFCCC, parties are organised into five regional groups,⁴⁶³ but in practice other groupings are important although not regionally based. One example is the Alliance of Small Island States, which is a coalition of 43 low-lying and small island countries, including the Seychelles, Mauritius, and Comoros. Although programmes under the umbrella of the UNFCCC have included food security issues, such as funding for adaptation,⁴⁶⁴ there have been calls for greater emphasis on marine ecosystem management recognising specifically that climate change will impact food from the oceans.⁴⁶⁵ As noted above, the recently adopted Paris Agreement only makes reference to food security in its Preamble.

There is more evidence of regional initiatives under the CBD, including Regional Biodiversity Strategies and Action Plans formulated through pre-existing organisations.⁴⁶⁶ These are based on continental groupings, rather than regions such as the Indian Ocean. The CBD has catalysed a great deal of relevant work through its programmes including the Southern Indian Ocean Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas, the West Indian Ocean Partnership, and the programme on Climate Change and Biodiversity.⁴⁶⁷ More specifically, the Strategic Plan for Biodiversity 2011-2020 (including the Aichi Biodiversity Targets), and 2010 Sustainable Ocean Initiative focus on fisheries: under the strategic goal of reducing pressures on biodiversity, Aichi Biodiversity Target 6 seeks to ensure that by 2020 all fish and invertebrate stocks are managed and harvested sustainably and legally, using ecosystem-based approaches.⁴⁶⁸

While UNCLOS provides the framework for governance of different ocean spaces and creates obligations to protect and preserve the marine environment, it contains little detail as to how this might be achieved. UNCLOS encourages regional cooperation, but there are no regional initiatives within the treaty framework itself. Much more has been accomplished under the auspices of the UN Environment Programme (UNEP) Regional Seas Programme.⁴⁶⁹ This programme covers 18 regions of the world, but not the Indian Ocean as a whole, with initiative divided between the continents of Africa, Asia and Oceania. The East African region adopted the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region in 1985 (amended in 2010). Both Mozambique and the Seychelles (explored in this case study) are parties to that Convention and the Protocol Concerning Protected Areas and Wild Fauna and Flora in the East African Region, which does not refer to climate change. The only other relevant regional programme is the South Asian Seas, of which India and the Maldives are members.

463 African States, Asian States, Eastern European States, Latin American and the Caribbean States, and the Western European and Other States (the 'Other States' include Australia, Canada, Iceland, New Zealand, Norway, Switzerland, and the United States, but not Japan, which is in the Asian Group). See UNFCCC, 'Party Groupings', http://unfccc.int/parties_and_observers/parties/negotiating_groups/items/2714.php.

464 UNFCCC, 'Funding for Adaptation' (2020) <https://unfccc.int/Adaptation-Fund>.

465 The International Coastal and Ocean Organization, 'At the Frontlines of Climate Change—Oceans, Coasts, and Small Island Developing States: The Need for Action Now in the Climate Negotiations' (Ad Hoc Working Group on Long-Term Cooperative Action under the UNFCCC, Bonn, 1-12 June 2009), <http://unfccc.int/resource/docs/2009/smsn/ngo/156.pdf>.

466 Convention on Biological Diversity, Regional Biodiversity Strategies and Action Plans (RBSAPs), www.cbd.int/nbsap/related-info/region-bsap.

467 West Indian Ocean Partnership, Resilient Ecosystems for Sustainable Livelihoods, Adaptation, and Human Security, www.cbd.int/islands/doc/wiop/wiop-factsheet-en.pdf.

468 Convention on Biological Diversity, Aichi Biodiversity Targets www.cbd.int/sp/targets.

469 UNEP, Regional Seas: UNEP Administered Programmes <http://web.unep.org/regionalseas/unep-administered-programmes>.

The 1995 South Asian Seas Action Plan ‘focuses on Integrated Coastal Zone Management, oil-spill contingency planning, human resource development and the environmental effects of land-based activities’.⁴⁷⁰ Although climate change issues are acknowledged, there are no legal instruments or programmes that focus on it or fisheries management.

Earlier in this chapter, the role of the FAO was discussed and, with respect to fisheries, the FAO plays a critical role in standard setting, dissemination of data and development of best practice guidelines. For example, the 1995 Code of Conduct on Responsible Fisheries provides guidance on best management practices and its objects include recognition of the contribution of fisheries to food security.⁴⁷¹ The Voluntary Guidelines for Securing Sustainably Small Scale Fisheries in the Context of Food Security and Poverty Eradication seeks to enhance their contribution to sustainable seafood production and encourages support for these fisheries in small island states where climate change will impact greatly.⁴⁷² In addition, the FAO Committee on Fisheries has a subcommittee on aquaculture and the role it can play in sustainable food security,⁴⁷³ and the Smart Fish Programme is a regional initiative focusing on good fisheries governance, including regulatory frameworks for sustainable exploitation of fisheries resources.⁴⁷⁴

The FAO works with and provides technical and administrative support to five regional fishery bodies of relevance to the Indian Ocean: Southern Indian Ocean Fisheries Agreement,⁴⁷⁵ Indian Ocean Tuna Commission,⁴⁷⁶ Bay of Bengal Programme Inter-Governmental Organisation,⁴⁷⁷ Regional Commission for Fisheries⁴⁷⁸ and Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden.⁴⁷⁹ The focus of most of these bodies is conservation and management of fisheries for the purposes of both economic development and food security. For example, the Indian Ocean Tuna Commission includes within its objectives the promotion of cooperation among members to ensure management, conservation, optimum utilisation of stocks and encouragement of sustainable development of such fisheries.⁴⁸⁰ The Southern Indian Ocean Fisheries Agreement has the objective of ensuring the long-term conservation and sustainable use of non-highly migratory fish stocks in the high seas of the southern Indian Ocean.⁴⁸¹ The FAO also works at the national level and has engaged in projects to strengthen law and policy to improve food security, for example, in the Seychelles⁴⁸² and to incorporate the right to food in national legislation.⁴⁸³

470 UNEP, Regional Seas: South Asian Seas <http://web.unep.org/regionalseas/south-asian-seas>.

471 FAO, *Code of Conduct for Responsible Fisheries* (1995) www.fao.org/3/a-v9878e.pdf.

472 FAO, *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication* (2015) www.fao.org/3/a-i4356e.pdf.

473 FAO, COFI Sub-Committee on Aquaculture www.fao.org/fishery/about/cofi/aquaculture/en.

474 FAO, Programme for the Implementation of a Regional Fisheries Strategy for the Eastern and Southern Africa - Indian Ocean Region (IOC-SmartFish) www.fao.org/3/a-az404e.pdf.

475 Parties to the Southern Indian Ocean Fisheries Agreement include Australia, Cook Islands, the EU, Mauritius, and Seychelles. FAO, Regional Fishery Bodies Summary Descriptions: South Indian Ocean Fisheries Agreement (SIOFA) www.fao.org/fishery/rfb/siofa/en.

476 Membership includes the Maldives, Mozambique, Seychelles, and South Africa. See Indian Ocean Tuna Commission, ‘Structure of the Commission’ www.iotc.org/about-iotc/structure-commission.

477 India and the Maldives are parties. FAO, Regional Fishery Bodies Summary Descriptions: Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO) www.fao.org/fishery/rfb/bobp_igo/en.

478 FAO, Regional Fishery Bodies Summary Descriptions: Regional Commission for Fisheries (RECOFI), www.fao.org/fishery/rfb/recofi/en.

479 FAO, Regional Fishery Bodies Summary Descriptions: Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) www.fao.org/fishery/rfb/persga/en.

480 Indian Ocean Tuna Commission, The Commission www.iotc.org/about-iotc.

481 FAO, Regional Fishery Bodies Summary Descriptions: South Indian Ocean Fisheries Agreement (SIOFA) (n 475)

482 FAO, Seychelles and FAO: Partnering for Sustainable Agricultural Development and Food Security (2016) www.fao.org/3/a-au744e.pdf.

483 Skonhoft, Gobena, and Bultrini (n 462).

The above analysis demonstrates that there are a number of global laws, projects and programmes in the Indian Ocean region, but they rarely involve all relevant countries or address climate change and food security on a holistic, regional basis. As will be discussed below, the limited regional initiatives flowing directly from wider international agreements has been compounded by the relative dearth of agreements and organisations emerging from *within* the region.

(II) REGIONAL INSTITUTIONS AND INITIATIVES

Although other regions of the world have developed significant joint responses to environmental issues, including climate change, initiatives in the Indian Ocean region have tended to be disjointed and lack a unified framework. This is in part due to the division of countries in the region across Africa, Asia and Oceania. In each of these relevant regions, there are some early regional agreements such as the African Convention on the Conservation of Nature and Natural Resources (ACCNNR)⁴⁸⁴ and the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region.⁴⁸⁵ While reference is made in the ACCNNR to cooperation to address food security, it is in the context of irrigation and agriculture rather than fisheries.⁴⁸⁶ References to fisheries do not make mention of food security aspects.⁴⁸⁷ A number of relevant conferences have been held, and publications prepared, that build capacity in the region. Examples include the Regional Conference on Climate Change Impacts, Adaptation and Mitigation in the WIO Region: Solutions to the Crisis, and its final report, *Climate Change Impacts in Coastal and Marine Areas of the Western Indian Ocean Region: An Assessment of Problems, Solutions, and Strategic Options for Promoting Climate Resilient Development in the WIO Region*. It has also facilitated the establishment of the Consortium for Conservation of Coastal and Marine Ecosystems in the Western Indian Ocean between major NGOs in the Western Indian Ocean that have marine programmes. Similarly, ASEAN, which also includes some Indian Ocean countries, has been active in the area of climate change, through the UNFCCC framework and instruments such as the Singapore Declaration on Climate Change, Energy and the Environment (2007), Blueprint for the ASEAN Socio-Cultural Community (2009–2015) and the ASEAN Multi-Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry towards Food Security.

Strong regional organisations are critical to the success of such initiatives and this has been recognised in relation to the Indian Ocean. The Indian Ocean Marine Affairs Cooperation Conference established by the Colombo Declaration in 1987 was intended to be at the centre of a network of organisations.⁴⁸⁸ Its mandate includes building a cooperative framework, strategy for enhancing national development, and consultative forum for reviewing economic uses and protection of the Indian Ocean and its resources.⁴⁸⁹ Nevertheless, rather than a region-wide approach, what has emerged are some bilateral and multilateral, sub-regional initiatives. For example, trade agreements

484 Originally formulated in 1968, it was signed by the Seychelles in 1977 and Mozambique in 1981, then revised in Maputo in 2003. It has not been signed by India or the Maldives, whereas South Africa is not a signatory to the amended 2010 Convention. See ACCNNR (15 September 1968) 1001 UNTS 3 ('Algiers Convention').

485 UNEP, Nairobi Convention: Introduction <http://web.unep.org/nairobiconvention/who-we-are/introduction>.

486 See ACCNNR (11 July 2003) ('Revised African Convention'), VII.

487 *Ibid* IX.

488 Barbara Kwiatkowska, 'Institutional Marine Affairs Cooperation in Developing State Regions: Part 2: The Indian Ocean and IOMAC' (1990) 14 *Marine Policy* 399, 400.

489 *Ibid* 400.

between Mauritius and the Seychelles, and the Mauritius-Madagascar arrangement on fisheries, tourism, and textiles.⁴⁹⁰

One important commitment that is evident across the region relates to integrated coastal zone management, critical to climate change adaptation. This can be seen through initiatives such as the Arusha Resolution in 1993,⁴⁹¹ the 1996 Seychelles Second Policy Conference on Integrated Coastal Zone Management in Eastern African and Island States, and the 1998 Maputo Declaration from the Pan-African Conference on Sustainable Integrated Coastal Management.⁴⁹² The Arusha Resolution ‘set the stage for increased national support for, and efforts in, coastal management and successfully began a dialogue between the scientific community and high-level policy makers’; however, there is no explicit focus on climate change or food security.⁴⁹³ This is not unexpected given the age of these initiatives. The more recent developments, acknowledging the link between marine management and climate change, are at the national rather than the regional level – for example, the Seychelles National Climate Change Strategy (2009-2015).

Common security threats and economic opportunities, rather than environmental concerns, have led to some regional cooperative organisations such as SADC, South Asian Association for Regional Cooperation, AU, Gulf Coordination Council, ASEAN, and the Asia-Pacific Economic Cooperation (APEC).⁴⁹⁴ Some of these organisations address environmental issues, such as SADC and its Protocol on Wildlife Conservation and Law Enforcement and the Protocol on Fisheries. As noted above, ASEAN has been active in the area of climate change, and also food security but with a greater focus on agricultural products than fish.⁴⁹⁵ Overall, there is relatively little tangible whole-of-region cooperation on concerns at the intersection of climate change, environmental protection and food security.

The most promising avenue for a region-wide approach is IORA. This organisation was established in 1997 in response to the creation of other major regional trading organisations.⁴⁹⁶ It has 22 member states⁴⁹⁷ and its goals include ‘sustained growth and balanced development of the region and of the member states, and to create common ground for regional co-operation’, including stimulating regional trade and investment, synergising competitive advantage, building networks, information sharing and promoting standardisation and harmonisation.⁴⁹⁸ The organisation is supported by the Working Group of Trade and Investment, the Indian Ocean Rim Business Forum and the Indian Ocean Rim Academic Group. Specifically, the Indian Ocean Rim Academic Group ‘promotes

490 Mauritius Embassy, ‘Mauritius-Antananarivo’ www.l.govmu.org/portal/sites/mfamission/antananarivo/mission.htm.

491 Mauritius, Mozambique, Madagascar, the Seychelles, Tanzania and later Kenya were signatories of the Arusha Resolution. L Celliers et al, ‘Pathways of Integrated Coastal Management from National Policy to Local Implementation: Enabling Climate Change Adaption’ (2013) 39 *Marine Policy* 72, 73.

492 Celliers et al (n 491) 73.

493 Elin Torell, ‘Adaption and Learning in Coastal Management: The Experience of Five East African Initiatives’ (2000) 28 *Coastal Management* 353, 353.

494 Christian Wagner, ‘The Indian Ocean Rim—Association for Regional Co-operation (IOR-ARC): The Futile Question for Regionalism?’ (2013) 9 *Journal of the Indian Ocean Region* 6, 6.

495 For example, the ASEAN Integrated Food Security Framework and Strategic Plan of Action on Food Security (2015-2020).

496 Saman Kelegama, ‘Can Open Regionalism Work in the Indian Ocean Rim Association for Regional Co-operation?’ (1998) 15 *ASEAN Economic Bulletin* 153, 155. It was formed with fourteen member states: Australia, India, Indonesia, Kenya, Madagascar, Mauritius, Malaysia, Mozambique, Oman, Singapore, South Africa, Sri Lanka, Tanzania and Yemen. At the time of this writing, it has expanded to twenty-one states.

497 Bangladesh, Comoros, Seychelles, Iran, Thailand, United Arab Emirates, and Somalia are the additional members of fifty-one littoral states, with China, Egypt, France, Japan, United Kingdom, United States, and Germany as dialogue partners.

498 Kelegama (n 496).

dialogue on the peaceful uses and ecologically sustainable development of maritime resources and initiates informed debate on issues of concern within the region'.⁴⁹⁹ The group has published several books that are focused on broader issues of security rather than climate change but do include a volume on *Fisheries Exploitation in the Indian Ocean: Threats and Opportunities*.⁵⁰⁰

While IORA has potential to address common challenges of climate change and food security the cultural, economic and political divergences among the over 20 member states are significant,⁵⁰¹ which have limited the organisation's impact to date. It has produced 'few tangible results', despite its impressive appearance and regular meetings.⁵⁰² Many authors have expressed doubts about its potential to respond effectively to regional issues, noting that economic and political divergences hamper efforts⁵⁰³ and that simply sharing an ocean space will not ensure successful regional cooperation.⁵⁰⁴ Nonetheless some recent advances can be seen. The Fisheries Support Unit, for example, was established in 2004, to enhance cooperation in this sector.⁵⁰⁵ The 2013 Perth Communiqué endorses work undertaken in IORA to strengthen ocean monitoring, seasonal climate forecasting capacities and knowledge of climate change adaptation practices.⁵⁰⁶ In addition, the 2013 Perth Principles recognise the importance of building the capacity of countries to understand, forecast and address marine, ocean and climate science issues in the region.⁵⁰⁷ Furthermore, there is a commitment 'to understand and address the main threats to the Indian Ocean and its resources, including [...] ocean acidification' and a number of nations are now focusing on the blue economy and this has generated further action within IORA.⁵⁰⁸ In 2017 the first IORA Summit was held in Indonesia, bringing together national leaders to focus on 'Strengthening Maritime Cooperation for a Peaceful, Stable and Prosperous Indian Ocean'. The Summit resulted in the signing of the Jakarta Concord setting out a strategic vision for IORA that emphasises the importance of sustainable fisheries and enhancing disaster risk management in the context of climate change.⁵⁰⁹ This renewed momentum will hopefully lead to greater whole-of-region initiatives.

An important area in which relevant work has been carried out is through large marine ecosystems (LMEs) initiatives. The African LMEs have developed commissions, programmes and policies for protection against threats, including climate change. One of the four African LMEs is Agulhas-Somali LME in the Indian Ocean. In some of the African LMEs developments have included data and information sharing and programmes to reduce bycatch and to develop small pelagic fisheries. In the Indian Ocean, partnerships have been established with existing regional institutions including

499 ResearchCareer, 'UWA Academic Appointed to Indian Ocean Rim Academic Group' (20 April 2011) www.researchcareer.com.au/archived-news/uwa-academic-appointed-to-indian-ocean-rim-academic-group.

500 Dennis Rumley, Sanjay Chaturvedi, and Vijay Sakhuja (eds), *Fisheries Exploitation in the Indian Ocean: Threats and Opportunities* (ISEAS Publishing 2009).

501 Wagner (n 494) 11.

502 Alex Vines and Bereni Oruitemeka, 'Engagement with the African Indian Ocean Rim States' (2007) 14 *South African Journal of International Affairs* 111, 113.

503 Wagner (n 494).

504 For example, Kelegama (n 496). This article focuses primarily on regional economic development.

505 IORA, Fisheries Support Unit (FSU) www.iora.int/en/structures-mechanisms/specialised-agencies-and-mous/specialised-agencies-and-mous.

506 IORA, 13th Meeting of the Council of Ministers of the Indian Ocean: Perth Communiqué (1 November 2013) www.iora.int/media/8251/perth_communique_2013.pdf.

507 Australian Government Department of Foreign Affairs and Trade, Perth Principles, <http://dfat.gov.au/international-relations/regional-architecture/indian-ocean/iora/pages/perth-principles.aspx>.

508 IORA, Blue Economy www.iora.int/en/priorities-focus-areas/blue-economy.

509 IORA, Promoting Regional Cooperation for a Peaceful, Stable and Prosperous Indian Ocean (Jakarta Concord) (7 March 2017) www.iora.int/media/23699/jakarta-concord-7-march-2017.pdf.

the South West Indian Ocean Fisheries Project and the UNEP Project addressing land-based activities in the Western Indian Ocean, to create the Western Indian Ocean Sustainable Ecosystem Alliance to coordinate research and management activities in the region.⁵¹⁰ This will provide an opportunity for more integrated approaches to oceans governance across large scales including through the Western Indian Ocean Large Marine Ecosystems Strategic Action Programme Policy Harmonisation and Institutional Reforms.

The South West Indian Ocean Fisheries Project itself is funded by the World Bank and involves the Agulhas-Somali LME and nine countries. It is a five-year project, formalised in a memorandum of understanding, which includes obligations to cooperate by allowing access to sovereign waters and research infrastructure, the import and export of marine species, and data sharing, including any intellectual property (IP) associated with it. The project is aimed at participatory marine science cooperation through gathering data and assessing migratory fish health across the region.⁵¹¹ Such assessments are essential if enhanced fisheries management is to be implemented to ensure food security in the face of climate change. Only when accurate data is available can regional management plans be implemented and law and policy embed the resulting scientific information.

In the Bay of Bengal LME (covering Indian Ocean coastal communities in Bangladesh, India, Maldives, Myanmar and Sri Lanka) it is likely that the impacts of climate change will result in depletion of fisheries and therefore of economic returns and food security.⁵¹² The approach taken has been to improve fisheries management and improve governance to enhance adaptation and resilience, with climate change issues being integrated into the governance agenda.⁵¹³

Although there are some relevant initiatives in the region, they have tended to be disjointed with little cohesion; some positive signs can be seen from the recent IORA Summit. The lack of a strong regional governance framework focused on food security and climate issues highlights the critical nature of national initiatives to both implement international law and provide an effective domestic response to local climate change and food security concerns.

(iii) NATIONAL APPROACHES

Most of the Indian Ocean region countries have national environmental policies in place to combat the effects of climate change and foster protection and conservation of the marine and coastal environment, including living resources relied on for food. In addition, there are a myriad of laws that could be used to address these challenges, but efforts to date are varied.

South Africa's Constitution, for example, incorporates rights to an environment not harmful to human health, and also addresses conservation, sustainable development, ecological integrity, and a right of access to natural resources. Centralisation of environmental policy allows for a common strategic approach, as well as consideration of international obligations and, potentially, regional concerns. It has been recognised that South Africa has 'the political will to address the difficult balance needed between poverty and conservation at the domestic level'; yet the country still

510 Satia (n 433).

511 Van der Elst et al (n 431) 258.

512 Vivekanandan, Hermes, and O'Brien (n 451).

513 *Ibid.*

faces challenges in responding effectively at a regional level.⁵¹⁴ The South African Department of Environmental Affairs' Strategic Plan for the Environmental Sector (2009–2014)⁵¹⁵ emphasises the need for effective management of issues such as rising sea levels and natural disasters on livelihoods and marine and coastal systems through controlling unsustainable coastal developments, implementing sustainable livelihoods programmes, and increasing research to understand the vulnerability of marine and coastal systems. Similarly, Outcome 10 addresses the reduction of GHG emissions and the preparation of strategies to cope with projected climate change impacts.⁵¹⁶ In addition, South Africa has developed a specific *National Climate Change Response White Paper* (2011) that addresses mitigation and adaptation across a range of sectors such as water, agriculture, health and biodiversity.⁵¹⁷ The White Paper notes the need to 'review legislation to determine the legal requirements to support the institutional and regulatory arrangements proposed [...] and to ensure policy and legislative alignment.'⁵¹⁸ Food security is noted as a national concern, but linked to agriculture rather than oceans governance. Fisheries management is also identified as critical but in the context of economic development rather than food security.

Despite ample environmental legislation in South Africa, there are relatively few initiatives that respond directly to food security and climate change issues. There are a number of laws that could be used by local governments, including the National Environmental Management Act 2004, Integrated Coastal Management Act 2008, Disaster Management Act 2002, National Parks Act 1976, Biodiversity Act 2004 and Environment Conservation Act 1989.⁵¹⁹ The National Environmental Management Act covers some relevant issues such as sustainable development, a human right to a decent environment, standing to challenge environmental issues, intergenerational equity, integration, precaution, pollution prevention, the polluter pays principle, local-level governance, ecosystem-based management, and common but differentiated responsibilities. The most recent statute is the 2008 Integrated Coastal Management Act, which provides for coastal protection zones and coastal protected areas. The Act addresses erosion and accretion, both of which can be the result of climate change impacts, but makes no mention of food security.

The Republic of Mozambique has been in a period of reconstruction following civil war that lasted from the 1980s to 1992. The war caused considerable damage to the social and economic wellbeing of Mozambique and affected the environment. Under the 2004 Mozambique Constitution, the national government and local authorities, in cooperation with other environmental associations, are to adopt policies for environmental protection and to promote rational use of resources.⁵²⁰ Although it is recognised that climate impacts and overfishing are key challenges, there has been no specific legislation related to climate change to date.⁵²¹ Mozambique's Constitution and environmental laws incorporate rights and duties in relation to the environment, and issues are coordinated by

514 UNFCCC, 'UNFCCC African Regional Workshop on Adaptation: Accra, Ghana, 21 to 23 September 2006' http://unfccc.int/adaptation/adverse_effects_and_response_measures_art_48/items/3743.php.

515 Republic of South Africa Department of Environmental Affairs, 'Strategic Plan for the Environmental Sector 2009–2014', www.environment.gov.za/sites/default/files/strategic_plans/2009_2014.pdf.

516 Torell (2000) (n 493) 353.

517 South Africa has undertaken various initiatives to implement the recommendations of the White Paper. See for example Republic of South Africa Department of Environmental Affairs, 'Climate Change and Air Quality', www.environment.gov.za/branches/climatechange_airquality.

518 South African Government, *National Climate Change Response White Paper* (2011) 37, www.gov.za/sites/www.gov.za/files/national_climatechange_response_whitepaper_0.pdf.

519 Torell (2000) (n 493) 353.

520 Constitution of Mozambique 2004, 90.

521 Torell (2000) (n 493).

the Ministry of Coordination of Environmental Affairs. Nevertheless, implementation has been hampered by a lack of capacity and resources, insufficient inter-institutional coordination, and lack of awareness and education leading to insufficient public understanding and support. These factors have also delayed the national implementation of Mozambique's international commitments.⁵²² There are, however, various laws that could be used to address climate change adaptation, such as the legal obligation to take measures to protect the environment.⁵²³ For example, the Environment Law 1997 provides for environmental protection zones over terrestrial and marine areas to facilitate protection of ecosystems that have ecological, socio-economic, aesthetic, cultural, scientific and other values. Other relevant laws include the Forestry and Wildlife Law, Fisheries Law and Local Organs Law. With respect to climate change, Mozambique has developed a National Adaptation Programme of Action (2007), which has four key goals: strengthening of early warning systems; strengthening of the agricultural sector to withstand the impacts of climate change; the reduction of climate change impacts in coastal zones; and the management of water resources under climate change.⁵²⁴ The Environmental Strategy for Sustainable Development (2007) calls for the integrated and sustainable management of the marine environment and of climate change. Subsequently, the National Climate Change Adaptation and Mitigation Strategy (2012) analyses the inclusion of climate change in development instruments.⁵²⁵ However, the lack of implemented environmental legislation has been said to demonstrate a 'deliberate and careless exploitation of the natural environment'.⁵²⁶ Significant challenges remain and weaknesses in governance and fragile oversight mechanisms have resulted in 'many unresolved tensions between economic development objectives and environmental sustainability' in Mozambique.⁵²⁷

The Republic of Seychelles is almost exclusively reliant on fish exports and tourism for foreign revenue;⁵²⁸ both are at risk from warming oceans and acidification. The most critical issue is reef management, and conservation law and policy are essential to reconcile competing concerns of fishing and tourism.⁵²⁹ There has been a significant study of the 1998 bleaching event, in which the authors suggest that 'climate-mediated disturbances, such as coral bleaching, be at the fore of conservation planning for coral reefs.'⁵³⁰ The Constitution includes the right of every person 'to enjoy a clean, healthy and ecologically balanced environment.'⁵³¹ This is balanced by the duty of every Seychelles citizen to protect, preserve and improve the environment.⁵³² In addition, the state implements measures to promote the protection, preservation, and improvement of the environment, which is primarily advanced through the Environmental Protection Act 1994. Despite

522 Simon Norfolk and Michaela Cosijn, 'Development and the Balancing of Interests in Mozambique' in Michael Faure and Willemien du Plessis (eds), *The Balancing of Interests in Environmental Law in Africa* (Pretoria University Law Press, 2011).

523 Torell (2000) (493).

524 Mozambique Ministry for the Co-ordination of Environmental Affairs, 'Mozambique National Adaptation Programme of Action (NAPA) (2007)', <http://unfccc.int/resource/docs/napa/moz01.pdf>.

525 Republic of Mozambique, 'National Climate Change Adaptation and Mitigation Strategy' (2012) www.cgcmc.gov.mz/attachments/article/148/National%20Climate%20Change%20Strategy_lowerres.pdf.

526 Norfolk and Cosijn (n 522) 337.

527 *Ibid* 296.

528 UNEP, Seychelles Department of Environment, 'Environmental Management Plan of the Seychelles 1990–2000' (1990).

529 Simon Jennings, Suzanne Marshall, and Nicholas Polunin, 'Seychelles' Marine Protected Areas: Comparative Structure and Status of Reef Fish Communities' (1996) 75 *Biological Conservation* 201, 201.

530 Nicholas Graham et al, 'Lag Effects in the Impacts of Mass Coral Bleaching on Coral Reef Fish, Fisheries, and Ecosystems' (2007) 21 *Conservation Biology* 1291, 1296-98.

531 Constitution of the Republic of Seychelles, 38.

532 *Ibid* 40.

numerous laws to protect the environment, the most significant problem in the Seychelles is implementation. There are very limited resources,⁵³³ resulting in poor monitoring and enforcement combined with a lack of public awareness.⁵³⁴ Most of the early legal responses to environmental concerns have been through legislative regulations or orders, which now require significant updating.⁵³⁵ For example, the National Parks and Nature Conservancy Ordinance 1969 and numerous regulations prohibiting fishing and damage to reefs, are old pieces of legislation.⁵³⁶ One of the more modern statutes is the Environmental Protection Act 1994, which was enacted to implement the ACCNNR.⁵³⁷ Furthermore, the Fisheries Act 1987 was amended in 1997 and 2001, but enforcement remains the main challenge. There has been much more recent activity at the policy level. For example, the Seychelles has adopted a National Climate Change Strategy (2009-2015) recognising the link between climate change, food security and health, as well as acknowledging that earlier policies and plans did not address climate impacts.⁵³⁸ This strategy seeks to minimise the impacts of climate change through concerted and proactive action at all levels of society noting the importance of both commercial and artisanal fisheries, as well as the need to strengthen management. The subsequent Seychelles Strategic Plan (2015), Seychelles Biodiversity Strategy and Action Plan (2015-2020) and Seychelles Sustainable Development Strategy (2012-2020) all refer to climate change, fisheries and food security and recognise the linkages between them.⁵³⁹ The Seychelles possesses above average wealth per capita and therefore the theoretical capacity to expand its environmental law framework. Although the overall economic strength of this nation remains limited, recent developments have significantly advanced the position. The 2016 debt-for-nature swap, with assistance from The Nature Conservancy and Paris Club, should facilitate further marine conservation and climate change adaptation. The commitments include increasing marine protection to 30 per cent of the EEZ, through a marine spatial planning initiative. The Seychelles has also established the Conservation and Climate Adaptation Trust. The Seychelles is a positive example of a developing nation that has demonstrated the political will to protect marine environments and fisheries, although it is likely to face some implementation challenges.

A further regional example is the Republic of the Maldives, which gained independence in 1965 and became a republic in 1968. Today, the legal system is based on the Islamic religious legal system (Sharia law) with English common law influences, primarily in commercial law. Tourism is the most significant economic activity in the Maldives, followed by fisheries, both of which are affected by climate change. Due to these factors, combined with the Maldives' low elevation and resulting threat from rising sea levels, the government has played a significant role in international climate change discussions. Mohamed Nasheed, former President of the Maldives, has been very vocal in outlining

533 Republic of Seychelles and European Community (n 427) 16.

534 *Ibid* 17.

535 *Ibid*.

536 Jennings, Marshall, and Polunin (n 549) 201.

537 Rose Mwebaza et al, 'A Situation Report: The Nature and Extent of Environmental Crimes in Seychelles', (Institute for Security Studies 2009) <https://wedocs.unep.org/bitstream/handle/20.500.11822/9537/-A%20situation%20report%20-The%20nature%20and%20extent%20of%20environmental%20crimes%20in%20Seychelles-2009SitRepSeychellesNov09.pdf?sequence=3&BisAllowed=>.

538 The Seychelles National Climate Change Committee, 'Seychelles National Climate Change Strategy' (2009) www.preventionweb.net/files/20091100_seychelles_climate_change_strategy_2009.pdf.

539 Seychelles Sustainable Development Strategy 2012-2020 www.nationalplanningcycles.org/sites/default/files/planning_cycle_repository/seychelles/ssds_volume_1.pdf.

the risks that climate change poses, particularly to SIDSs.⁵⁴⁰ He has committed his own country to specific goals, encouraged developing countries to form a bloc of carbon-neutral nations, and called for the US to further engage with climate change science and issues.⁵⁴¹ The Maldivian government has committed to a number of measures and policies to address climate change. The National Sustainable Development Strategy (2009) includes seven goals, including adaptation to climate change, protection of coral reefs, the achievement of carbon neutrality and the establishment of a carbon-neutral transport system. In the context of climate change-specific measures, the Maldives has taken a combined approach to risk reduction and climate change.⁵⁴² The Action Plan includes both mitigation and adaptation strategies, as well as recognising the importance of legal preparedness through the Disaster Management Act (2015)⁵⁴³ and National Building Bill.⁵⁴⁴ The former creates a framework for disaster management and the latter a regulatory framework for building works, in the absence of a building code. As with many nation states in the Indian Ocean region, the Maldives do not possess the resources needed to respond to such environmental concerns adequately and effectively, and legislation is likely to be hampered in terms of implementation.

2.9.3 Analysis

This case study illuminates several of the recommendations highlighted in the following section: the importance of multilevel approaches, good governance, and pursuing integrated, multidisciplinary approaches.

Any exploration of the issues cannot be limited to the governmental or regional level. Engaging and meeting the needs of people and communities is critical. This is illustrated by the study of two sites in each of Tanzania and Mozambique, which reveals that communities felt that their quality of life had reduced as a result of negative impacts on natural resources, with climate change being one stress factor.⁵⁴⁵ This is particularly concerning as the full effects of climate change are yet to be felt. Most worrying is the result that government policies and projects aimed at environmental protection and the creation of livelihoods are perceived as having a negative impact on livelihoods.⁵⁴⁶ Therefore, law and policy approaches that restrict existing livelihoods should also provide alternatives for those affected. Although it appears that the government has encouraged offshore fishing in response, the promised larger boats and equipment have not materialised.⁵⁴⁷ This leaves local people under such pressure that they may turn to illegal fishing.⁵⁴⁸ Similar issues have occurred in Mozambique due to damming upstream resulting in reduced downstream water flows with resultant effects on fishing, farming and tourism.⁵⁴⁹ This demonstrates the need for multifaceted and integrated approaches that

540 Ishaan Tharoor, 'Heroes of the Environment 2009: Mohamed Nasheed' *TIME* (New York City 22 September 2009), http://content.time.com/time/specials/packages/article/0,28804,1924149_1924152_1924195,00.html. Nasheed is now the subject of a documentary by Jon Shenk, *The Island President* (2012).

541 James Gerken, 'Mohamed Nasheed, Former Maldives President, Calls for U.S. to Embrace Climate Change Reality' *The Huffington Post* (6 July 2012) www.huffingtonpost.com/2012/07/06/mohamed-nasheed-maldives-climate-change-united-states_n_1652409.html.

542 Maldives Government and UNEP, Maldives National Strategy for Sustainable Development (2009) www.environment.gov.mv/v1/download/9.

543 Maldives National Disaster Management Center, Disaster Management Act <http://ndmc.gov.mv/policies-and-regulation/rules-and-regulations>.

544 The National Building Bill has yet to be enacted.

545 Bunce, Brown, and Rosendo (n 430) 487-488.

546 *Ibid* 488.

547 *Ibid* 489.

548 *Ibid*.

549 *Ibid* 490.

do not focus on single-issue efforts and large-scale initiatives, but which incorporate participatory approaches involving those most closely affected in order to build resilience and diversity.

In terms of data collection and further research, there is a need for further scientific information as well as additional social science information. This again feeds into the issue of livelihoods. Any consideration of establishing industries and jobs related to natural resources must involve not only scientific analysis, but also economics, sociology, cultural studies and other disciplines. Tourism in marine protected areas is one livelihood option and, where viable, it needs to be scaled up to divert fishers to this form of non-consumptive exploitation. But expertise in developing tourism enterprises will also be needed. Nevertheless, it will be essential to ensure access to both income and food, and further effort needs to be focused on resilient fish farming as well as tourism. Again, knowledge of aquaculture science and business models to sustain such enterprises will be critical.

Both fishing and climate change place pressure on marine resources, and approaches to management and governance should be integrated to address both areas.⁵⁵⁰ Approaches will probably need to include new mixes of mechanisms or holistic tools such as marine spatial planning not currently implemented in the Indian Ocean region. Within the Western Indian Ocean, there has been a trend away from sectoral approaches towards more integrated marine management since the 1980s.⁵⁵¹ Nonetheless, while fisheries management may have become more integrated with other marine environment laws and policies, contemporary climate change policies and legislation have tended to be separated. Approaches must also be participatory and coordinated at whatever level initiatives are being developed.

While there is common recognition of the realities of climate change in the Indian Ocean region, significant barriers to regional responses remain. Although action at all levels of governance and in each jurisdiction can be seen to some extent, approaches have not been consistent nor frameworks cohesive. Regional organisations are relatively nascent and in many contexts other priorities are more pressing. There must be a collective will to discuss, present and implement complex solutions to the realities of climate change and food scarcity before advances can be made.

There are many areas where assistance might be sought. Future responses in the Indian Ocean region can be adopted from the experiences and successes of their Pacific counterparts where countries are supported by many strong regional organisations, such as the Secretariat of the Pacific Community, the Pacific Islands Forum Secretariat, and the Secretariat of the Pacific Regional Environment Programme. Regional compliance treaties that have developed in areas such as fisheries could provide useful examples for governments in advancing responses to climate change.⁵⁵² Legislative models developed to assist Pacific Island countries in preparing domestic laws could also be extended to climate action. The Indian Ocean region should look to such approaches to inform the strengthening of regionalism, on which to develop fresh and unified approaches to combating climate change and food scarcity, recognising of course the differences between the two regions. As in the legally pluralist Pacific Ocean region, differences in each nation's state-based and customary law

550 Vivekanandan, Hermes, and O'Brien (n 451).

551 R Kiambo et al, 'Coastal Management in the Western Indian Ocean Region: A Capacity Needs Assessment' (Western Indian Ocean Marine Science Association and University of Rhode Island Coastal Resources Center 2001) <https://wedocs.unep.org/rest/bitstreams/14997/retrieve>.

552 See, eg, 'Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region' (1992) 32 ILM 136.

must be acknowledged if governments are to deal effectively with both the causes and consequences of climate change in the Indian Ocean region.⁵⁵³

Collaborative approaches to law and policy can only be fostered by a region that promotes cooperation, which has been lacking in Indian Ocean regional organisations. The IORA could provide the impetus for such future directions by, for example, catalysing action through regional workshops on key issues and acting as a valuable forum for discussion. Furthermore, it could assist with building regional capacity by providing a clearing house of successful programmes, policies and regulations. Such responses will depend significantly on the political will and legal and economic capacity of each Indian Ocean state. Nonetheless the recent adoption of the Jakarta Concord is a positive development.

Responding to environmental concerns must play a central role in Indian Ocean regional cooperation in the future.⁵⁵⁴ A regional approach to climate change adaptation law and policy is justified on a number of bases. First, efforts must be made to improve governance. This is harder from within a specific state, and therefore regional organisations and frameworks can play an important role. Weak governance and lack of the rule of law will undermine any efforts made to develop effective marine management regimes. Second, it is sensible to cooperatively design laws and policies for the coastal zone, including development, land use and physical construction. Law and policy approaches must respect the different legal systems and cultural backdrop in each country. While there is no one-size-fits-all legal framework that will work across the whole region, common approaches to oceans governance and marine resource management can be applied. Third, a cooperative approach would allow for the sharing of limited legal and technical resources and expertise on shared impacts and adaptation responses. From a scientific perspective, it would be beneficial to have data collected across the region. Regional frameworks can also provide developing countries, which form the majority of the Indian Ocean rim nations, a stronger voice globally.⁵⁵⁵ Although the need for regional approaches and responses to climate change was recognised at an early date,⁵⁵⁶ they have not come to fruition.

Much national fisheries legislation in the region only focuses on commercial fishing. Similarly, food security initiatives in the context of climate change commonly focus on agriculture rather than also on aquaculture. Fisheries regulations must address all types of fishing, including small-scale artisanal and subsistence fisheries. Approaches taken must address local concerns, although all fisheries cannot be community-based nor managed from the bottom up. Again, there is a need for sophisticated holistic and integrated law and policy frameworks.

But for the many of the Indian Ocean countries, the main issue is technical and financial capacity to develop law and policy and thereafter implement it and ensure compliance and enforcement. This is likely to remain a challenge in the future. Because of the particular context of the Indian Ocean region, much could be achieved from regional discussion and cooperation. It is to be hoped that such collaboration emerges in the future to ensure the biological and cultural diversity of the Indian Ocean.

553 *Ibid.*

554 Chellaney (n 422) 166.

555 Ian H Rowlands, 'Mapping the Prospects for Regional Co-operation in Southern Africa' (1998) 19 *Third World Quarterly* 917, 917.

556 Chellaney (n 422).

Precise predictions about the changes that climate change will cause are not possible. But modelling, and existing changes where they already occur, should be used to develop long-term law and policy strategies to minimise future impacts as far as possible.⁵⁵⁷ Lack of food security contributes to other concerns in the Indian Ocean region, including piracy.⁵⁵⁸ It is also clear that food security, poverty and environmental protection and management are inherently interlinked.⁵⁵⁹ Therefore, in order to ensure stability in the region and place coastal communities in the best position to adapt to climate change, sustainable fisheries management is critical.

‘There is a danger that interstate conflict in the IOR in the coming years could be driven by competition not so much over political influence as over scarce resources.’⁵⁶⁰ Given the complexity of the challenges, multiscale and multifaceted responses are needed that are adaptive and flexible while building resilience to address not only food security, but broader human security concerns.

2.9.4 Recommendations

The case study illuminates some broader principles that should guide climate change adaptation and food security responses. They align with those that have been outlined in section 2.8 revolving around enhanced and improved governance.

(i) INVEST IN MULTILEVEL GOVERNANCE APPROACHES AND RESILIENT INSTITUTIONS

While broad international consensus on issues such as climate change is critical,⁵⁶¹ global approaches and policies alone cannot solve the issues. Multilevel governance approaches are needed that take account of regional goals, national agendas and the diversity of issues affecting communities. In this respect, it is particularly important to invest in resilient institutions that can mediate conflicts – many of which are not yet known and could not be properly anticipated.

Such resilience depends on greater coordination between institutions (as noted in section 2.8.1) and also vertical integration from global to local. Resilient institutions can also help mediate conflicts that may exist between global, regional, national and local objectives. This is a particular risk in the Indian Ocean region where states are culturally diverse and at different points on the spectrum of development with various political and economic agenda.

(ii) PROMOTE GOOD GOVERNANCE

At the core, there must be solid foundations for all laws and policies, built on good governance. Good governance involves not only the laws and institutions referred to above, but also procedures. Both procedural and substantive aspects are relevant. Unfortunately, good governance is often

557 Gable, Aubrey, and Gentile (n 444) 401.

558 Yirga Gelaw Woldeyes, ‘An East African Perspective for Paradigm Shift on Maritime Security in the Indian Ocean Region’ (2015) 11 *Journal of the Indian Ocean Region* 121.

559 S Walmsley, J Purvis and C Ninnes, ‘The Role of Small-Scale Fisheries Management in the Poverty Reduction Strategies in the Western Indian Ocean Region, (2006) 49 *Ocean & Coastal Management* 812.

560 Chellaney (n 435) 168.

561 *Ibid* 160.

lacking, with failure to implement all key principles – for example, transparency, accountability, responsiveness, participation and effectiveness. Where governance is weak, strategies, policies and laws can be ineffective. In terms of climate change and fisheries this results in a lack of planning as populations migrate, an absence of focus on issues such as food security and livelihoods, and no enforcement of existing law and policy. Addressing these fundamental concerns must be the starting point and regional and international institutions have a role to play in standard setting and capacity building.

Those tasked with achieving good governance must recognise that not all policies that address climate change achieve positive outcomes, often due to policy misfit. For example, some tools remain important in the short term and at the local level but they are unsuited to combatting broader threats such as climate change. This again points to the need for integrated and holistic approaches, but also taking into account the limited resources available in many developing countries.

(iii) INTEGRATE CLIMATE CHANGE AND FOOD SECURITY LEGAL RESPONSES WITH RESPONSES FROM OTHER DISCIPLINES

Climate change is essentially a cross-cutting theme, and efforts need to be made to ensure it is not examined apart from other pressures affecting vulnerable communities.⁵⁶² It is equally clear that issues associated with climate change cannot be solved by law and policy alone. There is a significant role for science, economics and other disciplines in any holistic solutions developed. In this respect, it is important to continue to develop a body of knowledge regarding climate change,⁵⁶³ and also the ways in which approaches can be coordinated with fisheries and food security initiatives. This should avoid perverse outcomes including abuses and injustices as set out in Section 2.8.4.

2.10 Conclusions and summary of key recommendations

By identifying and describing the key inter-linkages between the legal regimes for climate change and food security, we have found that whereas climate change law has potential to impact on the three dimensions of the right to food (availability, accessibility and adequacy), food systems also have the capacity to affect the goals of climate change law and policy. It is therefore paramount that both regimes evolve in a highly coordinated manner so as to avoid negative interrelations and to promote synergies. As our study of the governance and policy frameworks at the international level to promote food security and climate change mitigation and adaptation has shown, both governance regimes must be understood within a wider and more complex set of interrelated regime complexes, which at least includes the regime complex for trade and the regime complex for energy. The resulting near-overwhelming complexity and the corresponding set of interlocking effects can only be understood and therefore managed when all complexes are looked at from an external perspective. It has been argued that the global governance regime for sustainable development may provide just such perspective, as it is premised on a core number of globally-shared public policy goals specified through a series of indicators that can be used to track progress towards those goals.

We have sought to identify strong, widely shared normative foundations on which the global governance regime for sustainable development can be sustained. The suggestion is that fundamental

⁵⁶² Bunce, Brown, and Rosendo (n 430) 485.

⁵⁶³ Craig (n 306).

rights have the normative clout to play that role, and within them, the right to food is particularly apposite to ensure the necessary coordination among all the relevant regime complexes. The contours, potential and limitation of this fundamental right to exert a pull and push factor on key public and private players has been assessed, and the conclusion is that the right can increase the accountability of both sets of actors for violations of the right and steer them towards full respect of the right, which includes respecting, protecting, and fulfilling the right to food and therefore food security. This is particularly promising in relation to extraterritorial effects of states' and TNCs' actions, where more doubts about the justiciability of the right seem to remain.

Based on our above analysis and conclusions, we recommend that international organisations:

- Work to develop, effectively implement at a national level, and monitor the compact indicator framework for SDGs,⁵⁶⁴ with a particular attention to the impact on the right to food of national policies on, inter alia, climate, food, energy, and trade.
- Work to improve the degree of coordination among the relevant international legal frameworks and regime complexes so as to identify and mitigate negative impacts on food security (eg, climate change adaptation measures may be tested and strengthened by closely evaluating their impact on food stability).
- Systematically require the integration of the right to food in states (eg, during the approval process of market-based projects within the UNFCCC).
- Mainstream the right to food in all existing mechanisms for financial transfers and transfers of technology across the relevant regimes (eg, the CDM, REDD+, the Green Climate Fund, the Adaptation Fund and various other climate-related funds).
- Use the Universal Periodic Review and reports to specific treaty bodies to systematically assess and highlight the links between climate change, energy, trade and human rights.

As a general matter, we recommend that states:

- Put in place at a domestic level the necessary framework to monitor progress towards the SDGs, select the adequate indicators and consider the right to food as a key cross-cutting issue and assign sufficient resources to the task.

With regard to food law and policy, we recommend that states:

- Seek innovative ways to promote the organisation of small food producers to deal with the challenges arising from the concentration of the agrifood market (buyer-driven supply chains, power in setting standards and codes of conduct, etc).
- Seek innovative ways to promote investment in smallholder agriculture, including by facilitating access to financial markets (eg, by adopting laws to that end).
- Seek ways to promote sustainable agriculture and social movements supporting it.

⁵⁶⁴ Sustainable Development Solutions Network, 'Indicators and a Monitoring Framework for the Sustainable Development Goals: Launching a Data Revolution' (2015) <https://sustainabledevelopment.un.org/content/documents/2013150612-FINAL-SDSN-Indicator-Report1.pdf>.

- Reform agricultural policies (in middle-income and high-income countries) to eliminate market distorting subsidies to production and exports of agricultural produce.
- Remove subsidies to bioenergy that have negative impacts on food security.
- Use competition policy to prevent negative effects of buyers-driven agrifood markets.
- Increasing accountability of global food processors and retailers through (eg, codes of conduct, and possible legal instruments).
- Continue monitoring the negative impacts of the financialisation of agricultural markets on food security and take measures, including legislative measures, if necessary, to avoid negative side effects on the environment and human rights.
- Require financial institutions to report on the material environmental, economic and social impacts of their investments (socially responsible investment), if need be through legal instruments.
- Improve access to information, participation and justice related to the enforcement of the right to food and remove existing (legal and practical) barriers.
- Assist NGOs that exert oversight over TNCs' practices, as well as those fostering access to information, public participation and justice.

With regard to climate change law and policy, we recommend that states:

- Fully integrate interactions between climate change and food security in National Communications to the UNFCCC.
- Make progress towards the elimination of market distorting subsidies to energy that aggravate climate change and food insecurity.
- Apply in a systematic manner Strategic and Environmental Impact Assessments to plans and projects which may have a negative impact on food security and the right to food.

Chapter 3: Technology transfer

3.1 Introduction

Since the adoption of the UNFCCC in 1992, technology transfer has been a central pillar of the international legal architecture established to address climate change. The development and application of technologies is essential both to reducing the GHG emissions produced by human activities and to adapting to the varied effects of a changing climate. ‘Technology’ is, of course, a broad and potentially elastic term. The rationale behind ‘technology transfer’, however, is straightforward. It is the recognition that sustainable economic development and in a context of climate constraints involves rapid and widespread access to efficient and environmentally sound technologies, especially for those countries most vulnerable to climate change. This chapter will make the case that, in the context of climate change, access to technology is a human rights matter. This is so for two reasons. First, because climate change can inflict – indeed, is inflicting – severe harms on individuals in much of the world, many of which may be mitigated by technological means. Second, because sustained development in a climate-constrained world – the type of development necessary to raise basic human rights standards everywhere – is unthinkable without widespread diffusion of the technologies that take us beyond fossil fuels and deforestation. Bearing this in mind, this chapter examines the degree to which the international legal architecture is broadly supportive and facilitative of technological transfer and makes suggestions for improvement.

The transfer of technologies from more developed countries with greater historical responsibility for causing climate change and with better capacity to deal with its impacts to less developed countries has been reiterated in successive climate agreements as an indispensable element of a just climate regime. This is because, absent technology transfer, poorer countries will not be able to meet their population’s developmental needs given the twin burgeoning imperatives of adapting to the ravages of climate change, on the one hand, and avoiding exacerbating them, on the other. Since the countries most affected by climate change, and most in need of technological responses, are not, for the most part, themselves net contributors to climate change, it has long been acknowledged that wealthier countries must contribute to this process of adaptation, by facilitating, financing and promoting the transfer of technologies to poorer countries.

An elaborate institutional structure for coordinating and governing technology transfer has been developed under the UNFCCC and now centres on a Technology Mechanism which itself consists of a Technology Executive Committee (TEC) and a Climate Technology Centre and Network (CTCN). These bodies engage in policy analysis, research and information exchange. They are primarily promotional and facilitative in nature, with neither the capacity nor the authority to ‘implement’ the technology provisions of the UNFCCC. They have focused on identifying needs in developing countries, reducing barriers to market access and creating an ‘enabling environment’. Important though this work has been, relatively few measures have addressed the technology proprietors, investors and developers in developed countries – whether public or private – who are in fact best placed to make technology transfer a reality and whom the UNFCCC tasked to do so.

As a result, technology transfer has been limited and slow in practice despite its centrality to the international climate change and has remained contentious. In its assessment of the framework of international law relating to climate change adaptation, the IBA Task Force report identified significant constraints on technology transfer, including the apparent absence of a concrete framework to facilitate transfer while remaining attentive to each of the various bodies of relevant international law (environment, trade, investment and human rights). The Task Force report recommended that the Working Group explore and propose legal and policy recommendations regarding access to adaptation technologies, particularly with respect to how international trade and investment regimes may be brought into consonance with environmental and human rights imperatives to achieve technology transfer and how the international legal community can promote and facilitate cooperation among various stakeholders.

Much of the existing literature on technology transfer has focused on the role of IP. This is unsurprising given that the imperative to ‘transfer’ technology has historically been articulated precisely to challenge the imposition of high IP costs on poorer countries in need of specific (for example, life-saving) technologies. This challenge has, in turn, typically been countered with the argument that IP protections spur rather than impede technological development, transfer and diffusion: a position articulated in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). In practice, whether IP protections enhance or hinder the dissemination of key technologies is best answered on a case-by-case basis. Moreover, it has never been clear how relevant this debate is to the specific technologies at issue in addressing climate change. In this chapter, we have chosen to set the question of IP protection aside, while acknowledging its importance. We have done so largely because the literature on this matter is already vast, the positions are well-rehearsed and frequently polarised and also because the IP debate has tended to obscure other important questions regarding technology transfer of relevance to the current report, such as the human rights consequences of achieving (or failing to achieve) it. By refocusing on basic human rights and developmental needs, and on legal obstacles to successful transfer other than IP, we hope to resituate the technology debate in a way that avoids the worn controversies of the past.

There are two main elements of the international legal architecture that may constrain or limit the potentially central role of technology transfer in mitigating and adapting to anthropogenic climate change. These elements are the structuring of international finance and the role of IIL.

A key difficulty in implementing technology transfer has been the limited availability of financial resources. Initially, the primary focus in relation to finance for transfer was on mobilising public funds through the establishment of specific funding bodies or through mobilising multilateral institution finance. In the years following the adoption of the UNFCCC, however, developed countries created only very modest funds to support technology transfer. In more recent years there has been an increasing focus on mobilising private finance for adaptation and mitigation, implicitly including technology transfer. This has been largely due to the limited availability of public funds.

This chapter identifies and evaluates mechanisms for funding technology transfer, including under the UNFCCC and through other multilateral sources, bilateral public finance, and, in particular, private finance. It also considers possibilities for incentivising and removing obstacles to technology transfer financing. In light of the increasing acceptance that private finance has an important role to play in facilitating the transfer of technology for adaptation, special attention is paid to possible

legal interventions to support private financing such as green bonds, sustainable stock exchanges and adaptation tax credits. One issue which emerges is that, while a number of international institutions, national governments and regulators are starting to pursue these initiatives, for the most part they are doing so without direct reference to the UNFCCC process. This results in a problematic lack of alignment with internationally-agreed aims regarding climate change responses as laid down through the UNFCCC process, including the need for technology transfer. Going forward, international institutions, national legislators, regulators and other standard-setting bodies should consider the requirements and principles of technology transfer in designing these interventions.

A further step that would promote the consideration of technology transfer in interventions into the financial system is the inclusion of some form of technology transfer as a criterion in accounting for developed countries contributions to the US\$100bn mobilisation commitment established in Cancun. This would serve as an important incentive for developed countries to pursue technology transfer in their efforts to mobilise private finance to address climate change and ensure that the principles established under the UNFCCC are considered. To accomplish this, however, it will be necessary to develop appropriate methodologies for accounting for climate finance. To this end, a review of proposed methodologies for accounting for climate finance, including adaptation finance, follows.

The second element affecting technology transfer is IIL. This chapter will explore how IIL operates to facilitate or obstruct investment flows for climate finance and technology transfer. While the idea that private investment has a key role to play in addressing climate change is a relatively common one, there has traditionally been less scrutiny of whether the international investment regime operates so as to help or hinder this goal. This is beginning to change, with a growing body of emerging literature that identifies the need to reform IIL if climate change concerns are to be prioritised. Within the IIL regime, prohibitions on performance requirements and investor-state dispute settlements (ISDS) emerge as troubling legal obstacles to technology transfer through FDI. As such, various possibilities for reforming IIL are considered as a means to insure that the IIL regime does not unduly impede technology transfer.

After a close analysis of climate financing and IIL, this chapter reviews one adaptive technology – desalination – as a case study to illustrate the intersection between human rights, climate adaptation and technology transfer. As a complement to this chapter, this case study underlines the importance of improving implementation of technology transfer, particularly through enhanced funding as discussed in the rest of the chapter.

3.2 Technology transfer overview

Following the adoption of the UNFCCC in 1992, all subsequent major international climate agreements have reaffirmed the importance of technology and its transfer as a key factor in assisting states to mitigate emissions and adapt to the impacts of climate change.⁵⁶⁵ As an example, Article 4(1) (c) of the UNFCCC states that:

⁵⁶⁵ UNFCCC (n 414), Arts 4(1) (c), 4(3), 4(5), and 4(7); Kyoto Protocol to the UNFCCC (10 December 1997) 2303 UNTS 148, 10(1) (c); UNFCCC, Copenhagen Accord (30 March 2010) UN Doc FCCC/CP/2009/11/Add 1, Decision 2/CP 15 ('Copenhagen Accord') [11]; Cancun Agreements (n 54) [113]–[127]; Paris Agreement (n 3) 10.

‘[a]ll Parties ... shall: (c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases ...’⁵⁶⁶

Further, Article 4.5 provides more obligatory language and requires that:

‘[t]he developed country Parties . . . shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention ...’⁵⁶⁷

This general requirement set out in the UNFCCC has remained a consistent theme throughout subsequent agreements. In 2001, COP 7 adopted the Marrakesh Accords, establishing a formal technology transfer framework to enhance the implementation of UNFCCC articles 4 and 5.⁵⁶⁸ In 2007, COP 13 adopted the Bali Action Plan, which mandated an ad hoc body to focus on key elements of long-term cooperation, including technology transfer.⁵⁶⁹ At COP 16 in 2010, as part of the Cancun Adaptation Platforms, the parties took a significant step forward in formalising the technology transfer process by establishing what is known as the Technology Mechanism, comprised of two bodies called the TEC and the CTCN, which became operational in 2012.⁵⁷⁰

In the most recent agreement reached in Paris 2015, the entirety of Article 10 is dedicated to the issue of technology transfer.⁵⁷¹ In particular, Article 10(1) notes that:

‘Parties share a long-term vision on the importance of fully realising technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions’.⁵⁷²

Article 10 of the Paris Agreement further notes the ‘importance of technology for the implementation of mitigation and adaptation actions’ and states that:

‘[s]upport, including financial support, shall be provided to developing country Parties for the implementation of [technology transfer], including for strengthening cooperative action on technology development and transfer at different stages of the technology cycle, with a view to achieving a balance between support for mitigation and adaptation’.⁵⁷³

It is clear that the provision of finance for technology transfer focused on both mitigation and adaptation remains a central component of the international climate framework.

566 UNFCCC (n 414), Art 4(1)(c).

567 *Ibid* Art 4.5,

568 UNFCCC, Development and Transfer of Technologies (21 January 2002) UN Doc FCCC/CP/2001/13/Add 1, Decision 4/CP. 7 (‘Marrakesh Accords’)..

569 UNFCCC, Bali Action Plan (14 March 2008) UN Doc FCCC/CP/2007/6/Add 1, Decision 1/CP 13 (‘Bali Action Plan’) 1(d).

570 Cancun Agreements (n 35), [113-127].

571 Paris Agreement (n 4) 10.

572 *Ibid*.

573 *Ibid*.

3.2.1 Defining technology transfer

Despite its centrality to the international climate change regime, perhaps surprisingly, there has been no formally adopted definition of the concept of technology transfer. In a 2002 report, the IPCC provided one widely accepted definition of ‘technology transfer’ as:

‘a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs [non-governmental organisations] and research/education institutions’.⁵⁷⁴

As this definition highlights, technology transfer is commonly seen to require more than the simple provision of IP for new technological innovations but, in addition, requires the capacity and materials to implement the technology.

In relation to adaptation in particular, in some literature it has become common practice to distinguish between three categories of technologies for adaptation: hardware, software and ‘orgware’.⁵⁷⁵ In general, hardware refers to equipment, material goods and other capital, including things such as drought-resistant seeds and the components of irrigation systems. Software refers to the capacity and processes involved in the use of the technology. It includes knowledge, skills, awareness-raising, education and training. Orgware relates to the ownership, institutional and legal arrangements required to effectively operationalise the technology.⁵⁷⁶ Although all three types of technology are necessary, there is often a concern that hardware is applied in isolation, as its perceived impact is frequently prioritised over software and orgware.

The wording contained in Article 4(5) of the UNFCCC also suggests that the technologies that are to be transferred should be ‘environmentally sound technologies’.⁵⁷⁷ While this language has been picked up by a number of the different institutions established to effect technology transfer, there has been little attempt to provide a definition of exactly what ‘environmental soundness’ might require.⁵⁷⁸ Some commentators have suggested that the concept should be interpreted comparatively, by comparing the environmental impacts and practical applications of one existing technology with those of potential competitors.⁵⁷⁹

574 IPCC, *Methodological and Technological Issues in Technology Transfer* (Cambridge University Press 2000) 3.

575 UNFCCC Technology Executive Committee, ‘Technologies for Adaptation in the Agriculture Sector’ (2014) http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_column_L/544babb207e344b88bdd9fec11e6337f/bcc4dc66c35340a08fce34f057e0a1ed.pdf; UNFCCC Technology Executive Committee, ‘Technologies for Adaptation in the Water Sector’ (2014) http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_column_L/0cac6640a3b945c08e7a54f8e496223e/55e192e14cd6495f975f4098843baf7e.pdf.

576 Lars Christiansen, Anne Olhoff, and Sara Trærup (eds), ‘Technologies for Adaptation: Perspectives and Practical Experiences’ (UNEP Risø Centre 2011) x.; HC de Coninck, F Haake, and NH van der Linden, ‘Technology Transfer in the Clean Development Mechanism’ (2007) 7 *Climate Policy* 444, 445.

577 Environmentally sound technology is also described in Ch 34 of Agenda 21, *Transfer of Environmentally Sound Technology, Cooperation and Capacity-Building*. UNEP ‘Transfer of Environmentally Sound Technology, Cooperation and Capacity Building’ www.unep.org/documents.multilingual/default.asp?DocumentID=52&ArticleID=84&l=en.

578 Global Environment Facility, ‘Transfer of Environmentally Sound Technologies: Case Studies from the GEF Climate Change Portfolio’ (2012) www.thegef.org/sites/default/files/publications/GEF-TechTransfer-lowres_final_2.pdf.

579 International Council on Human Rights Policy, ‘Beyond Technology Transfer: Protecting Human Rights in a Climate-Constrained World’ (2011) www.ichrp.org/files/reports/65/138_ichrp_climate_tech_transfer_report.pdf 38.

3.2.2 Governing technology transfer

The international governance of technology transfer is complex, diffused, and fragmented.⁵⁸⁰ Alongside the formal process set up under the UNFCCC to support multilateral governance of technology transfer, there are a variety of different actors involved, including other UN bodies and multilateral institutions, regional initiatives, national and sub-national bodies and, of course, the ultimate users and beneficiaries of the technology themselves. Given the close links between adaptation and more general development goals noted above, the situation is particularly complex where technology transfer and adaptation goals overlap very closely with national adaptation goals.

The path towards the technology transfer framework becoming operational under the UNFCCC has been a slow and complex process. Initially, the UNFCCC invited developing countries to prepare and submit reports detailing their priorities in relation to technology needs for both mitigation and adaptation.⁵⁸¹ These reports, known as Technology Needs Assessments (TNAs) were intended to provide a basis for ensuring that technology would be deployed where it would be most effective and also to establish a localised and participatory approach to technology transfer.⁵⁸² The initial emphasis in pursuing technology transfer through the TNAs was on facilitating cooperation and opening lines of communication between relevant governmental and non-governmental stakeholders so that they could share information, create better enabling environments and build technological capacity.⁵⁸³

Until 2007, formal technology transfer activity under the UNFCCC framework was primarily limited to the preparation and development of TNAs, the funding and support for which was initially provided by the Global Environment Facility (GEF). With limited success in securing funding from member states for this process, the 2007 COP in Bali requested that the GEF ‘develop a strategic programme to scale up the level of investment for technology transfer’.⁵⁸⁴ The following year, the COP in Poznan adopted the subsequent GEF proposal entitled the Poznan Strategic Program on Technology Transfer.⁵⁸⁵

Under the Poznan Strategic Program on Technology Transfer, the GEF initially focused on supporting a number of pilot projects to transfer technologies to recipient countries based on the priorities set out in specific TNAs. They also supported a new round of TNAs and started to develop materials on best practices for technology transfer.⁵⁸⁶ In 2010, the GEF expanded these initial activities to include the establishment of four technology centres housed within regional development banks⁵⁸⁷ and the establishment of a number of public-private partnerships adopting elements of climate technology transfer.⁵⁸⁸

580 Stephen Humphreys, ‘Structural Ambiguity: Technology Transfer in Three Regimes’ in MA Young (ed), *Regime Interaction in International Law: Facing Fragmentation* (Cambridge University Press 2012) 175; Jeffrey McGee and Joseph Wenta, ‘Technology Transfer Institutions in Global Climate Governance: The Tension Between Equity Principles and Market Allocation’ (2014) 23 *Review of European Community & International Environmental Law* 367, 375-76.

581 See further, Sam Barnard and Smita Nakhooda, ‘Financing Technology Transfer: Lessons from Efforts under the UNFCCC’ (Overseas Development Institute 2015) 3 www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/10053.pdf.

582 Marrakesh Accords (n 568), Annex, s C, [2].

583 McGee and Wenta (n 580) 375-376.

584 UNFCCC, Development and Transfer of Technologies under the Subsidiary Body for Implementation (14 March 2008) UN Doc FCCC/CP/2007/6/Add 1, Decision 4/CP 13.

585 UNFCCC, Development and Transfer of Technologies (18 March 2009) FCCC/CP/2008/7/Add 1, Decision 2/CP.14.

586 Barnard and Nakhooda (n 581) 3.

587 Asian Development Bank, African Development Bank, European Bank of Reconstruction and Development, and Inter-American Development Bank.

588 Barnard and Nakhooda (n 581) 3.

In 2010, the COP in Cancun took a further step in developing the governance framework for technology transfer by establishing the Technology Mechanism as a new core pillar of the UNFCCC's activities.⁵⁸⁹ Comprised of the policy-focused TEC⁵⁹⁰ and the implementation-focused CTCN,⁵⁹¹ the Technology Mechanism became fully operational in 2012. It is now the primary means through which the UNFCCC develops its commitment to technology transfer and puts it into operation.

The TEC addresses policy issues related to climate technology development and transfer and makes recommendations to countries and to other UN bodies to support technology transfer efforts.⁵⁹² In a complementary manner, the CTCN provides technical assistance to countries developing their TNAs, facilitates access to information on climate technologies and supports capacity building to identify and implement appropriate technology in developing countries.⁵⁹³ The approach now taken by both the TEC and CTCN towards the governance of technology transfer, particularly for adaptation, places a strong emphasis on the importance of 'community-based adaptation'. This approach aims to 'integrate consideration of local-level knowledge, barriers and enablers into the adaptation process through the identification of local knowledge, including technological innovations, and improvement and replication to ensure contextual suitability and local acceptance'.⁵⁹⁴ In this respect, there is an explicit emphasis on ensuring collaboration and coordination between governments, local actors and businesses, NGOs and informal local leaders.⁵⁹⁵

In carrying out their functions to support technology transfer, the TEC and CTCN necessarily also work closely with a range of other UN bodies. In the context of providing finance for adaptation-based technology transfer, the most relevant bodies established under the UNFCCC's Financial Mechanism are the GEF and the Green Climate Fund⁵⁹⁶ as well as the bodies established under the UNFCCC framework for adaptation. The TEC and CTCN also work closely with bodies established to address adaptation to climate change, including: the Adaptation Fund,⁵⁹⁷ the Adaptation Private Sector Initiative;⁵⁹⁸ the Adaptation Committee,⁵⁹⁹ which supports countries' development of National Adaptation Plans;⁶⁰⁰ and the Least Developed Country Work Programme,⁶⁰¹ which supports the development of NAPAs.⁶⁰²

Outside of the UNFCCC process, the administrative support and financing for technology transfer for adaptation is provided through several further channels, including:

589 Cancun Agreements (n 54), [113–127].

590 UNFCCC, Technology Executive Committee (TEC)', http://unfccc.int/ttclear/pages/tec_home.html.

591 Climate Technology Centre & Network, www.ctc-n.org.

592 Cancun Agreements (n 54), [113–127].

593 Cancun Agreements (n 54).

594 UNFCCC Technology Executive Committee (n 575).

595 *Ibid*

596 The Green Climate Fund (n 414).

597 The Adaptation Fund (AF) was established under the Kyoto Protocol of the UNFCCC. The AF is financed in part by government and private donors, as well as from a 2% share of proceeds of Certified Emission Reductions (CERs) issued under the Kyoto Protocol's CDM projects. See Adaptation Fund, 'Adaptation Fund' (2019) www.adaptation-fund.org.

598 The UNFCCC Nairobi work programme Private Sector Initiative (PSI) aims to catalyse private sector engagement in climate change adaptation efforts and provides a platform for the private sector to showcase and exchange best practices and experiences. See UNFCCC, Adaptation Private Sector Initiative (PSI) (2020) https://unfccc.int/adaptation/workstreams/nairobi_work_programme/items/4623.php.

599 UNFCCC, Adaptation Committee (2020) http://unfccc.int/adaptation/groups_committees/adaptation_committee/items/6053.php.

600 UNFCCC, 'National Adaptation Plans' (2020) http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/6057.php.

601 UNFCCC, 'Chronological Evolution of the LDC Work Programme and Introduction to the Concept of NAPA' (2020) http://unfccc.int/adaptation/knowledge_resources/ldc_portal/items/4722.php.

602 UNFCCC, 'National Adaptation Programmes of Action—Matters Relating to the Least Developed Countries' (2020) http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/7567.php.

In the context of technology transfer, it has widely been noted that the types of technology and projects necessary to pursue mitigation objectives are much easier to identify than those for adaptation.⁶⁰⁹ In this respect, assessing technology or a particular initiative for its mitigation benefits is relatively straightforward. Mitigation will have occurred where there is a net avoidance or reduction of GHG emissions. Technology for mitigation therefore tends to target specific and clearly definable emitting sectors, such as power generation, transport and land use. While a certain level of complexity arises in determining and applying accounting standards to assess what can and cannot be counted as avoided emissions, the overall aim is quite clear.

For technologies and projects targeted at adaptation, the situation is not as straightforward. This is due both to the future-oriented and unpredictable nature of the impacts of climate change as well as the varied and context-specific nature of the actions necessary to address them. Within the UNFCCC, and the Technology Mechanism more specifically, the analysis of adaptation activities is now generally focused around two central concepts: vulnerability; and adaptive capacity or resilience.⁶¹⁰ In general, vulnerability refers to the propensity or predisposition of a system to be adversely affected by particular impacts.⁶¹¹ Adaptive capacity, now more frequently referred to as resilience, refers to the ‘capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance’ and, where possible, to respond positively to them, ‘reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation.’⁶¹²

Vulnerability and resilience are, by their very nature, context specific and difficult to quantify. As a consequence, in more recent years, adaptation responses have focused on localised adaptation needs (particularly through the NAPA and TNA processes) that consider the relationship between vulnerability within communities, existing resilience and capacity building needs.⁶¹³ Generally, such responses are also further categorised into proactive and reactive approaches.⁶¹⁴ In general, pre-emptive, anticipatory strategies are preferred as they attempt to anticipate future impacts rather than simply responding to them.⁶¹⁵ What this means in practice is that measures taken to address adaptation frequently overlap with or restate more general development goals. In this respect, increasing economic and social development has itself been identified as a key element in improving resilience to the effects of climate change for particular communities.⁶¹⁶

This overlap between adaptation and more general development goals means that adaptation considerations are increasingly being integrated into mainstream national and international development agendas. While this integration has provided much greater institutional and financial support for adaptation initiatives, it has also made it difficult to assess clearly and account for ‘new

609 See for example n 381; International Council on Human Rights Policy (2011) (n 579) 9.

610 Kate Miles, ‘Investing in Adaptation: Mobilising Private Finance for Adaptation in Developing States’ (2011) 2 *Carbon & Climate Law Review* 190.

611 IPCC (2014) (n 36) 5.

612 *Ibid* 5.

613 Miles (n 610).

614 Anthony Giddens, *The Politics of Climate Change* (Polity Press 2009) 165.

615 Miles (n 610).

616 Global Environment Facility, *Linking Adaptation to Development* (2006) 2 www.thegef.org/sites/default/files/publications/Adaptation_brochure_3.pdf.

and additional' efforts and funding that are targeted specifically at climate change adaptation.⁶¹⁷ This lack of definitional clarity around what counts as adaptation, as opposed to more general development, creates significant difficulties in measuring and assessing both public and private actions to support technology transfer for adaptation.

One further issue that is specific to adaptation projects is the comparative difficulty such projects face in attracting private finance, particularly in the countries that are most in need. In this respect, it has been identified that unlike for mitigation activities, there may be significantly less incentive for the private sector⁶¹⁸ – with technologies in the water and agriculture sectors being notable exceptions given their relatively large capacity for direct commercial applications. This issue is further exacerbated by the private sector's reluctance to invest in public goods that are most crucial to vulnerable populations, particularly in SIDSs and LDCs. International private finance investments in LDCs and SIDSs have risen over the past decade, but they remain significantly lower than such investment flows to more developed countries.⁶¹⁹

3.2.4 Determining 'needs' for technology transfer

A significant focus of the Technology Mechanism has been determining 'needs' for technology transfer. While there is significant variation in the scope and quality of the TNAs that have been submitted by developing countries, a synthesis report prepared for the UNFCCC by the Subsidiary Body for Scientific and Technological Advice provides a useful overview of the general trends.⁶²⁰

According to the synthesis report, the majority of the countries that submitted TNAs in the relevant time period (31 in total) stated that they adopted a stakeholder consultation process in preparing the TNA. The majority of the countries stated that their national development priorities were the starting point for the TNA process and served as a basis for prioritising sectors and technologies. The synthesis report found that for adaptation, the agriculture and water sectors were the most prioritised by the countries and the majority of the technologies prioritised for the agriculture sector were related to crop management. Overall, biotechnologies, including technologies related to crop improvement and new, resilient crop variety development were the most prioritised technologies.⁶²¹

Along with providing a summary of the sectors and technologies prioritised by countries, the synthesis report also provides an overview of the barriers and enablers to the development and transfer of the relevant adaptation technologies identified by countries. In this respect, the most commonly identified barriers were the lack of access to financial resources and an insufficient legal and regulatory framework. Inversely, the most commonly identified enablers were measures to increase the financial resources available for the technology by introducing or increasing the allocation for

617 Adaptation Watch, 'Toward Mutual Accountability: 2015 Adaptation Finance Transparency Gap Report' (2015) 14 www.adaptationwatch.org/s/AW_Report_24-11-15-53nq.pdf.

618 WP Pauw et al, 'Private Finance for Adaptation: Do Private Realities Meet Public Ambitions' (2016) 134 *Climatic Change* 489; Aaron Atteridge, 'Private Sector Finance and Climate Change Adaptation: How Can Voluntary Private Finance Support Adaptation in Developing Countries?' (Stockholm Environment Institute 2010) www.sei-international.org/mediamanager/documents/Publications/Climate-mitigation-adaptation/Atteridge-Private-sector-finance-PBupdate-101118-web.pdf.

619 *Ibid* Pauw et al (2016); Atteridge (2010).

620 UNFCCC, 'Third Synthesis Report on Technology Needs Identified by Parties Not Included in Annex I to the Convention' (21 October 2013) UN Doc FCCC/SBSTA/2013/INF 7.

621 *Ibid*.

the technology in the national budget, or by identifying and creating financial schemes, funds, mechanisms, or policies.

3.3 Financing technology transfer

Finance for climate mitigation and adaptation now comes in several forms from a wide variety of sources. The type of financial assistance itself can come in the form of grants, concessional loans, guarantees, non-concessional loans, equity, insurance, venture capital, or any combination of these. Funds flow through the UNFCCC Financing Mechanism and increasingly through bilateral, regional and national sources. As previously noted, in more recent years, there has also been a significant increase in emphasis on mobilising private financial flows.

For the financing of technology transfer more specifically, the primary initial focus was on mobilising public funds through the establishment of specific funding bodies or through modifying finance provided by existing multilateral institutions. While these public funding sources continue to be viewed as critical, particularly for technologies targeted at adaptation, there is similarly a growing understanding that private finance will be necessary to deliver on the commitments established under the UNFCCC.⁶²²

3.3.1 Technology transfer and the UNFCCC Financial Mechanism

From its inception, the UNFCCC recognised that due to the variation in countries' contributions to causing climate change and their varied capacity to adapt to its effects, a mechanism would need to be established to facilitate the provision of financial assistance from developed countries to developing countries. To facilitate this, the UNFCCC established a Financial Mechanism under which developed country parties would provide funds to assist developing country parties to implement the Convention and to mitigate and adapt to the effects of climate change. Under Article 11 of the UNFCCC, the operation of the Financial Mechanism is partly entrusted to the GEF and, following COP 17, partly to the Green Climate Fund. The Financial Mechanism is accountable to the COP, which determines the climate change policies, programme priorities and eligibility criteria for funding.

Following the adoption of the UNFCCC, the parties have established four further special funds: (1) the Special Climate Change Fund managed by the GEF; (2) the Least Developed Countries Fund managed by the GEF; (3) the Green Climate Fund; and (4) the Adaptation Fund under the Kyoto Protocol. At COP 16, the parties further decided to establish a body to assist the COP in exercising its functions in relation to the Financial Mechanism of the Convention. This is known as the Standing Committee on Finance (SCF) and is tasked with improving coherence and coordination in the delivery of climate change financing, with rationalising the Financial Mechanism, with mobilising financial resources and measurement, and with reporting and verification of support provided to developing country parties.⁶²³

622 World Resources Institute, 'Climate Finance' www.wri.org/our-work/project/climate-finance/climate-finance-and-private-sector.

623 UNFCCC, 'Standing Committee on Finance' http://unfccc.int/cooperation_and_support/financial_mechanism/standing_committee/items/6877.php.

Under the formal UNFCCC process, the majority of finance for the operationalisation of technology transfer has been carried out through the Financial Mechanism and the various funding bodies established under it. Initially, the majority of funding has been provided through the GEF, which in turn is funded through support by developed countries.⁶²⁴ In 2006–2010, 31 developed countries pledged just over US\$1bn to the climate change programmes of the GEF, the majority of which was disbursed to a variety of mitigation and adaptation projects.⁶²⁵ In 2011–2014, donor countries pledged a further US\$1.3bn and for the period between 2015 and 2018 a further US\$1.1bn has been pledged.⁶²⁶

While these sums may sound significant, they fall well short of the estimated amounts required to assist developing countries with their mitigation and adaptation efforts. A 2009 review of UNFCCC estimates by the IPCC concluded that total funding needed for adaptation alone by 2030 could amount to US\$49–171bn per year globally,⁶²⁷ and a recent report by the World Economic Forum has concluded that by 2020, approximately US\$5.7tn will need to be invested annually in green infrastructure, much of it in developing countries.⁶²⁸ These sums also fall short of the ‘new and additional’ financial resources ‘approaching USD 30 billion’ promised to be provided by developed to developing countries between 2010 and 2012 and the further promise made in Cancun to mobilise US\$100bn per year by 2020.⁶²⁹ The failure of developed countries to meet this target can in part be attributed to the global financial crisis.⁶³⁰ Regardless of the cause, however, it has meant that, along with the other bodies established under the UNFCCC, the GEF has struggled to receive adequate resources and the roll out of technology transfer projects has been severely hampered.

In recognition of the difficulty in raising public finances from developed countries, the parties at COP 17 established a working group on long-term finance to develop a financing strategy for the period 2014–2020. Adopted at COP 19, the report of the long-term finance working group requires developed country parties to provide biennial submissions on their updated approaches and strategies for scaling up climate finance, to engage in continued deliberations on long-term finance through in-session workshops, and to conduct biennial high-level ministerial dialogues.⁶³¹ Recognising the modest levels of funding that the UNFCCC funding bodies have received to date, this process has also shifted its emphasis towards the role of the private sector in providing finance for technology transfer and adaptation more broadly.⁶³² In response to this shift, developed country parties at the 2010 COP in Cancun committed to a goal ‘of mobilising jointly USD 100 billion per year by 2020 to address the needs of developing countries [...] from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources.’⁶³³ This commitment makes it clear that it

624 Barnard and Nakhooda (n 581) 3.

625 Smita Nakhooda, Charlene Watson, and Liane Schalatek, ‘The Global Climate Finance Architecture’ (in Climate Finance Fundamentals Climate Funds Update 2015) 2 www.gendercc.net/fileadmin/inhalte/dokumente/6_UNFCCC/Topics/Finance/Climate_funds_updates_fundamentals.pdf.

626 *Ibid* 2.

627 IPCC (2014) (n 36) 959-960.

628 World Economic Forum, ‘The Green Investment Report: The Ways and Means to Unlock Private Finance for Green Growth’ (2013) www.weforum.org/docs/WEF_GreenInvestment_Report_2013.pdf.

629 Copenhagen Accord (n 565) [8].

630 Adaptation Watch (n 617) 14.

631 UNFCCC, ‘Background Information: Long-Term Finance’ (2020) http://unfccc.int/cooperation_support/financial_mechanism/long-term_finance/items/7405.php.

632 See Adis Dzebo and Johannes Stripple, ‘Transnational Adaptation Governance: An Emerging Fourth Era of Adaptation’ (2015) 35 *Global Environmental Change* 423.

633 Cancun Agreements (n 35).

is now recognised throughout the UNFCCC process that finance for climate change mitigation and adaptation, including for technology transfer, is expected to come from a range of different entities, including bilateral, regional, multilateral,⁶³⁴ private and philanthropic sources.

3.3.2 Climate finance under the Green Climate Fund

At COP 16, the parties established a new entity to carry out the work of the Financial Mechanism, the Green Climate Fund.⁶³⁵ The stated aim of the Green Climate Fund is to reduce GHG emissions in developing countries and to help vulnerable societies adapt to the unavoidable impacts of climate change by providing resources for capacity building as well as technology development and transfer.⁶³⁶ The Green Climate Fund is accountable to the COP and is guided by the provisions and principles of the UNFCCC. It has a permanent independent secretariat based in Songdo in South Korea and is governed by a board of 24 members, comprising an equal number of members from developing and developed countries. It aims to deliver equal amounts of funding to mitigation and adaptation.⁶³⁷

When it was established, the intention was that the Green Climate Fund would supplant the GEF and become the primary mechanism for disbursing climate finance under the UNFCCC. Some negotiators and commentators, particularly from developing countries, were under the impression that the Green Climate Fund would be responsible for distributing the full US\$100bn per year pledged in Copenhagen.⁶³⁸ This has not so far proved to be the case. The initial resource mobilisation effort that began in June 2014 raised US\$10.2bn from 37 contributing countries. In 2015, just US\$5.8bn of pledged finance was formalised through contribution agreements.⁶³⁹

In the lead-up up to the COP in Paris in December 2015, the Green Climate Fund announced its first round of project funding, allocating US\$168m to a range of different projects targeted at both mitigation and adaptation in developing countries. Yet, commentators raised concerns that funding was being pushed through for political reasons before clear approval criteria had been developed, throwing the integrity of the process into question.⁶⁴⁰ In particular, concerns have been raised about the role of the private sector in the process as well as the extent to which human rights impacts were considered, local populations were consulted and definitions or standards for adaptation projects were defined.⁶⁴¹

These issues will continue to be of relevance to the success and efficacy of the Green Climate Fund. One particularly relevant position already taken by the Green Climate Fund in this regard, however, has been its establishment of a country-driven approach as a core principle of the fund.⁶⁴² Towards this end, the Green Climate Fund has supported the development of National Designated Authorities

634 UNFCCC, 'Multilateral and Bilateral Funding Sources' http://unfccc.int/cooperation_and_support/financial_mechanism/bilateral_and_multilateral_funding/items/2822.php.

635 Green Climate Fund (n 414).

636 Cancun Agreements (n 54).

637 Green Climate Fund, 'About the Fund', www.greenclimate.fund/who-we-are/about-the-fund.

638 Adaptation Watch (n 617) 17.

639 See Liane Schalatek, Smita Nakhooda, and Charlene Watson, 'The Green Climate Fund' (Climate Funds Update 2015) www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/10066.pdf.

640 Megan Darby, 'Green Climate Fund Approves First Eight Projects' (Climate Home 6 November 2015) www.climatechangenews.com/2015/11/06/green-climate-fund-approves-first-eight-projects.

641 *Ibid.*

642 See Green Climate Fund, 'Who Are NDAs' www.greenclimate.fund/ventures/readiness/#who-are-ndas.

(NDAs) in all developing countries to act as a focal point and main point of contact with the Green Climate Fund. Funding proposals are submitted through these NDAs with the aim of ensuring that investments are aligned with local needs and with existing climate change planning and broader development goals.⁶⁴³ While there is limited evidence that application of the funds so far has been tied directly to the NAPA process for adaptation or to the TNA process for technology transfer, this country-driven approach potentially provides a basis for doing so in the future.

3.3.3 *Climate finance from other multilateral sources*

Alongside the formal process set out under the UNFCCC, a range of other multilateral institutions and organisations provide funding for climate change mitigation and adaptation. In many instances these actors do not directly specify that technology transfer is a primary or even partial objective. However, as with technology transfer observed in relation to the CDM,⁶⁴⁴ to a certain extent, some level of technology transfer is an inevitable by-product of the majority of development and climate finance. The extent to which these initiatives and institutions engage with the Technology Mechanism to achieve technology transfer in line with the UNFCCC principles is increasing; however, such engagement remains under-reported, and only limited analysis of targeted or achieved technology transfer is publicly available.

While it is beyond the scope of this chapter to provide a detailed overview of all multilateral sources of climate finance, there are some general trends that are worth noting. Outside of the UNFCCC process, the significant majority of multilateral climate finance comes from the MDBs. A significant portion of this is channelled through the CIF.⁶⁴⁵ Established in 2008, the CIF is administered by the World Bank but operates in partnership with a range of other regional investment banks. The CIF operates a number of different sub-funds and programmes, including the Pilot Program for Climate Resilience, which specifically targets adaptation initiatives.⁶⁴⁶ While the CIF does not report directly about its contribution to technology transfer, it does acknowledge that one of its key goals is to ‘scale up financing for low-carbon and climate-resilient technologies’.⁶⁴⁷

Alongside the specifically targeted funding through the CIF and other climate-focused initiatives, many of the MDBs have also incorporated climate change considerations into their core lending programmes and operations.⁶⁴⁸ So far there has been little acknowledgement or accounting for technology transfer in these programmes, but there is significant scope for doing so. In addition, the MDBs, as well as a number of other UN agencies, now also frequently act as implementing agencies for the core UNFCCC investment mechanisms discussed above.

643 Schalatek, Nakhoda, and Watson (2015) (n 639) 3.

644 See Kasturi Das, ‘Technology Transfer Under the Clean Development Mechanism: An Empirical Study of 1000 CDM Projects’ (2011), (The Governance of Clean Development Working Paper 014) 2011 www.tyndall.ac.uk/sites/default/files/gcd_workingpaper014.pdf; Stephan Seres, ‘Analysis of Technology Transfer in CDM Projects’ (2008) <https://cdm.unfccc.int/Reference/Reports/TTreport/TTrep08.pdf>.

645 Climate Investment Funds, ‘Governance’ (n 604).

646 Climate Investment Funds, ‘Pilot Program for Climate Resilience’, www.climateinvestmentfunds.org/cif/node/4.

647 Climate Investment Funds, ‘Making Technology Transfer Happen on the Ground’, www.climateinvestmentfunds.org/cif/node/15529.

648 Nakhoda, Watson, and Schalatek (2015) (n 639) 2.

3.3.4 Bilateral public finance for technology transfer

Alongside funds mediated through multilateral sources, a large portion of public finance is provided bilaterally, most often administered directly by national government development and aid agencies.⁶⁴⁹ Problematically, there is limited transparency and consistency in reporting of much bilateral finance for climate change, with countries self-classifying and self-reporting climate finance without a common reporting format, or any independent verification.⁶⁵⁰ In this context, there is very minimal effort made towards prioritising, identifying, or accounting for technology transfer at the bilateral level.

3.3.5 Private finance for technology transfer

According to the Climate Policy Initiative (CPI) 2015 report, *Global Landscape of Climate Finance 2015*, for the past three years at least, the total amount of climate finance from private sources has outstripped that provided by public sources.⁶⁵¹ The report finds that in 2015, for example, private climate finance amounted to US\$243bn and public climate finance only US\$143bn.⁶⁵² While these figures represent total investment rather than the flows from developed to developing countries and the report acknowledges a range of gaps in its data, the findings are at least indicative of the central role that private finance is playing in addressing climate mitigation and adaptation worldwide.

As evidenced by the inclusion of private finance in the US\$100bn commitment made by developed countries in Cancun, the parties to the UNFCCC now clearly accept that private finance is an essential source of funding for climate mitigation and adaptation. As the World Resources Institute (WRI) notes, ‘major financial investments – from both public and private sources and guided by smart and equitable policies – are required to transition the world’s economy to a low-carbon path, reduce GHG concentrations to safe levels, and build the resilience of vulnerable countries to climate change’.⁶⁵³ The immense scale of private finance’s role in driving this transition is emphasised even more strongly in a recent and widely cited report by the World Economic Forum, which has estimated that by 2020, about US\$5.7tn will need to be invested annually in green infrastructure, which in turn will require shifting the world’s US\$5tn in business-as-usual private investments into green investments targeted at climate change mitigation and adaptation.⁶⁵⁴

In relation to technology transfer more specifically, a recent policy brief by the TEC, entitled *Enhancing Access to Climate Technology Financing*, has emphasised the essential role that private finance can play in supporting technology transfer for mitigation, and to a more limited extent, adaptation. The same policy brief also notes that ‘[s]caling-up financing for climate technologies will face constraints unless capital markets can be tapped into. Capital markets are the only component of the financial sector that can supply the necessary volume of low-cost capital to reach the scale of investment needed.’ While it is clear that public finance will continue to have an essential role in

649 See for example UNEP, ‘Bilateral Finance Institutions & Climate Change: A Mapping of Public Financial Flows for Mitigation and Adaptation to Developing Countries in 2010’ (2010) www.unep.org/pdf/Mapping_report_final.pdf.

650 Nakhooda, Watson, and Schalatek (2015) (n 639) 2.

651 See Barbara K Buchner et al, ‘Global Landscape of Climate Finance 2015’ (Climate Policy Initiative 2015) <http://climatepolicyinitiative.org/wp-content/uploads/2015/11/Global-Landscape-of-Climate-Finance-2015.pdf>.

652 *Ibid* 1.

653 World Resources Institute, ‘Climate Finance’ (n 622).

654 World Economic Forum (n 628).

facilitating technology transfer, particularly for adaptation, it is also clear that private finance has an important role to play. While currently the focus remains on the most effective and efficient means of mobilising this private finance, there is also a growing focus on ensuring that private finance meets the broader goals set out under the UNFCCC, including for technology transfer.⁶⁵⁵

3.4 Mechanisms for engaging private finance

Since the UNFCCC was established, a large variety of different mechanisms have been proposed and established to mobilise private finance for climate adaptation and mitigation. To a certain extent, this has happened directly through the UNFCCC process for a number of years. The CDM established under the Kyoto Protocol, for example, intends to incentivise private actors to undertake mitigation and adaptation projects that they would not be inclined to invest in under business-as-usual conditions.⁶⁵⁶ Similarly, many countries and states throughout the world have now established some form of incentive, such as pricing on GHG emissions, which is intended to encourage private actors to reduce their emissions and drive investment in cleaner technologies.

Alongside these traditional mechanisms, in more recent years there has been a growing movement towards engaging the financial sector more directly in driving low carbon growth and promoting adaptation goals.⁶⁵⁷ While national governments introducing specific regulatory controls have partly driven this movement, it has also been accelerated by the increase in socially responsible investment and the development of standards and initiatives from within the financial sector itself.⁶⁵⁸ In this respect, there has been a growing awareness of the risks posed by climate change to financial interests but also in the role that finance itself can play in minimising those risks.

The UNEP Inquiry into the Design of a Sustainable Financial System was established in early 2014 to explore how to align the financial system with sustainable development, particularly as it relates to the environment. In October 2015, the inquiry released its major report, entitled *The Financial System We Need: Aligning the Financial System with Sustainable Development* (UNEP Inquiry Report). At its outset, the report notes that the full capacity of the financial system needs to be harnessed to deliver the transition to sustainable development and that financing sustainable development will require assets to be directed towards critical priorities and away from assets that deplete natural capital.⁶⁵⁹

While the UNEP Inquiry Report is targeted at SDGs rather than climate change specifically, many of the initiatives discussed are applicable in the climate change context. In this respect, the report notes that ‘investment estimated at US\$5–7tn a year is needed to realise the Sustainable Development

655 WP Pauw et al (n 618); Hayley Stevenson, ‘Governing Climate Technologies: Is There Room for Democracy?’ (2013) 22 *Environmental Values* 567; Atteridge (n 618); Aaron Atteridge, ‘Will Private Finance Support Climate Change Adaptation in Developing Countries? Historical Investment Patterns as a Window on Future Private Climate Finance’ (2011) (Stockholm Environment Institute Working Paper No 2011-05) www.sei-international.org/mediamanager/documents/Publications/SEI-WorkingPaper-Atteridge-WillPrivateFinanceSupportClimateChangeAdaptationInDevelopingCountries-2011.pdf; Aaron Atteridge and Adis Dzebo, ‘When Does Private Finance Count As Climate Finance? Accounting for Private Contributions Towards International Pledges’ (Stockholm Environment Institute 2015) www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-DB-2015-Private-climate-finance-accountability.pdf; McGee and Wenta (n 580) 367.

656 Miles (n 610).

657 Benjamin J Richardson, ‘The Evolving Marketscape of Climate Finance’ (2014) 4 *Climate Law* 94.

658 Mercer, ‘Investing in a Time of Climate Change’ (2015) www.mercer.com/content/mercer/global/all/en/insights/focus/invest-in-climate-change-study-2015.html; Blackrock, ‘The Price of Climate Change: Global Warming’s Impact on Portfolios’ (2015) www.blackrock.com/ca/institutional/en/literature/whitepaper/bii-pricing-climate-risk-international-en-zz.pdf.

659 UNEP, ‘The Financial System We Need: Aligning the Financial System with Sustainable Development’ (2015) xi http://apps.unep.org/publications/index.php?option=com_publication&task=download&file=011830_en.

Goals, including in infrastructure, clean energy, water and sanitation and agriculture.⁶⁶⁰ These goals represent clear overlaps with imperatives for adaptation to climate change and there is significant potential to align these interests.

At this stage, there has been very little attempt to align initiatives such as those suggested by the UNEP Inquiry Report with the aims of technology transfer under the UNFCCC. If such mechanisms are to be the centrepiece for shifting private investment in a way that is targeted at addressing climate mitigation and adaptation, then, to be effective and legitimate, the technology transfer framework should be taken into account. By way of example, a number of these mechanisms are set out below.

3.4.1 Climate bonds/green bonds

The concept of 'green bonds' has emerged as a tool for channelling finance specifically to climate-related activities. To date, green bonds focus mostly on mitigation (renewable energy, energy efficiency, sustainable transport), but they also focus on some adaptation activities. Although they are structured in essentially the same way as traditional bonds, the key difference is that green bonds explicitly seek to support the achievement of climate objectives. At this stage, the field of green bonds is still relatively young and there are ongoing efforts to delineate these from regular bond instruments. Voluntary Green Bond Principles have been published by the industry to define and clarify the term 'green bond' as new products become available.

A private initiative, the Climate Bonds Initiative (CBI) identifies bonds issued to help fund mitigation and adaptation measures and analyses their characteristics. In addition to this role, the CBI is also leading a project to develop certification standards which are intended to allow investors and intermediaries to assess the environmental integrity of bonds claiming to address climate change mitigation and adaptation. The development of the standards is ongoing. To date, the CBI has issued standards in relation to solar, wind, low carbon buildings and Bus Rapid Transport. These standards are primarily aimed at mitigation activities. However, further standards are also being developed to apply to projects that directly address adaptation issues such as water, forestry and agriculture.⁶⁶¹ At this stage, technology transfer has not been included as a criterion for the certification standards. It would not, however, be difficult to incorporate a technology transfer requirement.

In addition to amendments to certification standards, there is also a role for policy interventions to support the market development for both green bonds and climate bonds. A recent CBI consultation paper prepared in conjunction with the UNEP Inquiry into the Design of a Sustainable Financial System was entitled *Scaling Up Green Bond Markets for Sustainable Development*.⁶⁶² This paper proposes a range of public sector initiatives for scaling up the green bond market. These initiatives include:

- allowing aggregation of green assets through asset-backed securitisation;
- developing standards for green loans;

660 *Ibid* (2015) xi-xiii.

661 Water Technical Working Group, 'Water Climate Bonds Standard: Defining Expectations for Water-Related Climate Bonds in a Dynamic Climate, Background Paper to Eligibility Criteria' (Climate Bonds Initiative 2015); Climate Bonds Initiative, 'Land Use: Land Use Criteria and the Climate Bonds Standard' www.climatebonds.net/standard/land-use.

662 Climate Bonds Initiative, 'Scaling Up Green Bond Markets for Sustainable Development: A Strategic Guide for the Public Sector to Stimulate Private Sector Market Development for Green Bonds' (2015) www.climatebonds.net/files/files/GB-Public_Sector_Guide-Final-1A.pdf.

- developing preferential lending rates by public bodies for green loans; and
- providing credit enhancement to de-risk investments.

In adopting these initiatives, the public sector would be well-positioned to include a certain level of technology transfer requirements in the criteria that they develop.

3.4.2 Sustainable stock exchanges

According to a recent report by the Sustainable Stock Exchanges Initiative, *Report on Progress 2014*, stock exchanges are ‘well positioned to play a crucial role in facilitating more sustainable financial markets [...] and promoting investment to help meet the expected UN Sustainable Development Goals (SDGs).’⁶⁶³ The report notes that stock exchange sustainability initiatives typically take one or more of three forms: (1) promoting sustainability reporting by companies; (2) providing guidance and training on environmental, social and governance issues to companies and investors; and (3) producing sustainable investment products. According to the report, there is significant progress being made in this respect, but these initiatives are still in their infancy.

The report notes a number of key trends. As of 2014, over 40 per cent of major exchanges offer at least one index that integrates social or environmental issues. Over one-third of the exchanges provide sustainability guidance or training to companies listed on their exchange, and over 20 per cent require some form of environmental or social impact reporting from listed companies.⁶⁶⁴ Despite these developments, the report finds that, at present, financial markets are not set up to channel sufficient funds towards sustainable development objectives. The types of initiatives that are suggested by the report to drive investment in a sustainable direction include:

- aligning corporate incentive structures, reporting requirements and credit rating assessments with sustainable public policy goals;
- integrating sustainability considerations into investors’ fiduciary duties and corporate governance practices; and
- integrating environmental, social and governance reporting with financial reporting.⁶⁶⁵

It is in relation to this final point that stock exchanges can have a particularly prominent role. Consideration of technology transfer could easily be included in reporting requirements. In particular, reporting would provide greater transparency in relation to targeted technology transfer taking place through private initiatives.

3.4.3 Priority sector lending

State-directed priority sector lending programmes have been widely used to improve access to capital for critical sectors that are underserved by the financial sector. The UNEP Inquiry Report notes that in some circumstances priority sector lending programmes have funded well-run programmes

663 Sustainable Stock Exchanges Initiative, ‘Sustainable Stock Exchanges 2014 Report on Progress’ (2014) <https://sseinitiative.org/publication/sustainable-stock-exchanges-report-on-progress-2014/>.

664 *Ibid* 7.

665 *Ibid* iv.

helping to shape the growth of key industrial sectors.⁶⁶⁶ India, in particular, has for many decades had priority sector requirements for the banking sector; currently 40 per cent of bank lending in India has to be allocated to key sectors, such as agriculture and small and medium enterprises. One potential means of supporting the development of technology transfer could be to include a technology transfer requirement in priority sector lending criteria.

3.4.4. *Adaptation tax credits*

One approach recommended in a recent report by the World Economic Forum to encourage adaptation projects is the adoption of adaptation tax credits. This could take a similar form to current renewable energy production tax credits aimed at increasing renewable energy production and to new market tax credits aimed at increasing investment in low-income areas.⁶⁶⁷ In each case, the tax credits attract private ‘tax equity’ investors.

In applying this to adaptation, a government could enable a developer of an adaptation project (however defined) to create adaptation credits based on a set of measurable metrics (to be determined), and those tax credits could be used by any company to offset tax liability to a particular government. A project developed anywhere in the world (and especially in developing countries) could yield a tax credit in the country where the tax equity investor has a tax liability.⁶⁶⁸ As noted for the above initiatives, it would be a simple matter to include certain technology transfer requirements as criteria for such credit.

3.4.5 *Loan guarantees and credit enhancements*

The final intervention considered here is the use of loan guarantees and credit enhancements. Under these initiatives, borrowers could receive reduced interest rates on loans for adaptation enhancements to properties meeting certain criteria approved by the government.⁶⁶⁹ If the adaptation enhancements are approved by to-be-determined entities with adequate expertise, information and knowledge, the government would provide credit enhancement to reduce the interest rates, or enable the borrower to obtain the loan in the first place.⁶⁷⁰ As an example of this being put into practice, Bangladesh Bank’s green finance lending requirements provide favourable capital adjustments for applicants that meet certain criteria.⁶⁷¹ Projects requiring technology transfer would be obvious candidates for such an approach.

Notably, this is also a role that MDBs, multilateral climate funds and other public financiers can have a strong influence in supporting. MDBs can play an important role in taking the first risk position in particular investments or providing a form of guarantee for private capital investments in climate initiatives.⁶⁷² Often referred to as first-loss protection instruments, the goal of such initiatives is

666 UNEP (n 659) 26.

667 World Economic Forum, ‘Climate Adaptation: Seizing the Challenge’ (2014) 22 www3.weforum.org/docs/GAC/2014/WEF_GAC_ClimateChange_AdaptationSeizingChallenge_Report_2014.pdf.

668 *Ibid.*

669 *Ibid.*

670 *Ibid.*

671 Alexander Barkawi and Pierre Monnin, ‘Monetary Policy and Sustainability: The Case of Bangladesh’ (2015) (UNEP Inquiry Working Paper 15/02) http://unepinquiry.org/wp-content/uploads/2015/04/Monetary_Policy_and_Sustainability_The_Case_of_Bangladesh.pdf.

672 Morgan Hervé-Mignucci et al, ‘Risk Gaps: First-Loss Protection Mechanisms’, (Climate Policy Initiative 2013) <https://climatepolicyinitiative.org/wp-content/uploads/2013/01/Risk-Gaps-First-Loss-Protection-Mechanisms.pdf>.

to render investments attractive to previously untapped sources of finance, such as institutional investors and to free up resources for traditional sources of climate finance, particularly those on banks' balance sheets.⁶⁷³ In turn, these sorts of initiatives can be used to improve the credit rating of a particular financial instrument, thereby making it more appealing for private investors to participate.⁶⁷⁴ Technology transfer criteria could easily be adopted in the development of such an approach.

3.5 Accounting for climate finance in support of technology transfer

Despite the central role of climate finance within the UNFCCC framework, until recently there have been limited attempts to develop a clear framework for accounting and assessing climate finance. Accordingly, there has been limited information available about the amounts that have been mobilised. While some recent studies have sought to fill this gap, there is still no universally-agreed criterion or accounting methodology, and significant uncertainty regarding the total amounts mobilised remains.

An overview of the most up-to-date and comprehensive studies of accounting for climate finance is set out below with a particular focus on technology transfer for adaptation. Following this overview, a brief summary and proposal is included suggesting that technology transfer should be included in future methodologies to account for climate finance. Including technology transfer as a criterion for the mobilisation of private finance in relation to the US\$100bn goal adopted at Cancun would provide a powerful incentive for developed countries to pursue interventions that encourage technology transfer to occur.

3.5.1 UNFCCC Standing Committee on Finance Biennial Assessment

In 2014, the SCF provided in its *2014 Biennial Assessment and Overview of Climate Finance* (SCF Report) an estimate of all climate-related financial flows from developed countries to developing countries. The UNFCCC does not adopt a definition of 'climate finance' in the SCF Report but proposes the following as a general working definition: '[c]limate finance aims at reducing emissions, and enhancing sinks, of GHG and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate impacts.'⁶⁷⁵ This broad definition encapsulates both mitigation and adaptation activities.

Using this definition as a starting point, the SCF Report provides a detailed discussion of methodologies and issues relating to measurement, reporting and verification of public and private climate finance. The report notes the problems raised by different institutions and organisations having adopted different definitions, eligibility criteria and guidelines to assess projects and finance. In looking at methods to estimate private finance, the SCF Report provides an overview of the different definitions of climate finance for mitigation and adaptation adopted by the MDBs,⁶⁷⁶ OECD

673 *Ibid* 4.

674 *Ibid* 5.

675 UNFCCC Standing Committee on Finance, 'Biennial Assessment and Overview of Climate Finance Flows Report' (2014) 19 http://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/2014_biennial_assessment_and_overview_of_climate_finance_flows_report_web.pdf.

676 African Development Bank et al, 'Joint Report on Multilateral Development Banks' Climate Finance, (World Bank, 2014).

Development Assistance Committee,⁶⁷⁷ UN Conference on Trade and Development (UNCTAD),⁶⁷⁸ CPI,⁶⁷⁹ IPCC⁶⁸⁰ and UNDP.⁶⁸¹ In relation to public adaptation finance, the OECD and the MDBs each use separate eligibility criteria to determine the purpose and context of a project and therefore the relevance of a project to climate finance.⁶⁸²

The SCF Report does not directly consider the sub-category of private finance for technology transfer either for mitigation or adaptation. It does note, however, that given the lack of a universally-agreed definition of 'adaptation', it is 'not possible to compile a list of adaptation actions and then estimate the investment in those actions'.⁶⁸³ For this reason, the report acknowledges that the data in relation to finance for adaptation has been collated without a consistent set of criteria and further notes that 'virtually no information is available on [...] private adaptation investments in developed or developing countries'.⁶⁸⁴ The report does not consider finance mobilised for technology transfer as a separate category.

The report concludes that on average between 2010 and 2012, climate-related financial flows ranged between US\$40bn to US\$175bn per year. This amount was made up of US\$35–50bn mobilised directly through public institutions and between US\$5bn and US\$125bn through private finance. As is evident from the wide range, particularly in relation to private finance, this estimate was subject to significant uncertainty and in 2015 the SCF issued a statement, clarifying that flows from developed to developing countries may be closer to the lower end of the estimate.⁶⁸⁵

The report considers a number of other issues, including the extent to which public funds can be used to leverage private investment, the importance of domestic ownership and the alignment of finance with articulated needs. In relation to leveraging private finance, the report notes the increasing interest in attracting private investment to low carbon and climate-resilient initiatives and highlights both the risks of overemphasising this potential, as well as the accounting difficulties in properly attributing private climate finance.⁶⁸⁶

In highlighting the importance of domestic ownership, the report asserts that '[n]ational ownership increases the effectiveness of climate finance.' The report also emphasises the need to align climate finance with national development agendas.⁶⁸⁷ Finally, the report emphasises the need to provide finance in a way that addresses the domestic priorities articulated in the NAPAs and NAMAs prepared

677 OECD Development Assistance Committee, 'Handbook on the OECD-DAC Climate Markers' (2011) www.oecd.org/dac/stats/48785310.pdf.

678 UNCTAD, 'World Investment Report 2010: Investing in a Low-Carbon Economy' (2010) 99-152 http://unctad.org/en/docs/wir2010_en.pdf.

679 Barbara K Buchner et al, 'The Landscape of Climate Finance 2012' (Climate Policy Initiative 2012) <http://climatepolicyinitiative.org/wp-content/uploads/2012/12/The-Landscape-of-Climate-Finance-2012.pdf>; Barbara K Buchner et al, 'The Landscape of Climate Finance 2013' (Climate Policy Initiative 2013), <http://climatepolicyinitiative.org/wp-content/uploads/2013/10/The-Global-Landscape-of-Climate-Finance-2013.pdf>.

680 IPCC, *Climate Change 2014: Mitigation of Climate Change* (Cambridge University Press 2014) 232.

681 Governance of Climate Change Finance to Benefit the Poor and Vulnerable in Asia Pacific www.climatefinance-developmenteffectiveness.org.

682 *Ibid.*

683 UNFCCC Standing Committee on Finance (n 675) 38.

684 *Ibid* 39.

685 UNFCCC Standing Committee on Finance (n 675) 5.

686 *Ibid* 71.

687 *Ibid* 73.

by developing countries.⁶⁸⁸ The report does not, however, mention the need for alignment of finance with priorities articulated in TNAs.⁶⁸⁹

3.5.2 OECD Report on Climate Finance

In the lead up to the Paris COP in December 2015, the OECD, in collaboration with the CPI, issued a report entitled, *Climate Finance in 2013-14 and the USD 100 Billion Goal* (OECD Report). Similarly to the SCF Report, the OECD Report seeks to assess the amount of climate finance mobilised by developing countries but does so specifically by reference to the US\$100bn per year commitment made by developed countries in Cancun in 2010.

Drawing on the definition of climate finance provided by the SCF Report, the OECD Report defines climate finance as ‘all finance that specifically targets low-carbon or climate-resilient development’.⁶⁹⁰ The report provides preliminary estimates that climate finance reached US\$52bn in 2013 and US\$62bn in 2014. Included in this estimate is an amount corresponding to a preliminary, partial estimate of private finance mobilised by developed countries through bilateral and multilateral channels. In 2013 this amount was US\$2.8bn, and in 2014 it was US\$16.7bn. The report notes that the amounts identified represent estimates only, that accounting standards and definitions of climate change are still at a preliminary stage and that ‘confidence in the coverage and consistency of [its] estimates of public finance is higher than for private finance’.⁶⁹¹

Similarly to the SCF Report, the OECD Report notes that the reporting and accounting of climate finance has been inconsistent and incomplete. It notes, however, that over the past two years ‘there has been significant momentum and progress in tracking climate finance and climate-related development finance flows’ with significant progress being made in developing common climate finance definitions by the MDBs and the OECD Development Assistance Committee.⁶⁹² The OECD sets out in some detail the methodology it uses to account for climate finance. The methodology considers information from a range of different sources, including:

- reporting on climate finance by developed countries under the UNFCCC process;⁶⁹³
- reporting on public climate finance through bilateral channels;⁶⁹⁴
- reporting on multilateral climate finance;

688 *Ibid* 74.

689 The need for integration of the TNA process with the development of NAPs and NAMAs has been recognized by the TEC. See UNFCCC Technology Executive Committee, ‘TEC Brief: Possible Integration of the TNA Process with NAMA and NAP Processes’ (2013) http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_column_L/4f85c880f1b54a6bb1ed32a3b7e1bc94/7262a425eab84ac8a0ab4a5980d7e58d.pdf.

690 OECD and Climate Policy Initiative, ‘Climate Finance in 2013-14 and the USD 100 Billion Goal’ (2015) 10 www.oecd.org/environment/cc/OECD-CPI-Climate-Finance-Report.pdf.

691 OECD and Climate Policy Initiative, ‘Climate Finance in 2013-14 and the USD 100 Billion Goal’ (n 690) 11-12.

692 *Ibid* 32.

693 In accordance with reporting guidelines established under the UNFCCC, ‘Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention’ (15 March 2012) UN Doc FCCC/CP/2011/9/Add1, Decision 2/CP.17.

694 The OECD Report notes that the main funding sources for bilateral public climate finance are bilateral Official Development Assistance (ODA), as well as Other Official Flows (OOF). The majority of OECD Development Assistance Committee members in their reporting to the UNFCCC draw on their standard annual reporting to the Development Assistance Committee on climate-related development finance, following the Rio markers definitions and eligibility criteria. It is worth noting that the Rio markers were originally intended to track the mainstreaming of climate change considerations into development cooperation rather than providing a quantification of finance. There is no common reporting standard, and to date, there has been limited transparency regarding these practices.

- reporting on officially supported export credits; and⁶⁹⁵
- reporting by developed countries on mobilised private climate finance.⁶⁹⁶

In relation to the reporting by developed countries on mobilised private climate finance, the OECD Report uses a methodology that was developed by an Internal Technical Working Group⁶⁹⁷ and was adopted by 19 developed country bilateral climate finance providers. The developed methodology relies on the principle that ‘only finance mobilised by developed country governments is counted towards the US\$100bn goal and that, where multiple actors are involved, the resulting finance is only counted once in tracking finance.’ The methodology also articulates a commitment ‘to ensure that the reporting framework encourages and incentivises the most effective use of climate finance.’⁶⁹⁸ Accordingly, the methodology focuses on defining public as opposed to private finance, assessing causality between public interventions and private finance and attributing mobilised private finance.⁶⁹⁹

Notably, the methodology does not consider broader questions regarding the extent to which private finance takes into account broader principles established under the UNFCCC or whether it achieves any objectives articulated in NAPAs, NAMAs, or TNAs. There is no consideration in the report of the extent to which private finance, or public finance for that matter, contributes to technology transfer. A number of developing countries have also expressed concern about their lack of involvement in the development of this methodology.⁷⁰⁰

The OECD Report does note, however, that more public climate finance than private finance is recorded as targeting climate change adaptation objectives.⁷⁰¹ This reflects the fact that over 90 per cent of mobilised private climate finance that is currently traceable targets mitigation-related activities, and this contributes to the difficulties in tracking adaptation finance. Part of the problem in this respect is that activities promoting adaptation are rarely standalone but are mostly integrated into mainstream development interventions and business activities, for example, in the agricultural or water sectors.

3.5.3 OECD and CPI: estimating mobilised private finance for adaptation

Following the release of the OECD Report, the OECD and CPI have published a further study that articulates an expanded methodology for estimating private finance for adaptation. In this study, publicly mobilised private finance for adaptation is defined as ‘the private finance invested as a

695 Data for the OECD Report has been drawn from the OECD’s export credits individual transaction database, which monitors officially supported export credits.

696 Based on methodology adopted by 19 bilateral climate finance providers. See the joint statement by Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, United Kingdom, United States, and the EC. UNFCCC Financial Flows, ‘18 Industrialized Countries Issue Statement on Climate Finance’ (7 September 2015) <http://newsroom.unfccc.int/financial-flows/18-industrial-states-release-climate-finance-statement> (containing full text of the Joint Statement on Tracking Progress Towards the \$100 Billion Goal of 6 September 2015).

697 OECD Technical Working Group, ‘Accounting for Mobilized Private Climate Finance: Input to the OECD-CPI Report’ (2015) www.newsadmin.ch/newsd/message/attachments/41225.pdf.

698 *Ibid* 1.

699 OECD and Climate Policy Initiative (n 690) 40.

700 Nitin Sethi, ‘Developing Countries Irked by Report Saying Climate Change Funds Delivered’ (Business Standard, 23 October 2015) www.business-standard.com/article/international/developing-countries-irked-by-report-saying-climate-change-funds-delivered-115102200764_1.html.

701 OECD and Climate Policy Initiative (n 690) 30.

result of adaptation-related public interventions, which can typically take the form of finance or policies'.⁷⁰²

The study particularly focuses on the distinction between private finance that is mobilised directly (eg, mobilised private co-finance), intermediated directly (eg, via funds or credit lines), and indirectly (eg, via enabling outputs) by a range of public finance interventions.⁷⁰³ The study provides a detailed analysis of these separate categories and expands them into four exploratory methodological approaches for measuring mobilised private adaptation finance. The study does not deal explicitly with technology transfer. It does, however, provide a detailed and informative case study on transforming the northern Ugandan economy through 'Climate Smart Agribusiness'.⁷⁰⁴

3.5.4 CPI, WRI, and ODI working paper

A further effort towards progressing the debate on what should count as climate finance for the purposes of the US\$100bn Cancun commitment is a paper co-authored by representatives of three prominent environmental and development think tanks, the CPI, WRI, and Overseas Development Institute (ODI). The paper is entitled *What Counts: Tools to Help Define and Understand Progress towards the US\$100bn Climate Finance Commitment (Working Paper)*.⁷⁰⁵ Although not advocating clearly for a specific set of criteria to determine what counts as climate finance for the US\$100bn commitment, the Working Paper provides a framework for understanding the core tensions at the heart of this question with the aim of helping to facilitate clearer understanding and convergence among key actors.⁷⁰⁶

While recognising the existence of a certain degree of overlap, the Working Paper identifies five key categories or variables that have emerged in recent years regarding what finance flows should count towards the US\$100bn goal. These categories are:

1. motivation – the extent to which a financial flow was explicitly designed to reduce GHG emissions or support climate adaptation;
2. concessionality and source – the extent to which finance takes the form of a grant or a loan and whether it originates from a public or a private source;
3. causality – the extent to which a contributor country intervention (whether public finance or public policy) has caused private sector dollars or developing country public finance to flow;
4. geographic origin – including considerations of differences between bilateral and multilateral public finance sources, of south-to-south flows and of definitions for developed and developing countries; and

702 Jessica Brown et al, 'Estimating Mobilized Private Finance for Adaptation: Exploring Data and Methods' (Climate Policy Initiative and OECD, 2015) <http://climatepolicyinitiative.org/wp-content/uploads/2015/11/Estimating-mobilized-private-finance-for-adaptation-Exploring-data-and-methods.pdf>.

703 *Ibid* v.

704 *Ibid* 20.

705 Paul Bodnar, Jessica Brown, and Smita Nakhooda, 'What Counts: Tools to Help Define and Understand Progress Towards the \$100 Billion Climate Finance Commitment' (Climate Policy Initiative, World Resources Institute, and Overseas Development Institute 2015) <http://climatepolicyinitiative.org/wp-content/uploads/2015/08/What-Counts-Tools-to-Help-Define-and-Understand-Progress-Towards-the-100-Billion-Climate-Finance-Commitment.pdf>.

706 Bodnar, Brown, and Nakhooda (n 705) 1.

5. recipient – whether money needs to be received directly by a developing country government institution or can be administered by a private entity, a multilateral institution or a non-government organisation.

Alongside these categories, the Working Paper also highlights likely accounting issues and the difficulties in determining whether funds are considered to be ‘new and additional’.

Observing that different stakeholders in the debate place different emphasis on different criteria, the Working Paper does not attempt to provide a position on what should count towards the US\$100bn target for climate finance. It also notes the significant difficulties in obtaining data that could be used to inform the allocation of funds into the separate categories. This is noted as being particularly problematic in relation to documenting the amounts of private climate finance. The Working Paper also does not consider the extent to which technology transfer may or may not have taken place.

3.5.5 *Private finance for adaptation*

The only study identified which explicitly attempts to develop adaptation finance criteria from the UNFCCC is a paper by Pauw and others, entitled *Private Finance for Adaptation: Do Private Realities Meet Public Ambitions?* Pauw and others develop a set of ‘adaptation finance criteria’ distilled from the UN climate negotiation outcomes. Pauw and others then apply these criteria to 101 submissions to the Private Sector Initiative of the UNFCCC Nairobi work programme on impacts, vulnerability and adaptation to climate change. They found that while private sector initiatives increasingly complement public adaptation activities, the adaptation criteria that they identify are not often met. Accordingly, they argue that private finance should not be identified as contributing to the US\$100bn climate finance target established in Cancun, unless it actually meets the relevant criteria.⁷⁰⁷

Pauw and others propose adaptation finance criteria that require the finance to be: adequate; predictable; sustainable; scaled up; new and additional; provided with improved access; allocated evenly between adaptation and mitigation; provided to the most vulnerable developing countries as a priority; mobilised by developed countries; and transparent. These criteria are explicitly based on longer-standing country-based agreements under the UNFCCC and therefore reflect public perspectives adapted to private financing. Arguably, some of these criteria are not easily transposable to the application of private finance and the article is somewhat vague on how they might be applied.

3.5.6 *Discussion brief of the Stockholm Environment Institute*

A further contribution to this field is a discussion brief prepared for the Stockholm Environment Institute, *When Does Private Finance Count as Climate Finance? Accounting for Private Contributions towards International Pledges.*⁷⁰⁸ The discussion brief examines different private financial flows for climate-related activities on the basis of how the investors’ motives connect with the recipients’ objectives through an analysis of ‘accountability chains’. It focuses on two accountability parameters: the degree to which different actors in the finance chain share similar ‘end goals’ for the funds; and the degree to which the final expenditure contributes to climate-related outcomes beyond a single private entity,

707 WP Pauw et al (2016) (n 618) 3.

708 Atteridge and Dzebo (n 655).

a consideration that is of particular relevance for adaptation objectives. The discussion brief considers different types of private finance and compares features with public finance as a reference point. In particular, it looks at ‘green bonds’, equity instruments, philanthropy and remittances. While it notes the need to determine whether private finance should count towards the US\$100bn, the brief does not offer a basis for doing so.

3.5.7 Towards a climate finance accounting methodology: considering technology transfer

As is evident from the variety of methodologies and criteria set out above, there are a number of approaches available for accounting for flows of climate finance. The situation is even more complicated when it comes to accounting for private finance for adaptation. In light of the commitment made in Cancun by developed countries to mobilise US\$100bn per year by 2020, there is, however, going to be a need for greater clarity regarding the contribution of private finance to adaptation goals. If this contribution is to be at all meaningful, there will need to be some level of agreement reached about what accounting methodology is most appropriate. Given the concern from the developing countries about the methodology adopted by the OECD Report, it is also clear that this process will need to be more transparent and comprehensive than it has been so far.

It is beyond the scope of this chapter to propose an appropriate and comprehensive methodology. Given the likely political contestation that will take place over any such methodology, it would also be potentially unhelpful to do so. Having said this, however, the reports described above provide a useful way forward. Most notably, the CPI, WRI, and ODI Working Paper provides a useful starting point for understanding the central issues. The paper by Pauw and others also provides a useful basis for considering the relevance of more general UNFCCC principles in accounting for private finance flows as being something beyond business-as-usual investments. At the very least, some of these factors should be considered when deciding in what context private finance counts as climate finance.

An issue not considered by any of the methodologies set out above is that of technology transfer. While it is not specifically referenced in the Cancun Agreements, mobilising finance to meet the needs of developing countries should include their need for technology transfer. In this context, it is arguably necessary to include some reference to technology transfer and the principles developed by the Technology Mechanism in methodologies to account for flows of climate finance. Furthermore, including a requirement for all designated ‘climate change finance’ to include some form of technology transfer would create a significant incentive for developed countries to pursue this goal in adopting initiatives aimed at mobilising private finance for sustainable purposes. Only if these principles are adequately integrated can climate finance hope to meet the aims and needs of developing countries in accordance with the principles developed through the UNFCCC process.

3.6 International investment agreements and technology transfer

Coupled with a growing recognition of the importance of private finance to support climate measures, is recognition of the need to better understand how IIL shapes such financing. Investors seek protections for money that is to be invested in a state in which they are not citizens. Domestic laws, which can be unilaterally changed (and often are with a change in government), are unlikely to provide sufficient certainty for long-term investors in a country. Historically, individuals (companies

or persons) had to rely on their own state to take action on their behalf to correct wrongs that had been committed by a host state,⁷⁰⁹ and the creation of IIAs flourished primarily due to the desire of developed, capital-exporting states to ensure that their nationals were financially and legally protected when investing in developing, capital-importing states.⁷¹⁰

There are now more than 3,000 bilateral investment treaties (BITs) and over 350 other types of IIAs in existence.⁷¹¹ Generally, the rules on treaty interpretation are of most importance in this area due to the proliferation of IIAs, though in some areas customary law remains particularly important.

The term ‘international investment agreements’ is an umbrella term for these agreements between states that include bilateral, regional and multilateral treaties, which promote and protect the activities of private foreign investors (amongst other things).⁷¹² UNCTAD defines BITs as:

‘agreements between two countries for the reciprocal encouragement, promotion and protection of investments in each other’s territories by companies based in either country. Treaties typically cover the following areas: scope and definition of investment, admission and establishment, national treatment, most-favored-nation treatment, fair and equitable treatment, compensation in the event of expropriation or damage to the investment, guarantees of free transfers of funds and dispute settlement mechanisms, both state-state and investor-state.’⁷¹³

IIAs can also refer to ‘investment chapters’ which are often included in more broad-ranging free trade agreements (FTAs), such as NAFTA or the Energy Charter Treaty (ECT). IIAs give foreign investors specific rights by limiting the sovereignty of the host country to make regulations for public purposes (including environmental purposes).⁷¹⁴

The definitions of ‘investor’ and ‘investment’ are important as they are among the key elements that determine the scope of rights and obligations under BITs and IIAs.⁷¹⁵ While minimum prerequisites for the use of these terms exist in customary international law, most IIAs define these terms, and it is therefore necessary to consider the definitions contained in the agreements themselves. There are generally two types of investors involved in IIAs: natural and legal persons. For natural persons, IIAs will usually base nationality on the laws of the state of claimed nationality, although some IIAs include alternative criteria such as a residency requirement.⁷¹⁶ Nationals of the host state are generally excluded from investment protection, even if they also hold the nationality of another state;⁷¹⁷ therefore, the protections offered to foreign investors by IIAs are generally not available to domestic investors.

The issue of corporation ‘nationality’ can be more complicated, particularly given the way contemporary companies operate and the transnational nature of much trade and investment activity. IIAs and domestic legal systems use a variety of methods to determine the nationality of corporations,

709 Margaret L Moses, *The Principles and Practice of International Commercial Arbitration* (2nd edn, Cambridge University Press 2012) 9.

710 *Ibid* 48, 81.

711 UNCTAD, IIA Databases [http://unctad.org/en/pages/DIAE/International%20Investment%20Agreements%20\(IIA\)/IIA-Tools.aspx](http://unctad.org/en/pages/DIAE/International%20Investment%20Agreements%20(IIA)/IIA-Tools.aspx).

712 Rudolph Dolzer and Christoph Schreuer, *Principles of International Investment Law* (Oxford University Press 2008) 46.

713 Junji Nakagawa (ed), *Transparency in International Trade and Investment Dispute Settlement* (Routledge 2013) 182.

714 Saverio Di Benedetto, *International Investment Law and the Environment* (Edward Elgar 2013) ix.

715 OECD, *International Investment Law: Understanding Concepts and Tracking Innovations* (OECD 2008) 9.

716 *Ibid* 10.

717 *Ibid* 10-11.

but the most common designators are the place of incorporation and the ‘main seat of the business’ (or registered office) location.⁷¹⁸ Issues in relation to the interpretation of what amounts to a ‘foreign’ company have become more prevalent in arbitration cases as there has been an increase in the creation of ‘shelf companies’ which enable a corporation to set up an operation in a particular country so they can claim standing under an IIA, even when they do not really operate from that country.⁷¹⁹

IAs usually define investment in very broad terms. They often refer to ‘every kind of asset’ followed by an illustrative but usually non-exhaustive list of assets. For example, the US Model BIT 2012 includes the following definition:

“investment’ means every asset that an investor owns or controls, directly or indirectly, that has the characteristics of an investment, including such characteristics as the commitment of capital or other resources, the expectation of gain or profit, or the assumption of risk. Forms that an investment may take include:

- (a) an enterprise;
- (b) shares, stock, and other forms of equity participation in an enterprise;
- (c) bonds, debentures, other debt instruments, and loans;
- (d) futures, options, and other derivatives;
- (e) turnkey, construction, management, production, concession, revenue-sharing, and other similar contracts;
- (f) intellectual property rights;
- (g) licences, authorisations, permits, and similar rights conferred pursuant to domestic law; and
- (h) other tangible or intangible, movable or immovable property, and related property rights, such as leases, mortgages, liens, and pledges.⁷²⁰

Despite variations, IAs tend to include multiple common substantive rights for investors. Many of these are similar in substance to those found in trade law. A brief summary of the most important protections follows below:⁷²¹

- National treatment: The host country must treat the investor as well as it treats its own nationals. Exceptions are sometimes included in agreements for particular industries.
- Most favoured nation (MFN) treatment: The host country must not discriminate between investors from different countries, and must treat the investor as well as they would treat an investor from any other nation.

718 *Ibid* 19.

719 Merel Alstein, ‘Top 10 Developments in International Law in 2015’ (*OUP Blog* 11 January 2016) <http://blog.oup.com/2016/01/top-ten-developments-international-law2015/#sthash.6WtagUqk.VIJADt6Q.dpuf>.

720 US Trade Representative, 2012 US Model Bilateral Investment Treaty (2012) <https://ustr.gov/sites/default/files/BIT%20text%20for%20ACIEP%20Meeting.pdf>.

721 UNCTAD, ‘Key Terms and Concepts in IAs: A Glossary’ (United Nations, 2004) http://unctad.org/en/Docs/iteit20042_en.pdf.

- Protection against uncompensated expropriation (or nationalisation): If a state wishes to expropriate property or land of an investor (or nationalise an asset), it must do so only for a public purpose, it must compensate the investor and it cannot act in a discriminatory matter. In recent years, there has been a move to recognise not only direct or outright expropriation but also ‘indirect expropriations’, which deprive the investor of its enjoyment and economic value of the investment.
- Fair and equitable treatment (FET): This requires states to provide a reasonably stable investment environment, consistent with investor expectations. In recent years, the interpretation of the scope of this obligation has been considered extensively by tribunals and has led to subsequent clarification by parties of some IIAs that the narrower scope – provided by the minimum international standard under customary international law – applies.⁷²²
- Obligation to observe specific investment undertakings (known as the ‘umbrella clause’): These clauses require states to observe all obligations in a treaty. It has led to disagreement about whether a breach of an investment provision can amount to a breach of a treaty obligation. These clauses are becoming less common in recent IIAs.

As discussed in greater detail below, IIAs also frequently contain bans on performance requirements (including those relating to technology transfer) and investor-state dispute settlement (ISDS) procedures that need to be considered by host states in their efforts to adopt climate change regulations. In particular, there is tension between the restrictions imposed by IIAs on states’ regulatory authority and the need for IIAs to attract FDI to support climate change measures. The OECD Benchmark Definition of FDI states:

‘Foreign direct investment reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor. The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise’.⁷²³

Accordingly, FDI usually involves companies or individuals investing directly in overseas ventures over which they have significant control. In that sense, it is distinguishable from other forms of investment, where nationals of a country simply purchase shares or assets in businesses in other countries (portfolio investment). FDI is said to provide a means for creating direct, stable and long-lasting links between economies. It is argued that under the right policy environment, it can serve as an important vehicle for local development, can help improve the competitive position of both the host and home countries and can encourage the transfer of technology and know-how between economies.⁷²⁴ For these reasons, it is argued FDI can play a key role in mitigating and adapting to climate change by contributing the necessary financial and technological resources to countries that require them.

722 *Ibid.*

723 OECD, ‘Benchmark Definition of Foreign Direct Investment’ (4th edn, OECD 2008) 48.

724 *Ibid* 14.

UNCTAD believes that FDI can play a significant role in the development of host economies:

‘In addition to providing capital inflows, FDI can be a vehicle for obtaining foreign technology, knowledge, managerial skills, and other important inputs; for integrating into international marketing, distribution and production networks; and for improving the international competitiveness of firms and the economic performance of countries’.⁷²⁵

In recent decades, there has been significant growth in the level of investment made by private actors, particularly in developing countries. As reported by UNCTAD’s World Investment Report 2018, global foreign direct investment flows represented US\$1.43tn,⁷²⁶ of which developing countries accounted for 47 per cent of the total global FDI inflows.⁷²⁷ Given the significant growth of FDI, it is easy to understand why it is seen as a potentially useful source of funding for developing countries in relation to development and climate change action.

Consequently, significant attention is directed to the question of how to attract FDI, and in particular, whether signing international investment treaties can assist countries in increasing FDI.⁷²⁸ While some commentators argue that IIAs are good for developing countries because increased involvement in IIAs leads to increased FDI,⁷²⁹ others contend that even if IIAs increase FDI, they do not necessarily increase welfare in developing countries and are therefore not entirely beneficial.⁷³⁰ Alternatively, some commentators argue that IIAs are signed not because they are likely to categorically benefit developing countries, but rather due to the ‘contagion effect’, whereby countries are concerned they will miss out if they are not involved in the competition for FDI, and therefore sign IIAs even where they do not appear to be advantageous.⁷³¹

However, recent studies indicate that there are many more elements at play in relation to attracting FDI. For example, a 2009 UNCTAD study on this question concluded that there are three main host country determinants for attracting FDI outside the states involvement in IIAs. These included:

- the general policy framework for foreign investment, including economic, political, and social stability, and the legislation affecting foreign investment;
- economic determinants, such as the market size, cost of resources, and other inputs (for example, costs of labour) or the availability of natural resources; and
- business facilitation, such as investment promotion including investment incentives.⁷³²

725 UNCTAD, ‘Foreign Direct Investment and Performance Requirements: New Evidence from Selected Countries’ (United Nations 2003) http://unctad.org/en/docs/iteia20037_en.pdf.

726 UNCTAD, ‘World Investment Report 2018: Investment and New Industrial Policies’ (UN, 2018) 2 https://unctad.org/en/PublicationsLibrary/wir2018_en.pdf.

727 *Ibid.*

728 Eric Neumayer and Laura Spess, ‘Do Bilateral Investment Treaties Increase Foreign Direct Investment to Developing Countries?’ (2005) 33 *World Development* 1545; Ryan J Bubb and Susan Rose-Ackerman, ‘BITs and Bargains: Strategic Aspects of Bilateral and Multilateral Regulation of Foreign Investment’ (2007) 27 *International Review of Law and Economics* 291.

729 *Ibid.*

730 Andrew T Guzman, ‘Why LDCs Sign Treaties That Hurt Them: Explaining the Popularity of Bilateral Investment Treaties’ (1998) 38 *Virginia Journal of International Law* 639, 683.

731 Eric Neumayer, Peter Nunnenkamp, and Martin Roy, ‘Why Developing Host Countries Sign Increasingly Strict Investment Agreements’ (*VOX CEPR’s Policy Portal* 1 August 2014), www.voxeu.org/article/why-developing-host-countries-sign-increasingly-strict-investment-agreements.

732 UNCTAD, ‘The Role of International Investment Agreements in Attracting Foreign Direct Investment to Developing Countries’ (UN 2009) http://unctad.org/en/docs/diaeia20095_en.pdf; Bubb and Rose-Ackerman (n 728) 291–311.

It therefore seems likely that IIAs are only part of the policy framework that attracts FDI and are only one of the factors that may influence whether or not a company invests in a developing country. Despite arguments over the extent of the benefits received by developing countries from FDI, the extent of funds required for climate change measures is likely to involve FDI. Accordingly, it is worth examining the way in which foreign investment is regulated and whether the imposition of conditions on this investment could be of assistance for developing countries.

3.6.1 Performance requirements

Performance requirements are stipulations imposed on investors that require them to meet certain specified goals with respect to their operations in the host country. They may act as conditions for the investor's entry into the host country and can involve many different measures, although they are primarily designed to affect FDI and usually apply to the post-entry phase of investment.⁷³³ Some believe that technology transfer could be supported through the use of FDI performance requirements in developing countries;⁷³⁴ however, there has been relatively little examination of the role that IIL plays in relation to performance requirements and investment and of the ways in which this regime may create tensions with the UNFCCC framework. Performance requirements are, *prima facie*, prohibited in both investment law and trade law. To date, however, there have only been two WTO challenges involving performance requirements, which suggest that as a practical matter, states have not strictly enforced the prohibition against performance requirements.⁷³⁵ In theory, the IIL regime has the potential to hinder a state's ability to regulate in relation to climate change, including in relation to the use of performance requirements. As both technology transfer and FDI are considered essential to the success of climate change initiatives, it is worth considering the potential utility of performance requirements and legal obstacles to their use.

Because performance requirements are regarded as state interference in the economic choices of an investor regarding the management of their investment, they are usually justified on the basis of the host country's need to minimise disadvantages while maximising the benefits of an investment.⁷³⁶ Both developing countries and developed countries have traditionally used them. Developing countries have employed performance requirements to secure the types of investment that align with their development priorities and to attempt to control restrictive business practices on the part of firms in relation to technology and funds. On the other hand, developed countries' reliance on the use of these kinds of performance requirements has declined in recent years as they are more likely to be able to rely on incentives or regulations to achieve the same ends. Extensive incentives or sophisticated regulatory measures are not always available to more poorly resourced developing countries.⁷³⁷

733 Peter Muchlinski, Federico Ortino, and Christoph Schreuer (eds), *The Oxford Handbook of International Investment Law* (Oxford University Press 2008) 31.

734 Suzy H Nikièma, 'Performance Requirements in Investment Treaties' (International Institute for Dispute Settlement 2014) www.iisd.org/sites/default/files/publications/best-practices-performance-requirements-investment-treaties-en.pdf.

735 Aaron Cosbey, 'Everyone's Doing It: The Acceptance, Effectiveness and Legality of Performance Requirements' (International Institute for Sustainable Development 2015) www.iisd.org/itm/2015/02/19/everyones-doing-it-the-acceptance-effectiveness-and-legality-of-performance-requirements/.

736 Nikièma (n 734).

737 *Ibid.*

There are at least four types of performance requirements commonly discussed in the literature:

- requirements that aim to strengthen domestic capacity in the regulated sector itself (for example, requirements to perform domestic research and development (R&D), technology transfer, joint ventures);
- requirements that aim to build backward or forward linkages from a regulated sector (often local content requirements, for example, requirements to process products in the host country or to use local goods and services);
- requirements for regulated firms to improve social outcomes (for example, quotas on the employment of locals or training and capacity building initiatives within the local economy); and
- requirements to contribute to macroeconomic balance (for example, ensuring that firms are not exerting undue pressure on the balance of payments by importing more than they export).⁷³⁸

Performance requirements could be readily used by developing countries to require technology transfer to accompany an investment, particularly where it relates to climate change adaptation or mitigation. However, the use of performance requirements is not without controversy. While some states view performance requirements as effective tools that maximise the contribution of FDI to development in the host state, in other spheres they are viewed as ineffective, or worse, damaging to the free movement of FDI and trade and, therefore, to the ability of the host country to attract both.⁷³⁹

Nevertheless, some studies support the view that performance requirements can be used successfully to assist a country in meeting development goals while they continue to attract high levels of FDI. For example:

- Chang surveyed the successful use of industrial policy in the economic rise of post-war Japan and modern South Korea, Singapore and Taiwan with various tools that included a number of different performance requirements;⁷⁴⁰
- Rodrik and Long describe China's successful efforts to alter the pattern of its export trade using performance requirements among other tools;⁷⁴¹
- Mazzucato documented China's successful push to develop solar photo-voltaic and wind power sectors with extensive use of local content and technology transfer requirements;⁷⁴²

738 Aaron Cosbey, n 735.

739 Nikiéma (n 734) 1.

740 Ha-Joon Chang, 'Industrial Policy in East Asia: Lessons for Europe' (2006) 11 EIB Papers 106.

741 Dani Rodrik, 'What's So Special About China's Exports?' (NBER Working Paper No 11947) 2006 www.nber.org/papers/w11947.pdf; Guoqiang Long, 'China's Policies on FDI: Review and Evaluation' in Theodore H Moran, Edward M Graham, and Magnus Blomström (eds), *Does Foreign Direct Investment Promote Development?* (Institute for International Economics 2005).

742 Mariana Mazzucato, *The Entrepreneurial State: Debunking Public vs. Private Sector Myths* (Anthem 2013).

- Ranawat and Tuwari examined the influence of Indian government policy in fostering a competitive domestic automobile sector;⁷⁴³ and
- Morris, Kaplinski and Kaplan described the successful efforts of Botswana in fostering a domestic diamond processing industry through performance requirements.⁷⁴⁴

However, even in the above examples, it is generally conceded that there were specific economic factors at play as well as other policy tools apart from performance requirements that helped achieve positive results. Furthermore, many of these measures were originally implemented in the 1990s, prior to the introduction of various legal barriers to performance requirements in trade and investment law, which arguably have contributed to the view that performance requirements are not effective. These more successful examples are also more likely to be found in emerging economies and in larger more populous and stable countries rather than in the poorest LDCs that are likely to require the most adaptation assistance in the future.

In addition, there are also documented cases of failures, as well as examples where there was no significant positive benefit observed from the use of performance requirements.⁷⁴⁵ In a 2003 report, UNCTAD considered flows of FDI and the use of performance requirements in developing and developed countries and determined there were a number of international and domestic factors that impact FDI flows and the benefits they bring to a host country's economy. This report indicated that the limited success of performance requirements may be partly due to misuse during implementation. They must be balanced in order to produce the desired effect without jeopardising the economic viability of investments.⁷⁴⁶ For example, imposing high quotas for the supply of local goods or services will be ineffective where there is an absence of policies for capacity building or access to finance that will ensure the quotas can be met without jeopardising the investment.⁷⁴⁷

The capacity to manage and monitor performance requirements is also crucial. For example, R&D requirements are often ineffective because the success of these measures largely depends on the state's capacity to absorb, adopt and develop the technology and cover its associated costs. Similarly, the effectiveness of performance requirements that focus on technology transfer depends on the capacity of the state to specify the type of technology it needs the most and to monitor its implementation.⁷⁴⁸ Additionally, a multifaceted and complex policy approach must be taken in order for countries to be successful in the use of performance requirements, and countries must also possess strong and stable institutional and administrative functions (including stable legal systems, which is part of what attracts FDI) to achieve this success. These factors will not be present in many of the LDCs in the world, and some studies have considered these factors and found them to be

743 Mahipat Ranawat and Rajnish Tiwari, 'Influence of Government Policies on Industry Development: The Case of India's Automotive Industry' (Technology and Innovation Management (University of Hamburg) Working Paper No 57) 2009 <http://https://core.ac.uk/download/pdf/6795776.pdf>.

744 Mike Morris, Raphael Kaplinsky, and David Kaplan, *One Thing Leads to Another: Promoting Industrialisation by Making the Most of the Commodity Boom in Sub-Saharan Africa* (lulu.com 2012).

745 Morris, Kaplinsky, and Kaplan (n 744) 21; Aaron Cosbey and Howard Mann, 'Bilateral Investment Treaties, Mining and National Champions: Making It Work' (International Institute for Sustainable Development 2014) www.iisd.org/sites/default/files/publications/bilateral_investment_treaties_mining_national_uneca.pdf

746 Cosbey and Mann (n 745).

747 *Ibid.*

748 *Ibid.*

more significant than the presence (or lack of) IIAs and FDI.⁷⁴⁹ Furthermore, countries that have successfully used performance requirements are more likely to have some power in negotiations with investors and their home countries, particularly where the investor wants access to a large consumer market. LDCs or SIDSs are unlikely to have previously used performance requirements and are therefore only likely to have limited bargaining power in IIA negotiations.

For these reasons, there are obvious challenges involved in using performance requirements to advance climate adaptation through technology transfer. Not only are there many international restrictions on their use, but evidence of performance requirements' effects in developing countries is mixed overall. All this illustrates the need to design and incorporate carefully considered performance requirements as part of a range of policy tools employed by developing countries to facilitate FDI and the achievement of various policy goals, including technology transfer for adaptation purposes.

At present, however, the widespread use of performance requirements appears to be foreclosed by various legal constraints, even in countries and situations where it might prove fruitful. Most investment treaties and agreements forbid performance requirements. The prohibitions contained in IIAs are generally quite similar to those found within international trade law, and it is therefore worthwhile to examine both areas briefly.

The Agreement on Trade-Related Investment Measures (TRIMS) produced by the General Agreement on Trade and Tariffs (GATT) bans certain trade-related investment measures that are inconsistent with the provisions of Article III or Article XI of GATT. In addition, it provides a list explicitly prohibiting the following measures (many of which have been used as performance requirements):

- local content requirements;
- trade-balancing requirements;
- foreign exchange restrictions related to the foreign exchange inflows attributable to an enterprise (domestic sales requirements); and
- export controls.⁷⁵⁰

There are also additional performance requirements that are prohibited, conditioned, or discouraged by various IIAs at bilateral or regional levels, including:

- requirements to establish a joint venture with domestic participation;
- requirements for a minimum level of domestic equity participation;
- requirements to locate headquarters in a specific region;
- employment requirements;

749 Melaku G Desta and Moshe Hirsch, 'African Countries in the World Trading System: International Trade, Domestic Institutions and the Role of International Law' (2012) 61 *International & Comparative Law Quarterly* 127. A study was conducted in relation to seven countries in Sub-Saharan Africa, which had generally pursued a liberalisation route over the past two decades, but their economic performance has remained deeply disappointing. Desta and Hirsch concluded that the main impediments to trade related to rising sanitary import requirements in foreign markets and weak institutional capacity within the countries.

750 Agreement on Trade-Related Investment Measures (15 April 1994) 1868 UNTS 186, annex.

- export requirements;
- restrictions on sales of goods or services in the territory where they are produced or provided;
- requirements to supply goods produced or services provided to a specific region exclusively from a given territory;
- requirements to act as the sole supplier of goods produced or services provided;
- requirements to transfer technology, production processes or other proprietary knowledge; and
- R&D requirements.

Further, even where a specific prohibition on performance requirements is not included in an IIA, if both states to an agreement are WTO members, the TRIMS clauses can often be incorporated into any agreement they sign. There can also be issues with an investor using the MFN clause to essentially ‘import’ a prohibition on performance requirements from another treaty the host state is bound by, consequently gaining the benefit of it, even if the same provision is not explicitly included in the relevant agreement.⁷⁵¹ Similar provisions prohibiting performance requirements are replicated in the majority of IIAs. As stated above, the illegality of many performance requirements creates an obvious barrier to their use by developing countries in conditioning FDI or attempting to force technology transfer to take place.

Although the evidence in relation to the effect of performance requirements in developing countries is mixed, performance requirements do appear to hold promise in at least some circumstances as a tool for conditioning FDI to meet host country objectives, including potentially technology transfer for adaptation efforts. Unfortunately, existing bans on performance requirements foreclose their use, even in circumstances where they could prove helpful. And prohibitions on performance requirements are not the only obstacle in this area. The following, closer consideration of IIL illustrates that it currently operates in such a way that it may also impede government regulation in relation to climate change.

3.6.2 *Investor-state dispute settlement*

ISDS mechanisms, which are increasingly included in the majority of IIAs, allow private investors to sue a host state for an alleged violation of an IIA between the host state and the investor’s country of origin. Given the proliferation of IIAs and the subsequent increase in arbitration proceedings, it is unsurprising that much of the focus of scholars on IIL in recent years has been on ISDS mechanisms which have drawn strong opposing views about their legitimacy and use. This criticism often focuses on three common features of IIAs that are relevant as precursors to considering the ISDS system in detail:⁷⁵²

- Each treaty authorises foreign investors to make and seek enforcement of claims for damages against state parties without the claims being vetted by the investor’s home state or an international organisation.

751 UNCTAD, ‘Most-Favoured-Nation Treatment: A Sequel’ (United Nations 2010) http://unctad.org/en/Docs/diaeia20101_en.pdf.

752 Gus Van Harten, *Investment Treaty Arbitration and Public Law* (Oxford University Press 2007) 6.

- Sovereign acts of states, including those that apply to a wide range of governmental activity, are within the purview of arbitrators' comprehensive jurisdiction.
- Disputes are resolved using a private model of adjudication using similar rules and enforcement structures of international commercial arbitration that were originally designed for private parties. This presents major challenges to public law principles of transparency, judicial accountability and independence.

The forum in which investor-state arbitration occurs is normally outlined in the relevant IIA, but the International Centre for Settlement of Investment Disputes (ICSID) is the leading international dispute settlement institution and one of the most commonly chosen dispute resolution centres. Established in 1966 by the ICSID Convention, ICSID administers the majority of all international investment cases. Once a case is referred to the ICSID (or another arbitration body) the disputes are decided by a panel of three arbitrators.

ISDS adjudication has expanded dramatically in recent years and has been criticised by a number of commentators, for various reasons. There are concerns about the fact that awards rendered by tribunals are not subject to appeal in the traditional sense that court judgments can be appealed. This concern is further heightened in view of a number of large awards⁷⁵³ produced in recent years. As it relates to the sovereignty of states, the main concern expressed about the ISDS system identifies the potential for 'regulatory chill' on the decisions of governments,⁷⁵⁴ or what some commentators regard as interference with the sovereignty of states.⁷⁵⁵ There are many stakeholders who agree that the arbitration system is necessary because it offers independent, legal protections to foreign investors who would otherwise be vulnerable to local court systems and the whim of governments.⁷⁵⁶ However, a growing number of critics argue these provisions are negatively affecting areas of public policy concern and that the legitimate use of ISDS mechanisms to 'challenge extreme injustices such as expropriations'⁷⁵⁷ has been overshadowed by opportunistic investors who can 'threaten, or influence, government regulations and even policy.'⁷⁵⁸ Other criticisms of ISDS provisions relate to: (1) a lack of transparency in decision justification due to the prevalence of confidentiality provisions; (2) the impact of decisions on third parties who are unable to make submissions in relation to proceedings;⁷⁵⁹ (3) controversy around the lack of transparency in relation to third-party funding and potential impact on proceedings;⁷⁶⁰ and (4) concerns regarding 'treaty shopping' (ie, investors' manipulation of corporate nationality through the creation of shell companies).⁷⁶¹ Proponents of ISDS have acknowledged these criticisms such as increasing transparency in ISDS proceedings.⁷⁶² The United

753 *Ibid.*

754 *Ibid.*

755 *Ibid* 67.

756 *Ibid* 221.

757 Shawn Donnan, 'Trade Deals: Toxic Talks' *Financial Times* (London, 6 October 2014) www.ft.com/content/27b8740e-48ce-11e4-9f63-00144feab7de.

758 *Ibid.*

759 Velimir Živković, 'Rethinking Interested Parties in ISDS: The Case of 3rd States' (*Kluwer Arbitration Blog*, 3 December 2015) <http://kluwerarbitrationblog.com/2015/12/03/rethinking-interested-parties-in-isds-the-case-of-3rd-states/#comment-7314>.

760 Alstein (n 719).

761 Javier García Olmedo, 'Claims by Dual Nationals under Investment Treaties: A New Form of Treaty Abuse?' (*EJIL Talk!* 9 December 2015) www.ejiltalk.org/claims-by-dual-nationals-under-investment-treaties-a-new-form-of-treaty-abuse/#more-13879.

762 For example, the 2014 UNCITRA. Rules on Transparency in Treaty-based Investor-State Arbitration addresses criticisms about lack of transparency and the inability of third parties to address submissions to tribunals. Under these Rules the default position provides for the extensive public disclosure of information and documents in the arbitration process, and both third parties and non-disputing treaty parties can make submissions.

Nations Commission on International Trade Law (UNCITRAL) has entrusted a working group to continue to work on possible reforms of ISDS.

As an international system, modelled on private arbitration but engaged in public law adjudication, the ISDS system is certainly unique. It illustrates the tension between the commercial interests of private actors and the public interests of states that exists at the heart of IIL.⁷⁶³ In some cases, tribunals have interpreted certain changes to a state's regulatory framework for public purposes as an infringement of investor rights and subsequently rendered large compensation awards.⁷⁶⁴ Some critics caution that '[f]aced with risks of uncapped financial liability due to ISDS claims, states may be deterred from implementing measures to fulfil their climate change responsibilities.'⁷⁶⁵ However, any potential award or financial liability must be understood in light of the limits imposed by clear compensatory standards established under international law and the relevant IIAs that require either 'wip[ing] out all the consequences of the illegal act' in the case of unlawful expropriations, or the 'fair market value' of the investment in the case of lawful expropriations.

Others argue that states have essentially enabled privately contracted adjudicators to determine the legality of sovereign acts and to award public funds to businesses that have sustained losses as a result of government regulation. Yet fundamentally, like the model of international arbitration between private parties, the ISDS is premised on consent. States have expressly agreed to submit disputes to independent adjudication under ISDS under the terms of the IIAs, and in the case of ICSID arbitration, have also ratified and signed the ICSID Convention to become contracting states. It has been argued that there is a clear and objective conflict of interest for arbitrators when they have been appointed by the parties involved and are operating without security of tenure in a system where only investors can bring claims but only states pay damages for a breach of treaty.⁷⁶⁶ Nevertheless, the alternative – enforcing a foreign investor's claims before unfamiliar domestic courts and judges – is also less than perfect and that ISDS at least provides more neutral tribunals than domestic courts.⁷⁶⁷ It is important to consider that empirical evidence confirms that states prevail more frequently in arbitrations than private businesses.⁷⁶⁸

A number of studies regarding the use of ISDS in IIAs have produced results that support the call for reform to ISDS.⁷⁶⁹ One extensive empirical study into judicial restraint within ISDS considered the discretionary choices of investment treaty arbitrators and investigated their review function and their exercise of constraint. The study discovered that generally adjudicators were more likely to adopt an expansive interpretation of decisions that would result in the widest possible expansion of their

763 Gus Van Harten, 'An ISDS Carve-out to Support Action on Climate Change' (2015) 11 *Osgoode Legal Studies Research Paper No 38* <http://digitalcommons.osgoode.yorku.ca/cgi/viewcontent.cgi?article=1112&context=olsrps>.

764 *Ibid.*

765 *Ibid.*

766 *Ibid.*

767 David W Rivkin, Sophie J Lamb, and Nicola K Leslie, 'The Future of Investor-State Dispute Settlement in the Energy Sector: Engaging with Climate Change, Human Rights and the Rule of Law' (2015) 8 *Journal of World Energy Law & Business* 130.

768 UNCTAD, 'IIA Issues Note Special Update on Investor-State Dispute Settlement: Facts and Figures' (2017) http://unctad.org/en/PublicationsLibrary/diaepcb2017d7_en.pdf.

769 A less extensive study focused on Ontario, Canada and whether ISDS contributed to regulatory chill within the government (through changes to decision-making) in the context of environmental protections. The empirical study was based on confidential interviews with 51 members of the government and—while the results are limited in their applicability—they did reveal, amongst other things, that government ministries had changed their decision-making to account for trade concerns, including ISDS, and that some ministers believed the regulatory process associated with trade decisions created undesirable obstacles for environmental decision-making. Gus Van Harten and Dayna Nadine Scott, 'Investment Treaties and the Internal Vetting of Regulatory Proposals: A Case Study from Canada' (2016) *Osgoode Legal Studies Research Paper No 26* https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2766978_code2200076.pdf?abstractid=2700238&mirid=1&type=2.

powers.⁷⁷⁰ Some consequently view investor-state arbitration as a vehicle for the exercise of sovereign authority and the contesting of sovereign states' choices by arbitrators.⁷⁷¹

An examination of some recent arbitration cases is further illustrative in relation to the concerns expressed above warranting calls for re-examination and reform of the ISDS system.

(A) PHILLIP MORRIS ASIA V AUSTRALIA

A recent high profile example of ISDS litigation was the action taken by Phillip Morris Asia against Australia in 2011 in relation to the Australian government's introduction of plain packaging for tobacco products.⁷⁷² Phillip Morris Asia challenged the plain packaging legislation under the 1993 Agreement between the Government of Australia and the Government of Hong Kong for the Promotion and Protection of Investments (HK-Australia BIT). In its challenge, Phillip Morris Asia argued that the regulation constituted an expropriation of their Australian investment, a breach of the FET standard contained in the HK-Australia BIT and an unreasonable and discriminatory measure such that Phillip Morris Asia's investments had been deprived of full protection and security.⁷⁷³

The decision of the arbitration panel was handed down on 17 December 2015. The tribunal held that Phillip Morris Asia's claims were inadmissible, but this determination was only made after the Australian government had reportedly spent AU\$50m in legal fees.⁷⁷⁴ At the time the plain packaging laws were being considered, the Phillip Morris International group transferred ownership of its Australian subsidiaries to Phillip Morris Asia. Phillip Morris Asia did not acquire the Australian operation until almost a year later, in full knowledge of the government's decision to regulate in this area.⁷⁷⁵

This led some commentators to speculate about the real motive behind Phillip Morris Asia's lawsuit, suggesting it was a cynical exercise in forum shopping that may have been motivated by a desire to ensure 'regulatory chill' – if not in Australia, in other countries that may have been considering similar regulations.⁷⁷⁶ This is quite plausible given that in 2014, under threat of a similar lawsuit, Canada changed its mind in relation to introducing plain packaging for tobacco,⁷⁷⁷ and New Zealand decided to await the outcome of the litigation against Australia before they introduced

770 Gus Van Harten, *Sovereign Choices and Sovereign Constraints: Judicial Restraint in Investment Treaty Arbitration* (Oxford University Press 2013), 17.

771 *Ibid* 1.

772 *Phillip Morris Asia Limited v The Commonwealth of Australia*, PCA Case No 2012-12, Notice of Claim (27 June 2011). In addition to a plain package, this measure also involved an increase in the size of graphic images of illnesses caused by smoking on the package.

773 Australian Government's Attorney-General's Department, 'Tobacco Plain Packaging: Investor-State Arbitration', www.ag.gov.au/Internationalrelations/InternationalLaw/Pages/Tobacoplainpackaging.aspx.

774 Peter Martin, 'Australia Faces \$50m Legal Bill in Cigarette Plain Packaging Fight with Philip Morris' (*The Sydney Morning Herald Sydney*, 28 July 2015) www.smh.com.au/federal-politics/political-news/australia-faces-50m-legal-bill-in-cigarette-plain-packaging-fight-with-philip-morris-20150728-gim4xo.html. The confidentiality regime surrounding the arbitration was such that the proceedings were heard behind closed doors in Singapore, and the publication of the decision required redaction of confidential information; 'Tobacco Plain Packaging: Investor-State Arbitration' (n 773).

775 *Phillip Morris Asia Limited v The Commonwealth of Australia*, PCA Case No 2012-12, Australia's Response to the Notice of Arbitration [2]. (21 December 2011)

776 Simon Chapman, 'Australian Government's \$50m Investment in Defending Against Big Tobacco Legal Thuggery' (*The Conversation* 30 July 2015) <http://theconversation.com/australian-governments-50m-investment-in-defending-against-big-tobacco-legal-thuggery-45427>.

777 Joseph E Stiglitz and Adam S Hersh, 'The Trans-Pacific Free-Trade Charade' *Project Syndicate* 2 October 2015) www.project-syndicate.org/commentary/trans-pacific-partnership-charade-by-joseph-e-stiglitz-and-adam-s-hersh-2015-10.

similar regulations.⁷⁷⁸ Furthermore, developing nations Togo, Namibia and the Solomon Islands have all received letters from big tobacco companies threatening litigation over similar laws. These countries would struggle to deal with the costs associated with such litigation.⁷⁷⁹ In fact, the tribunal in *Phillip Morris Asia v Australia* held that Phillip Morris Asia's initiation of the arbitration constituted an abuse of rights,⁷⁸⁰ concluding that 'the corporate restructuring [...] was carried out for the principal, if not sole, purpose of gaining Treaty protection.'⁷⁸¹ The tribunal also ordered that Philip Morris Asia bear some of the legal costs of the Australian government given their success in arguing Philip Morris Asia's abuse of rights.⁷⁸²

At around the same time as the arbitration, Phillip Morris Ltd (the parent company of Phillip Morris Asia) intervened in a complaint brought by British American Tobacco against the Australian government in the Australian High Court regarding the same legislation. The primary question was whether the plaintiffs were owed compensation because the government had acquired their property otherwise than on 'just terms', contrary to section 51 (xxxii) of the Australian Constitution.⁷⁸³ The tobacco companies were unsuccessful, with the High Court finding that the legislation did not exceed the power of the government, and there had been no acquisition of property that required provision of 'just terms' under section 51 (xxxii).⁷⁸⁴

In addition to these cases, the WTO Dispute Settlement Body established dispute settlement panels at the requests of Cuba, the Dominican Republic, Honduras, Indonesia and Ukraine in relation to Australia's plain packaging law. The five complainants argued that the measure is inconsistent with Australia's obligations under the TRIMS, GATT, and the Agreement on Technical Barriers to Trade. More than 40 WTO members joined the dispute as third parties.⁷⁸⁵ In 2018, the WTO panel released a decision concluding that Australia's policy on plain packaging was consistent with WTO law and this was upheld by the appellate body.⁷⁸⁶

(B) VATTENFALL V GERMANY (I AND II)

Relevant to climate change efforts is whether ISDS awards may chill government regulation on the environment. In 2009, a Swedish energy multinational Vattenfall sued the German government, seeking €1.4bn in compensation for environmental restrictions that had been imposed on one of its coal-fired power stations.⁷⁸⁷ One of the objectives of the environmental measures was climate change mitigation.⁷⁸⁸ The case, which was based on the ISDS provisions in the ECT, a multilateral agreement

778 Tariana Turia, 'Government Moves Forward with Plain Packaging of Tobacco Products' *Beehive New Zealand* (19 February 2013) www.beehive.govt.nz/release/government-moves-forward-plain-packaging-tobacco-products.

779 Kyla Tienhaara and Deborah Gleeson, 'Govt Should Own up to Cost of Tobacco Litigation' (*The Sydney Morning Herald Sydney*, 31 July 2015) www.theage.com.au/comment/govt-should-own-up-to-cost-of-tobacco-litigation-20150731-gion8s.html.

780 *Phillip Morris Asia Limited v The Commonwealth of Australia*, PCA Case No 2012-12, Award on Jurisdiction and Admissibility [585-588]. 17 December 2015.

781 See n 780 *Phillip Morris Asia Limited v The Commonwealth of Australia* (2015) [588].

782 *Phillip Morris Asia Limited v The Commonwealth of Australia*, PCA Case No 2012-12, Final Award Regarding Costs [57-71]. 8 March 2017.

783 This section of the Constitution restrains the government from acquiring property absent the payment of just terms.

784 *JT International SA v Commonwealth of Australia* [2012] HCA 43; *British American Tobacco Australasia Limited v The Commonwealth* [2012] HCA 43.

785 Attorney-General's Department (n 773).

786 WTO, Australia — 'Certain Measures Concerning Trademarks, Geographical Indications and Other Plain Packaging Requirements Applicable to Tobacco Products and Packaging' (DS435 and DS441) www.wto.org/english/tratop_e/dispu_e/435_441abr_conc_e.pdf.

787 *Vattenfall AB, Vattenfall Europe AG & Vattenfall Europe Generation AG v Federal Republic of Germany* ICSID Case No ARB/09/6, Request for Arbitration [79].

788 Rosalind Diepeveen, Yulia Levashova, and Tineke Lambooy, 'Bridging the Gap Between International Investment Law and the Environment', 4th and 5th November, The Hague, The Netherlands' (2014) 30 *Utrecht Journal of International and European Law* 145.

concerned specifically with investments in the energy sector, was settled after Germany agreed to water down the environmental standards.

In 2012, Vattenfall launched a second lawsuit against Germany, also under the ECT, in relation to Germany's phase-out of nuclear energy, following the Fukushima nuclear disaster in Japan.⁷⁸⁹ Vattenfall is seeking €4.7bn for lost profits related to two of its nuclear power stations. The German government has already spent over €3.2m to defend the case and expects to incur a total of €9m in legal costs.⁷⁹⁰ Germany's preliminary objections to the case were dismissed, and a hearing was held in October 2016. A final award on jurisdiction, merits and damages is pending. Most recently, the tribunal issued a discrete decision in August 2018 addressing the effect of a judgment of the European Court of Justice invalidating certain intra-EU bilateral investment treaties and upheld its jurisdiction over the case. The case has been temporarily suspended following Germany's request to disqualify all three arbitrators in the case in November 2018.

(C) MOBIL INVESTMENTS AND MURPHY OIL V CANADA

In 2007, Mobil Investments (a subsidiary of ExxonMobil) and Murphy Oil Corporation (the Claimants) sued Canada under the NAFTA, challenging a 2004 requirement adopted by the Province of Newfoundland and Labrador that required offshore oil firms to invest a portion of revenues in local R&D and education and training. The Claimants brought the case on the basis that these measures constituted banned performance requirements under Article 1106 of NAFTA. The NAFTA, although prohibiting performance requirements generally, allows parties to make some reservations in relation to existing non-conforming measures.

In the Claimants' view, the NAFTA banned performance requirements because 'they subjugate the business judgment of foreign investors to the development goals of the host State and, in so doing, create investment and trade distortions.'⁷⁹¹ They argued that the measures also did not fit within the exemption permitting some performance requirements contained in the NAFTA. Conversely, Canada argued that the requirements were not banned performance requirements pursuant to Article 1106 of the NAFTA, and that alternatively if they were, they were exempt because Canada had made a reservation regarding the requirements in the NAFTA itself.

In considering the arguments, the question before the Tribunal was whether the 2004 Guidelines imposed requirements 'to purchase, use or accord a preference to goods produced or services provided in its territory, or to purchase goods or services from persons in its territory' within the meaning of Article 1106(1) (c), and consequently, whether R&D and education and training constitute 'services' within the meaning of Article 1106(1) (c).⁷⁹²

The Tribunal accepted Canada's argument that the text of Article 1106 did not specifically refer to R&D and education and training as prohibited performance requirements. However, the Tribunal further stated that they 'were not convinced that the absence of such express reference necessarily

789 *Vattenfall AB v and others Federal Republic of Germany* (2012) ICSID Case No ARB/12/12, Notice of Arbitration.

790 Corporate Europe Observatory et al, 'Polluters' Paradise: How Investor Rights in EU Trade Deals Sabotage the Fight for Energy Transition' (December 2015) <http://corporateeurope.org/sites/default/files/pollutersparadise.pdf>.

791 *Mobil Investments Canada Inc & Murphy Oil Corporation v Canada* 2021, ICSID Case No ARB(AF)/07/4, Decision on Liability and on Principles of Quantum [176].

792 *Mobil Investments Canada Inc & Murphy Oil Corporation v Canada* (n 791) [212].

means that the terms are to be interpreted to the effect that the term ‘services’ does not include R&D and [education and training].⁷⁹³ In other words, the Tribunal found that although R&D and education and training were not listed explicitly, ‘services’ could be interpreted to encompass R&D and education and training, and nothing in the NAFTA excluded this interpretation. They disagreed with Canada’s argument that R&D requirements were aimed at increasing the knowledge base of the country not at distorting trade and investment flows and that the prohibitions on performance requirements were aimed at those performance requirements that would ‘otherwise reduce the cross-border flow and importation of goods and services.’⁷⁹⁴

The Tribunal stated that ‘this interpretation of Article 1106 is not an expansive reading of ‘services’ but is rather one that is consistent with the treatment of R&D and [education and training] in the NAFTA and the object and purpose of the treaty, which is to eliminate barriers to trade and increase investment opportunities within the NAFTA Parties.’⁷⁹⁵ On this basis, the majority of the Tribunal⁷⁹⁶ ruled in favour of the Claimants and orderd Canada to pay them CAD 17.3m, plus interest. This did not include potential future damages. To that end, in January 2015, Mobil Investments filed a new arbitration claiming over CAD 20m in damages for the period between 2012 and 2014 arising from the continued application of the 2004 Guidelines.⁷⁹⁷ The case remains pending following the tribunal’s rejection of Canada’s arguments that Mobil Investment’s claim should be barred.⁷⁹⁸

One commentator criticised the decision by pointing out that the Tribunal placed more emphasis on the effect of the measure at hand, rather than its purpose.⁷⁹⁹ Therefore, ‘performance requirement prohibitions provide a new battleground for the ‘public-private debate’ [...] whereby a necessary and delicate balance must be struck between rights of private investors and obligations of host States.’⁸⁰⁰ However, states have prohibited performance requirements because they may inhibit FDI.

This case illustrates the issues that states need to consider if they wish to apply performance requirements to facilitate technology transfer or other climate change policies. While some may argue that this case is one example of the great potential ISDS has to negatively affect the attempts of states to implement climate change regulations, it is also important to recognise that the interpretation of IIAs is specific to the text of particular IIA and, as the commentator also acknowledges, there needs to be greater awareness among states in negotiating the scope and content of performance requirements within IIAs.

There are also criticisms that cases compensating investors for the economic impacts of environmental regulations could undermine the theoretical underpinnings:

‘Rooted in the ‘polluter-pays’ principle, environmental regulation aims to shift the costs of environmental harm to the responsible entity. To compensate an investor for lost profits shifts the costs of regulation back onto the public, essentially turning the polluter pays principle on its head.

793 *Ibid* [215].

794 *Ibid* [222].

795 *Ibid* [225]-[246].

796 *Ibid*. The decision was a 2:1 majority, with Professor Philippe Sands QC dissenting.

797 *Mobil Investments Canada Inc. v. Canada* (2015) ICSID Case No. ARB/15/6, Request for Arbitration.

798 *Mobil Investments Canada Inc. v. Canada* (13 July 2018) ICSID Case No. ARB/15/6, Decision on Jurisdiction and Admissibility.

799 Alexandre Genest, ‘Performance Requirement Prohibitions, *Lemire v Ukraine and Mobil v Canada*: Stuck Between a Rock and a Hard Place’ (2013) 47 *RJTUM* 433, 466.

800 Genest (n 799) 444.

[...]

Climate change regulation is particularly vulnerable to ISDS attacks because, compared to many other areas of environmental law, climate policy is very much in its infancy. As climate policy evolves, it can be expected to impact a broad range of investments'.⁸⁰¹

These cases can be seen as part of the battleground between private and public interests. Werksman and others have previously considered this potential clash when examining the operation of the CDM, which was created under the Kyoto Protocol, and the way it conflicted with several international investment rules. The analysis is relevant to the broader consideration of IIL and climate change regimes:

'The Kyoto Protocol provides that CDM project activities should assist developing countries in achieving sustainable development and should promote real, measurable, and long-term benefits [...] [S]uch criteria applied by a host country could require a CDM project activity to use locally produced goods or services, build domestic capacity by employing local citizens, or require the transfer of technology to a local firm. Such requirements, to the extent that they affect the import or export of products, could run afoul of IIAs, including the WTO's Agreement on Trade-Related Investment Measures. Similarly, under a high standard IIA[...] these employment and performance requirements, even if imposed equally on domestic and foreign investors, would be prohibited. A blanket prohibition on 'performance requirements' could potentially undermine a core objective of the CDM – sustainable development benefits for the host country [...] Some investment disputes may include claims by a foreign investor that the host government acted in a discriminatory manner or in a manner that expropriated the investor's assets. This raises the following two important issues related to IIAs: (1) which procedure or forum should resolve such disputes; and (2) what law will be applicable to the dispute at hand? If both the Protocol and the individual project agreements are silent on the choice of forum and choice of law, whatever IIA is in force between the home and host states would likely govern the dispute. This could have the unwelcome effect of trumping emission reduction and sustainable development policies taken pursuant to the CDM.'⁸⁰²

This analysis is analogous to the broader conflict between IIL and climate change law. The cases discussed arguably provide support for the argument that these two legal frameworks are not working in a cohesive manner to ensure climate change can be prioritised. However, there are arguments in favour of the investment treaty system, and ISDS in particular, and its ability to balance the private rights of investors with public interests appropriately. Recent cases demonstrate ways in which this can be achieved. In *Burlington Resources v Ecuador*, the Tribunal ordered Burlington to pay US\$41m in compensation to Ecuador for environmental and infrastructure damage arising out of Ecuador's counterclaims for harm to the environment. The parties in that case specifically consented to the

801 Meredith Wilensky, 'Potential Liability for Climate-Related Measures under the Trans-Pacific Partnership' (Columbia Law School Research Paper No 14-441, 2014) 2-4, <https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Fellows/wilenskypotentialliabilitytpp.pdf>. Wilensky makes the compelling point that significant regulation, as yet unknown, is likely to be required in the future. She provides as examples climate emissions standards that require power plants to adapt to environmentally sound technologies and adaptation measures such as setbacks from coastlines that challenge property rights. She argues these types of measures may be subject to challenge under ISDS provisions, which could deter timely action to combat climate change.

802 Jacob Werksman, Kevin A Baumert, and Navroz K Dubash, 'Will International Investment Rules Obstruct Climate Protection Policies? An Examination of the Clean Development Mechanism' (2003) 3 *International Environmental Agreements: Politics, Law and Economics* 59.

Tribunal taking jurisdiction over the counterclaims, allowing the issue to be decided.⁸⁰³ In reaching its decision, the Tribunal had to consider the issue of the applicable law to the dispute, and – contrary to the above commentary’s caution that the lack of a specific choice of law provision would lead to domestic laws and policies being abandoned for IIAs – found that both Ecuadorian law and international law were applicable and it was left to the Tribunal’s discretion to apply either domestic or international law depending on the type of issue to be resolved.⁸⁰⁴ Because the environmental counterclaim was brought under domestic tort law, the Tribunal also extensively examined relevant statutory and judicial developments in Ecuador and found that a strict liability regime for environmental harm applied to Burlington.⁸⁰⁵ The Tribunal then turned to analyse the alleged environmental harm against the relevant domestic regulatory criteria defining environmental harm, including the permissible limits afforded by those criteria.

At the treaty-making level, there are recent shifts toward including the language of sustainable development and environment chapters within treaties evidencing the fact that IIL is not only capable of dealing appropriately with competing interests, but it is in the process of reform and that a dramatic overhaul of the system is unnecessary.⁸⁰⁶

Given this view, it is worth examining the provisions of a recently concluded regional trade agreement, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), in order to consider whether emerging trade and investment regimes can operate together in a way that allows states to take appropriate climate change action.

3.6.3 *The Comprehensive and Progressive Agreement for Trans-Pacific Partnership*

The international investment regime is linked to and interacts with international trade law, particularly in relation to the consideration of performance requirements, which are prima facie prohibited under both regimes. Accordingly, this section will briefly touch on international trade law, focusing on an evaluation of the CPTPP, the most recently finalised large-scale FTA.

After several years of negotiation, the CPTPP was finalised in October 2015, with all negotiating parties signing the agreement on 4 February 2016. It was set to become the world’s largest FTA, originally including 12 countries that generate almost 40 per cent of global GDP: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the US and Vietnam. Following US withdrawal from the treaty in January 2017, it could not be ratified in its current form, as ratification requires a group of states with GDPs comprising 85 per cent of the total. Nevertheless, at an APEC side-meeting in Hanoi in May 2017, the remaining eleven members agreed to aim to retain the treaty in amended form.⁸⁰⁷ The remaining members concluded the CPTPP, which still represented nearly 13.5 per cent of global GDP, and signed the agreement on 8 March

803 Kate Parlett and Sara Ewad, ‘Protection of the Environment in Investment Arbitration – A Double-Edged Sword’ (*Kluwer Arbitration Blog* (22 August 2017) <http://arbitrationblog.kluwerarbitration.com/2017/08/22/protection-environment-investment-arbitration-double-edged-sword/>).

804 *Burlington Resources Inc v Republic of Ecuador* (2017) ICSID Case No ARB/08/5, Decision on Counterclaims [71]-[75].

805 *Ibid* [224]-[247].

806 Werksman Baumert, and Dubash (n 802) 77.

807 Sri Jegarajah, Craig Dale, and Leslie Shaffer, ‘TPP nations agree to pursue trade deal without US’ *CNBC* (21 May 2017) www.cnbc.com/2017/05/20/tpp-nations-agree-to-pursue-trade-deal-without-us.html.

2018. Following Australia's ratification of the CPTPP in November 2018, it entered into force on 30 December 2018.

The preamble to the CPTPP recognises the 'inherent right' of the parties to regulate and resolves to 'preserve the flexibility of the Parties to set legislative and regulatory priorities' in relation to legitimate public welfare objectives, including the environment.⁸⁰⁸ A further reference mentions the promotion of 'high levels of environmental protection, including through mutually supportive trade and environmental policies and practices.'⁸⁰⁹ These references to preserving the ability of parties to regulate and the importance of mutually supportive policies between trade and the environment reappear throughout the agreement. Given that tribunals have previously found the contents of a treaties preamble to be relevant to its interpretation, it is encouraging that references to the environment have been included, although it is also noteworthy that the CPTPP does not explicitly refer to climate change at any point.

The CPTPP contains the usual broad definitions in relation to 'investment', and the usual substantive protections for investors, including provisions that protect against:

- nationality-based discrimination;⁸¹⁰
- uncompensated expropriations (or takings) of investments;⁸¹¹ and
- treatment of investments and investors that is contrary to the obligation to provide FET and full protection and security.⁸¹²

The FET standard is limited to the minimum standard available according to customary international law, which is generally considered more narrow in scope than what is contained in some older IIAs. The CPTPP also limits the scope of the FET standard by providing guidance in assessing whether an investor's investment-backed expectations are reasonable.⁸¹³ Similarly, there have been attempts to narrow expropriation claims in relation to 'indirect expropriation' by providing specific factors to be considered in the determination of whether certain regulatory measures constitute indirect expropriation.⁸¹⁴

The investment chapter of the CPTPP provides a more flexible framework in relation to state regulation and transparency than many older IIAs. It also provides for public access to hearings and documents, establishes the ability for third parties to make amicus submissions and creates a procedure for expediting the dismissal of frivolous claims.⁸¹⁵ These provisions are consistent with best practice under the 2014 UN UNCITRAL Transparency Rules and the UNCITRAL Model Law on International Commercial Arbitration and are a positive development. However, the chapter still bans performance requirements, and it also includes an ISDS system for which certain states have negotiated and agreed to explicit carve-outs.

808 Comprehensive and Progressive Agreement for Trans-Pacific Partnership (adopted 8 March 2018, entered into force 30 December 2018, Preamble) 'CPTPP'.

809 *Ibid.*

810 *Ibid* Arts 9.4, 9.5.

811 *Ibid* Art 9.8.

812 *Ibid* Art 9.6.

813 *Ibid* Ch 9, Annex 9-B.

814 *Ibid* Ch 9, Annex 9-B.

815 *Ibid* Arts 9.23, 9.24.

The prohibition on performance requirements is explicitly stated in Article 9.10, which prohibits the imposition or enforcement of any performance requirements in connection with ‘the establishment, acquisition, expansion, management, conduct, operation, or sale or other disposition of an investment of an investor.’ The list of actions that amount to performance requirements is lengthy, and it includes technology transfer, stating that no party will require another party to ‘transfer a particular technology, a production process or other proprietary knowledge to a person in its territory.’⁸¹⁶ There is no carve-out regarding the ISDS process in relation to performance requirements, though there are some carve-outs for pre-existing non-conforming measures. However, as the *Mobil Investments and Murphy Oil* case demonstrated, whether such carve-outs will assist parties depends very much on the interpretation of the facts in any particular arbitration. This prohibition mirrors that found in trade law, and the explicit prohibition of technology transfer is another example of the need to closely examine or re-examine IIAs under negotiation to facilitate technology transfer measures for climate change adaptation.

Article 9.16 is aimed at protecting environmental, health and other regulatory objectives of states. It provides that nothing in the chapter will prevent a party from ‘adopting, maintaining or enforcing’ measures ‘which are otherwise consistent with th[e] [c]hapter’ and which are aimed at ensuring investment activity is ‘undertaken in a manner sensitive to environmental, health or other regulatory objectives.’⁸¹⁷ This provision clearly enables states to enact regulations for environmental protection but any such measures must be consistent with the provisions of the investment chapter.⁸¹⁸ It remains to be seen how tribunals will rule when faced with a dispute about an environmental measure and tasked to balance the state’s competing objectives of promoting trade and protecting its environment.

In any event, and more importantly, parties to the CPTPP have incorporated Annexes that are designed to carve out certain regulatory and environmental measures from ISDS. For example, Mexico specifically expressed the limit of its consent to arbitration of claims arising out of enumerated laws including those regulating public infrastructure such as roads, bridges, ports and airports and its hydrocarbons law.⁸¹⁹ The contracting parties also expressly confirmed that non-discriminatory regulatory actions ‘designed and applied to protect legitimate public welfare objectives, such as public health, safety and the environment’ do not generally constitute indirect expropriations except in rare circumstances.⁸²⁰

The CPTPP also contains an environment chapter in which there seems to be a general recognition that environmental laws should not be reduced in order to encourage trade or investment and that parties are empowered to enact and enforce environmental laws. However, there is no mention of climate change, at least not explicitly, and the chapter also tempers potential environmental regulations by stating that its objective is ‘to promote mutually supportive trade and environmental policies.’⁸²¹ Furthermore, there is specific recognition that it would be inappropriate for the

816 *Ibid* Art 9.10.

817 *Ibid* Art 9.16.

818 For example, if a state regulation was found to be in breach of an obligation owed to investors, it would not be defensible under this protective provision. Conversely, if the regulation did not breach an obligation owed by states (in other words, it was consistent with the chapter), the investor would have no ability to bring an ISDS case in any event. The article arguably seems to have very little tangible effect.

819 CPTPP (n 808) Ch 9, Annex 9-L.

820 *Ibid* Ch 9 Annex 9-B.

821 *Ibid* Art 20.2.

parties to use environmental laws in a way that would constitute a ‘disguised restriction on trade or investment.’⁸²²

In a manner similar to the investment chapter, the wording in the environment chapter appears to repeat the idea of a balance between trade and environmental policies. This focus on a balance between the two regimes is important because similar ‘balance’ objectives have been used as interpretive aids in past arbitrations. Unlike the provisions in the investment chapter, which can be used to enforce claims under the ISDS system, there are no similarly strong, enforceable measures in the environment chapter despite the parties’ affirmation of existing environmental multilateral agreements.⁸²³

The failure to include any express provision in relation to climate change can be seen as a shortcoming when one examines the specific environmental protections that are included in the CPTPP. For example, there is an ozone layer provision that makes a point of incorporating the aspects of the Montreal Protocol on Substances that Deplete the Ozone Layer.⁸²⁴ The article in relation to marine pollution includes references to the relevant international conventions and protocols,⁸²⁵ and the CPTPP not only invokes the relevant international law for sustainable fisheries, but also requires that any fishery management system be established using the best available scientific evidence and best practices.⁸²⁶ In addition, the conservation of flora and fauna in the agreement actually requires parties to adopt, maintain and implement domestic laws to ensure they meet their obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora.⁸²⁷

Such explicit references to international treaties in other contexts lead to the question of whether the CPTPP represents a missed opportunity to incorporate UNFCCC specifically into the obligations in the agreement. Such incorporation would have provided reassurance for states seeking to undertake measures to combat climate change. This missed opportunity to reference climate change or the UNFCCC specifically may make it possible for an investor to argue that if the parties intended to protect climate change measures, they would have explicitly included those measures in the agreement as they did in other areas.

The only provision that even alludes to climate change is Article 20.15, which states, ‘[t]he Parties acknowledge that transition to a low emissions economy requires collective action’⁸²⁸ and proceeds to require parties to ‘cooperate to address matters of joint or common interest’ with a specific recognition that ‘each Party’s actions to transition to a low emissions economy should reflect domestic circumstances and capabilities.’⁸²⁹ This provision, while mirroring the principle of common but differentiated responsibility in the UNFCCC, places no concrete obligations on parties. In the absence of a carve-out that would allow states clear protection from ISDS under the investment chapter should they embark on regulations aimed at lowering emissions of GHGs, states need to rely on more general provisions about protection of environmental objectives.

822 *Ibid* Art 20.2.3.

823 *Ibid* Art 20.6.

824 *Ibid* Art 20.5.

825 *Ibid* Art 20.6.

826 *Ibid* Art 20.16.

827 *Ibid* Art 20.17.

828 *Ibid* Art 20.15.

829 *Ibid* Art 20.15.2.

The inclusion of an environment chapter is a positive step forward in a large FTA such as the CPTPP. However, the text of the agreement appears to focus on supporting a balanced relationship between environmental and trade policies rather than any clear prioritisation of the environment. In the absence of specific carve-outs in relation to climate change, states may still face difficulties in arguing that climate change measures constitute measures promoting environmental objectives.

One potential area where climate change regulations could potentially gain a foothold in the CPTPP is the exceptions chapter, which allows parties to outline areas where they wish to make exceptions to the agreement as a whole or to the operation of certain provisions. For example, the general exceptions in GATT Article XX apply in relation to a number of different chapters in the agreement but not to the environment or investment chapter, whereas Article 29.2 prevents the agreement in its entirety from impacting a state's essential security interests. This chapter also includes a denial of benefits clause in relation to tobacco control measures. Clearly included as a response to the *Phillip Morris Asia* litigation against Australia, the clause essentially represents a carve-out, in that it prevents the use of the ISDS system for claims relating to tobacco control measures if a party so elects. 'Tobacco Control Measures' are defined broadly and include measures 'relat[ing] to the production or consumption of manufactured tobacco products' and 'their distribution, labeling, packaging, advertising, marketing, promotion, sale, purchase, or use, as well as enforcement measures, such as inspection, recordkeeping, and reporting requirements.'⁸³⁰ Such a strong protection will allow countries to avoid cases similar to the *Phillip Morris Asia* arbitration if they introduce public policy measures in relation to tobacco. There is a possibility that a similar clause could be created regarding climate change regulation trade restrictions. At the same time, it has been argued that this type of provision would be difficult to emulate in relation to climate change measures, because it is so specific in terms of subject matter and scope; a climate change provision would need to be more general.⁸³¹ However, even if that were true, there are other clauses in the CPTPP more general in nature that could be replicated for climate change.

A second restrictive clause that may work as a model for climate change regulation is a provision that relates to the Treaty of Waitangi.⁸³² This provision outlines that – provided measures are not used to discriminate against parties or as disguised restrictions on trade or investment – nothing in the CPTPP will preclude New Zealand from adopting measures it deems necessary to accord more favourable treatment to Maori in respect of any matter covered by the CPTPP, including in its fulfilment of obligations under the Treaty of Waitangi.⁸³³ This is a broad provision, and, although it is specific to New Zealand and its indigenous people, it still allows for favourable treatment to a section of the domestic population over other parties, in accordance with a domestic law. A similarly justified, domestically beneficial provision regarding climate change action could potentially be incorporated into the treaty.

It is clear from this examination of the CPTPP, including the specific protections that were included – the denial of benefits clause and the other exception clauses – that the CPTPP is not entirely 'free'

830 *Ibid* Art 29.5.

831 'Fact Check: Can a Poker Machine Manufacturer Use the TPP to Challenge Changes to Gambling Laws?' *ABC* (5 February 2016) www.abc.net.au/news/2016-02-05/can-poker-machine-manufacturers-sue-the-government-under-tp/7101798.

832 This is a treaty first signed in 1840 between members of the British Crown and Maori chiefs in New Zealand which outlined many rights of Maoris but also resulted in a declaration of British sovereignty over New Zealand.

833 CPTPP (n 808) Art 29.6.

of restrictions or carve-outs. However, it still represents a missed opportunity to ensure a state's ability to regulate in relation to climate change without the risk of facing ISDS. As the text of the CPTPP demonstrates, this could have been included via a denial of benefits clause, an invocation of the UNFCCC specifically, or a similar provision to that of Article 29.2. In addition, a carve-out in the prohibitions on performance requirements to allow for greater flexibility in their use in certain confined circumstances could have helped facilitate technology transfer.

It is apparent that the CPTPP represents an improvement, in certain aspects, on IIAs that do not mention the environment. It has nonetheless been criticised by many commentators that it does not go far enough on climate change. The CPTPP provides a good example of the current trend in IIAs to include sustainable development language and other environmental provisions and to circumscribe the operation of ISDS tribunals to some degree. However, as the above examination demonstrates, the prohibition of performance requirements in the CPTPP is still problematic in the facilitation of technology transfer and the language of the CPTPP could have strengthened the enforceability of the environmental chapter and prioritised climate change objectives. As a reflection of IIL more generally, more needs to be done at the treaty-making level to tackle climate change. Various proposals have been put forward in recent years for changes that could be made to the IIL regime to ensure climate change objectives are given sufficient attention. A number of these are outlined below.

3.6.4 Proposed reform of international investment law

In 2014 UNCTAD released a report that confirmed a number of states were concerned with the IIL regime, noting that at least 40 countries and five regional organisations were in the process of reviewing their IIAs, and some had walked away from the use of such agreements entirely.⁸³⁴ The report stated:

'While almost all countries are parties to one or more IIAs, few are satisfied with the current regime for several reasons: growing uneasiness about the actual effects of IIAs in terms of promoting foreign direct investment (FDI) or reducing policy and regulatory space, increasing exposure to investor-State dispute settlement (ISDS) and the lack of specific pursuit of sustainable development objectives.'⁸³⁵

The underlying premise in the document was that the case for reform had already been made and the question was not whether to reform, but how. The report presented four different pathways for states:

1. maintaining the status quo, largely refraining from changes in the way they enter into new IIA commitments;
2. disengaging from the IIA regime, unilaterally terminating existing treaties, or denouncing multilateral arbitration conventions;
3. implementing selective adjustments, modifying models for future treaties but leaving the treaty core and the body of existing treaties largely untouched; or

834 UNCTAD, 'Reform of the IIA Regime: Four Paths of Action and a Way Forward' (June 2014) http://unctad.org/en/PublicationsLibrary/webdiaepcb2014d6_en.pdf.

835 *Ibid* 2.

4. reforming the IIL regime systematically, comprehensively addressing the IIA regime's challenges.⁸³⁶

UNCTAD appears to come down clearly on the side of systematic reform, asserting the need for a new IIA treaty model. UNCTAD points out that option three would not be successful unless it could address the MFN clauses in active IIAs, which could allow investors to 'treaty shop'. Systematic reform, on the other hand, would allow for international commitments to be designed that promote sustainable development and that rebalance rights and obligations within the IIL regime.

(A) A MULTILATERAL TREATY

In addition to UNCTAD, several commentators have proposed the creation of a multilateral investment treaty that could specifically take into account the environment and sustainable development.⁸³⁷ A systematic, uniform approach is preferred so as to avoid the risk of creating 'investment havens' if reform of IIL is tackled in a piecemeal way. A multilateral agreement on investment, proposed by the OECD, was aborted in 1998 due to significant disagreement about the proposed terms and substantial opposition from NGOs.⁸³⁸ However, given the consensus demonstrated at Paris in relation to the need for urgent action on climate change, another similar initiative may be more successful the second time around.

Some have proposed the adoption of a specific carve-out provision for climate change informed by past interpretive approaches of ISDS tribunals, by an acknowledgement of the importance of climate change action and by the potential deterrence ISDS creates for governments who wish to regulate in relation to climate change. The provision is intended to protect a future climate agreement and any corresponding state action from ISDS claims. For example, Van Harten proposes:

'This Article applies to any measure adopted by a Party to this Agreement and relating to the objective of stabilising greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system or relating to any of the principles or commitments contained in Articles 3 and 4 of the *United Nations Framework Convention on Climate Change* of 1992.

Such a measure shall not be subject to any existing or future treaty of a Party to the extent that it allows for investor-state dispute settlement unless the treaty states specifically and precisely, with express reference to this Article and this Agreement, that this Article is overridden. For greater certainty, in the absence of such a reference in a future treaty between two or more Parties, the future treaty is presumed to include in full and without qualification the first three paragraphs of this Article.

Any dispute over the scope or application of this Article shall be referred to, and fall within, the sole and exclusive jurisdiction of [specific body and process pursuant to the multilateral climate change agreement]. For greater certainty, no investor-state dispute settlement tribunal, arbitrator,

836 UNCTAD, 'Reform of the IIA Regime' (n 834) 2.

837 Van Harten (n 770).

838 Werksman Baumert, and Dubash (n 802) 61.

body, or process has jurisdiction over any dispute related to the scope or application of this Article.

The Parties shall not agree to any future treaty that allows for investor-state dispute settlement unless the future treaty incorporates in full and without qualification the language of the first three paragraphs of this Article. The Parties shall make best efforts to renegotiate any existing treaty with a non-party that allows for investor-state dispute settlement in order to ensure that the existing treaty incorporates in full and without qualification the language of the first three paragraphs of this Article.’⁸³⁹

A provision like this in a multilateral treaty would have the advantage of binding all parties with previous IIAs who are also parties to the multilateral treaty, although it would be likely to apply only to future investment. While this proposed solution is ‘legally possible’ it will be extremely ‘politically difficult’.⁸⁴⁰ Nonetheless, this could be a highly effective way of enshrining the ability to regulate in relation to climate change. Despite the risks, an alternative to the proposed new multilateral treaty would be to include a similar provision in all new IIAs that are negotiated. To that end the European Parliament has adopted a resolution asking the European Commission (EC) to consider including such protections in future trade agreements.⁸⁴¹

(B) CARVE-OUTS FOR PERFORMANCE REQUIREMENTS AND REGULATION

As mentioned above, an alternative to a new treaty would be to include carve-out provisions in any new IIA. These carve-outs could help ensure that IIA provisions are drafted in such a way that states can regulate effectively in relation to climate change without facing subsequent ISDS claims. The strongest type of carve-out is likely to be a denial of benefits clause, akin to that used for tobacco control measures in the CPTPP, such that climate change measures become an exception to the investment protections in IIAs.

Given the evidence of how potential performance requirements can assist in conditioning FDI to facilitate technology transfer, it would also be advantageous to draft IIAs in such a way that performance requirements directed towards climate change measures and/or technology transfer are permissible. Alternatively, a carve-out could be included that excludes the operation of the ISDS system from performance requirements that relate to climate change measures.

(C) MODEL DRAFTING/BEST PRACTICE IN IIAs

A less robust option than drafting specific carve-outs would be the promotion of best practice drafting in relation to public policy concerns in IIAs. For example, the International Institute for Sustainable Development introduced a Model International Agreement on Investment for Sustainable Development, which was drafted as a model IIA that includes sustainable development principles with

839 Van Harten (n 770).

840 *Ibid.*

841 The Council of Canadians, ‘EU Parliament Adopts Robust Mechanism Needed for Paris Climate Talks. Are European National Leaders Ready to Act?’ Council’s (Media Release, 16 October 2015) <http://canadians.org/media/eu-parliament-adopts-robust-mechanism-needed-paris-climate-talks-are-european-national-leaders>.

a view to strengthening the ability of host countries to regulate important matters of public policy.⁸⁴² UNCITRAL also has model rules in relation to transparency and arbitration, which assist the reform of ISDS rules by encouraging states to agree, as a default position, to more transparent, flexible agreements that allow for various protections, such as amicus submissions and the review of decisions. While these measures on their own are arguably not sufficient to ensure climate change objectives are taken into account, a move by all countries towards the drafting of IIAs based on sustainable development principles would still be beneficial.

(D) A NEW COURT

Given that the majority of concerns about IIL revolve around arbitration under ISDS, many view the creation of an international investment court as one possible solution. The EU is a strong proponent of an investment court and has included elements of an investment court system in its recently concluded treaties with Vietnam and Canada. To date, however, no such court has been created. Some supporters argue that an investment court will allow for greater independence and neutrality than is currently present in the ISDS system.⁸⁴³ Others note that there are many advantages of a permanent court, including that it would allow states to determine the composition of the bench, would increase institutional legitimacy, and would increase judicial independence and impartiality through tenure status. Other perceived advantages include the potential to reduce inconsistencies and fragmentation by centralising control in one body.⁸⁴⁴

However, there are also disadvantages and problems associated with an investment court. Contrary to arguments about greater independence and neutrality, the way in which the EU treaties have been drafted, for example, would ensure that the tribunals presiding over a dispute will always consist of a member with the nationality of an EU Member State and another member having the nationality of its treaty partner. More significantly, there is real uncertainty about whether awards rendered by investment courts would be considered awards for the purposes of the New York Convention, which would undermine the overwhelming success of that framework in the enforcement of arbitral awards.

The creation of an investment court is under current consideration by a working group of UNCITRAL looking into possible reforms of ISDS, which remains in its early stages. In the interim, a move towards carrying out all arbitrations in a central forum, such as the Permanent Court of Arbitration, may provide states with some of the desired benefits, without investing the same level of time and expense that would be required to create a new court.

(E) THE STATE OF NECESSITY JUSTIFICATION

Another possibility is raising a 'state of necessity' justification precluding wrongfulness in environmental matters.⁸⁴⁵ In the *Gabcikovo-Nagymaros Project* case the ICJ recognised that a state of necessity may justify state conduct aimed at protecting the environment. The state of necessity concept was also referenced in the arbitration litigation that resulted from the Argentinian

842 Howard Mann et al, 'IISD Model International Agreement on Investment for Sustainable Development' (International Institute for Sustainable Development, 2005) www.iisd.org/pdf/2005/investment_model_int_agreement.pdf.

843 Van Harten (n 770).

844 Stephan W Schill, *International Investment Law and Comparative Public Law* (Oxford University Press 2010) 9.

845 Di Benedetto (n 714) 168.

government's IIA breaches following the severe economic crisis at the turn of the century.⁸⁴⁶ In a subsequent series of decisions, tribunals considered whether Argentina had an 'essential interest' underlying the measures that had negatively affected foreign investors. Some of the tribunals interpreted this concept very narrowly and, as a result, rebutted the necessity defence. However, in *LG&E v Argentina*, the ICSID tribunal took a more expansive view and considered that 'essential interest' included economic and ecological interests. Ultimately, the tribunal decided that a state of necessity had existed, and this state of necessity justified the measures taken by Argentina that had otherwise violated investment rules. This recognition of the necessity defence took place under general international law and in reliance on a necessity clause within the relevant IIA.⁸⁴⁷

(F) A COMPARATIVE PUBLIC LAW ANALYSIS USING PROPORTIONALITY

Another possibility is to adopt a comparative public law approach to the IIL system (and to investor-state arbitration) so as to achieve an appropriate balance between the protection of investors and other public interests.⁸⁴⁸ Some argue that this method would be particularly useful given that traditional methods of treaty interpretation, that focus on treaty provisions in context and in light of their object and purpose, face significant limits in applying vague principles of IIL in the context of the modern regulatory state. Where there is room for 'interpretive leeway' in IIAs, a comparative public law approach could be used, which would involve examining standard concepts from IIL and drawing parallels with public law concepts in domestic law and other international regimes. This would:

- concretise and clarify the interpretation of the often vague standards of investment protection and determine the extent of state liability in specific contexts;
- balance investment protection and non-investment concerns;
- ensure consistency in the interpretation and application of investment treaties because the interpretative method would be uniform for all investment treaties;
- ensure cross-regime consistency and mitigate the negative effects of fragmentation by stressing commonalities and openness of IIL towards other international regimes, such as human rights and environmental law;
- legitimise existing arbitral jurisprudence by showing that the solutions adopted in investment treaty arbitration are analogous to the ones adopted by domestic courts or other international courts or tribunals; and
- suggest legal reform of investment treaty-making or changes to arbitral practice in view of different, or more nuanced, solutions adopted in other public law systems.⁸⁴⁹

One way to undertake this comparative approach is through the use of proportionality analysis, not as an alternative to the Vienna Convention on the Law of Treaties, but rather 'as informing the exercise of interpreting a treaty with a view to resolving conflicts between competing rights and

846 *Ibid* 168-169.

847 *Ibid* 170-171.

848 Schill (n 844) 38.

849 Schill (n 844) 26.

interests when the rules of treaty interpretation do not indicate priority of one right or interest over the other.⁸⁵⁰ Tribunals may have little choice but to adopt approaches similar to those used by domestic and international courts when faced with conflicts between important interests that must be weighed, although this approach raises the problem of laying more power in the hands of tribunals.⁸⁵¹ However, proportionality analysis could still be desirable due to the following:

‘Fundamental to the application of proportionality analysis (and comparable techniques of balancing) in investment treaty arbitration is the question of the relationship of proportionality analysis to the applicable law, and in particular to the applicable international law. The starting point is the good faith interpretation of the applicable treaty. A particular feature of most investment treaties is that they make provisions for investor rights without addressing in a comprehensive fashion the relationship of these to continuing powers of state regulation. It is likely that state parties typically did not intend a severe occlusion of these regulatory powers, and a good faith reading of the text of the applicable treaty in its context and in the light of the object and purpose of the treaty may well indicate that interpretation calls for a balance to be struck between investor protection and state regulatory powers. [...] In this way, application of the principle of proportionality can be consistent with, and a form of, the interpretation and application of the substantive provisions of investment treaties. It can arguably provide a rational process for weighing and balancing that can itself be grounded in the proper interpretation of investment treaties.’⁸⁵²

Proportionality analysis could clearly be useful in helping to regulate climate change concerns, particularly in treaties that do not expressly mention climate change. Such proportionality analysis would also be particularly helpful if combined with stricter drafting practices that carve out regulatory space for states, because doing so would allow for the balancing of environmental interests against those of investors in a rational and considered manner.

3.6.5 Conclusion

There are tensions between the existing IIL regime and the assumptions that underpin the UNFCCC and climate change framework. This tension occurs in different ways as demonstrated by an examination of FDI, technology transfer, the use of performance requirements and the effect of ISDS mechanisms on government regulation.

FDI and technology transfer are both essential to the implementation of successful climate change adaptation measures. The use of performance requirements and state regulation to condition FDI are two possible mechanisms that could facilitate further investment and technology transfer in relation to climate change adaptation. However, the current IIL regime, with its rigid ban on performance requirements and legacy ISDS provisions, may limit technology transfer and potentially chill government regulatory action.

All this demonstrates that there is a clear need to consider how to balance these competing interests in the IIL system in order to promote the strong global consensus that climate change requires urgent

850 *Ibid* 78.

851 *Ibid* 78.

852 *Ibid* 88.

action. Despite the ability of ISDS to balance appropriately environmental protection objectives and protection of investors and the current trends at the treaty-making level as demonstrated by the examination of the CPTPP, more needs to be done to promote concrete solutions to climate change. A number of proposals for reform have been considered; however, it is evident that this requires a collective and concerted effort by all states to generate widespread acceptance of any of the proposed measures.

3.7 Case study: desalination

The IPCC projects that climate change will significantly exacerbate water scarcity.⁸⁵³ In its report, *Climate Change 2014: Impacts, Adaptation, and Vulnerability*, the IPCC concludes that ‘[c]limate change is projected to reduce renewable surface water and groundwater resources significantly in most dry subtropical regions’ and therefore ‘will intensify competition for water among agriculture, ecosystems, settlements, industry, and energy production, affecting regional water, energy, and food security.’⁸⁵⁴ Although the location and magnitude of climate-induced changes in water availability remain uncertain (they are dependent in part on assumptions about the rate of climate change, population growth and choice of hydrological impact model),⁸⁵⁵ ‘[t]here is strong consistency in projections of reduced availability around the Mediterranean and parts of Southern Africa’, and one study projects that a 1°C rise in global mean temperature would cause eight per cent of the world’s population to experience a severe reduction in water resources.⁸⁵⁶

Climate-induced water scarcity has clear human rights implications. Water insecurity is understood as the lack of individual access to sufficient safe water for health and wellbeing, paired with the absence of control and effective management of scarce water resources.⁸⁵⁷ Although there has been a long-standing international debate over the existence of an explicit human right to water, mostly due to lack of recognition in the 1948 UDHR,⁸⁵⁸ several recent international human rights treaties refer explicitly to the relevance of water and sanitation in realising human rights. These treaties include the Convention on the Elimination of All Forms of Discrimination against Women,⁸⁵⁹ the Convention on the Rights of the Child⁸⁶⁰ and the Convention on the Rights of Persons with Disabilities.⁸⁶¹ In 2010, the UNGA explicitly recognised water and sanitation as a human right, acknowledging that clean drinking water and sanitation are essential to the realisation of all human rights.⁸⁶² Later that year, the UNHRC also reaffirmed the recognition. The UNHRC has also appointed a Special Rapporteur

853 IPCC, AR5 Synthesis Report: *Climate Change 2014* (n 36) 232.

854 *Ibid* 250. Of note, impacts vary by region. While water resources are projected to decrease in many mid-latitude and dry subtropical regions, they are projected to increase at high latitudes and in many humid mid-latitude regions.

855 IPCC, AR5 Synthesis Report: *Climate Change 2014* (n 34) Of note, this uncertainty is relevant to choice of adaptation measures; the IPCC recommends a ‘low regrets’ solutions ‘for which moderate investment clearly increases the capacity to cope with projected risks or for which the investment is justifiable under all or almost all plausible scenarios.’ *Ibid*, 254.

856 *Ibid* 250.

857 UNDP, ‘Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority’ (UNDP Programme of Assistance to the Palestinian People, 2010) www.ps.undp.org/content/dam/papp/docs/Publications/UNDP-papp-research-climatechange.pdf?download=2.

858 John Scanlon, Angela Cassar, and Noémi Nemes, ‘Water as a Human Right?’ (International Union for Conservation of Nature and Natural Resources, IUCN Environmental Policy and Law Paper No 51, 2004) <https://portals.iucn.org/library/sites/library/files/documents/EPLP-051.pdf>.

859 Convention on the Elimination of All Forms of Discrimination Against Women (adopted 18 December 1979, entered into force 3 September 1981) 1249 UNTS 13, Art 14(2) (h).

860 Convention on the Rights of the Child (n 386) Art 24(2).

861 Convention on the Rights of Persons with Disabilities (n 386) Art 28(2) (a).

862 UNGA Resolution 64/292, The Human Right to Water and Sanitation (3 August 2010) UN Doc A/RES/64/292.

on the human right to safe drinking water and sanitation.⁸⁶³ Finally, the 2030 Agenda for Sustainable Development⁸⁶⁴ includes water and sanitation as a dedicated goal, setting out to ‘ensure availability and sustainable management of water and sanitation for all.’⁸⁶⁵

Desalination, the process of removing dissolved salts and other minerals from seawater, brackish water or treated wastewater, is one option for increasing water availability in response to climate-induced scarcity. The IPCC identifies desalination as one of a number of adaptive measures that may ‘prove particularly effective’ when managing water in the face of climate change.⁸⁶⁶ Desalination is being promoted by water managers as an adaptation response in some regions⁸⁶⁷ and scholars observe that desalination has ‘emerged as a preferred climate change adaptation response.’⁸⁶⁸ Desalination as an adaptation measure, however, presents significant challenges and risks.

3.7.1 Cost

The high cost of desalination plants has long been recognised as the most significant constraint on the use of these systems;⁸⁶⁹ desalination has typically been viewed as economically feasible only for high-income or middle-income countries⁸⁷⁰ and can be prohibitively expensive even for smaller communities within developed countries.⁸⁷¹ Some studies have found that desalination can result in increases in the price of water thereby disproportionately burdening poor consumers.⁸⁷² ‘The typical production cost of conventional desalination plants running on fossil fuels is between US\$1/m³ and US\$2/m³’ and ‘[t]ypical figures for the investment cost of new installed desalination capacity range between US\$800 and US\$1,500 per unit of capacity (m³/d)’, with ‘[t]ypical operation and maintenance costs [...] estimated at about 2-2.5 per cent of the investment cost per year.’⁸⁷³ While costs to build and operate a desalination plant are technology-specific and location-specific, chief drivers of cost typically include energy use, infrastructure to transfer water from point of treatment to point of use, feed water transportation, fresh water delivery to end users and brine disposal.⁸⁷⁴ Of these, the cost of energy to power the system is often the most significant driver of cost, typically constituting 30 per cent of the total.⁸⁷⁵ At present, water produced through renewable desalination generally remains more expensive than that produced using conventional desalination systems

863 UNHRC Resolution 15/9, The Human Right to Safe Drinking Water and Sanitation (6 October 2010) UN Doc A/HRC/RES/15/9.

864 UNGA, Sustainable Development Goals (n 139).

865 *Ibid* (Goal 6).

866 IPCC, AR5 Synthesis Report: Climate Change 2014 (n 36) 253, 255 tbl 3-3. As discussed in greater detail below, the IPCC also flags potential trade-offs of desalination, including the ecological risks of saline discharge, high energy demand and associated carbon emissions, and the creation of disincentives for water conservation, 918 tbl 16-2.

867 Jamie McEvoy and Margaret Wilder, ‘Discourse and Desalination: Potential Impacts of Proposed Climate Change Adaptation Interventions in the Arizona-Sonora Border Region’ (2012) 22 *Global Environmental Change* 353, 355.

868 *Ibid* 355 (raising concern about desalination as potentially maladaptive).

869 Helena van der Vegt et al, ‘Patent Landscape Report on Desalination Technologies and the Use of Alternative Energies for Desalination’ (World Intellectual Property Organization, November 2011) www.wipo.int/freepublications/en/patents/948/wipo_pub_948_2.pdf 7..

870 van der Vegt et al (n 869) 7.

871 US Bureau of Reclamation and Sandia National Laboratories, ‘Desalination and Water Purification Technology Roadmap: A Report of the Executive Committee’ (2003) 23 (‘Current-generation desalination plants are expensive to buy and operate, and thus cannot produce water at rates that are affordable for agricultural uses or for municipal use in small and medium-sized [U.S.] cities.’).

872 McEvoy and Wilder (n 867) 358-60.

873 Mirei Isaka, ‘Water Desalination Using Renewable Energy’ (International Energy Agency-Energy Technology Systems Analysis Programme and International Renewable Energy Agency 2012) 3, 13.

874 *Ibid*.

875 *Ibid*.

powered by fossil fuel energy, although there is some expectation that the costs of renewable desalination will decrease, particularly relative to those of conventional desalination systems.⁸⁷⁶

3.7.2 Technology

There are two major methods of desalination: membrane separation (primarily through reverse osmosis) and thermal (primarily through distillation). Reverse osmosis uses high-pressure pumps and a semipermeable membrane to separate fresh water from seawater or brackish water. Seawater pressure is increased above the osmotic pressure allowing the desalinated water to pass through the semipermeable membranes. Thermal technology separates pure water from seawater using heat and evaporation. Saline feed water goes into the thermal plant where it is heated, causing fresh water to evaporate, leaving behind a highly saline solution (known as brine). The vaporised fresh water is collected using vapour cooling and condensation technology.⁸⁷⁷

Renewable desalination constitutes a significant new focus in the development of desalination technology. Renewable desalination systems rely on an established underlying desalination method (thermal or membrane) but integrate renewable energy technologies within the desalination system.⁸⁷⁸ 'Broadly, integration with renewable energy sources can be direct (using the heat or pressure generated by the device directly) or indirect (where renewable energy generates electricity which then drives the desalination process).'⁸⁷⁹ Renewable desalination technologies have the potential to both increase cost-effectiveness and reduce environmental impact.

Patent landscape research on renewable desalination reveals some patterns that suggest the importance of technology transfer if desalination is to succeed as a widespread adaptation measure. A 2011 report showed that with respect to overall desalination patenting, the most important locations were (in order of importance) Japan, Europe, the US, and China.⁸⁸⁰ The same study identified no patents or offices of first or second filings in a list of the LDCs.⁸⁸¹

Notably, the influence of technology transfer on IP values and private R&D incentives will need to be considered. Significant advances in desalination technology are often attributed to government investment in research and development,⁸⁸² but such investment only goes so far. Low private R&D budgets resulting from low profit margins is recognised as an obstacle to the further development of desalination technology.⁸⁸³

876 *Ibid.*

877 *Ibid* 5-6.

878 Mohamed A Eltawil, Zhao Zhengming, and Liqiang Yuan, 'A Review of Renewable Energy Technologies Integrated with Desalination Systems' (2009) 13 *Renewable & Sustainable Energy Reviews* 2245.

879 Van der Vegt et al (n 869) 16.

880 *Ibid* 52.

881 *Ibid* 87-88 app 6.

882 US Bureau of Reclamation and Sandia National Laboratories (n 871) 37 ('Due to significant Federal support of R&D programs in the past, radical advances in water treatment technologies have been realized in spite of under-investment in R&D by the private sector.');

David Sedlak, *Water 4.0: The Past, Present, and Future of the World's Most Vital Resource* (Yale University Press 2014) 221-24 (describing US investment in desalination research through the Office of Saline Water).

883 US Bureau of Reclamation and Sandia National Laboratories (n 871) 32 ('Due to low profit margins . . . [membrane] manufacturers presently are only able to invest, on the average, 1-4% of their gross margins in R&D activities.').

3.7.3 Greenhouse gas emission impacts

Desalination plants typically have high direct or indirect energy usage and associated carbon dioxide emissions.⁸⁸⁴ Directly, diesel or other fossil fuel power can be used to power the plants.⁸⁸⁵ Indirectly, plants may be fed power from a grid that has a high level of fossil fuel composition.⁸⁸⁶ Although improved processes and technologies have allowed modern desalination systems to become more energy efficient, analyses suggest ‘there is not a lot of room for [further] lowering energy consumption by desalination plants.’⁸⁸⁷

3.7.4 Maladaptation risk

Desalination plants can significantly affect the local environment and contribute to climate change. Indeed, the IPCC observes that ‘desalination of seawater as an adaptation option is expected to increase GHG emissions if carbon-based fuels are used as energy source.’⁸⁸⁸ These climate and other environmental impacts can be mitigated by using advanced technologies (such as ‘advanced systems for the intake of the seawater and the diffusion of the waste products, non-chemical pre-treatment options such as [ultrafiltration] and [microfiltration], and wastewater treatment technologies’⁸⁸⁹) and by using sophisticated and knowledgeable site selection.⁸⁹⁰ Greening a desalination project can, however, significantly increase costs⁸⁹¹ and the absence of cost-effective means of mitigating environmental impacts (in particular, reject stream management) has been recognised as a significant obstacle to the deployment of desalination systems.⁸⁹²

Desalination plants have also been critiqued as maladaptive on the grounds that they can induce growth, increase water prices and prove difficult for host communities to operate effectively.⁸⁹³ Some contend that large-scale desalination plants comprise a ‘highly technological management of water resources [that] runs contrary to the Dublin Principles and an emerging water management paradigm that calls for more participatory, transparent and decentralised water management strategies.’⁸⁹⁴ A study of the performance of reverse osmosis desalination plants in rural India found that the plants operated at only 30-60 per cent of the design capacity resulting in a significantly higher cost of product water production; the major causes were ‘[p]lant shut-down due to inadequate and erratic power supply, and plant break-down and inherent delay in repairs due to lack of adequate infrastructure.’⁸⁹⁵ The study recommended that ‘[d]esalinated water should be used in extreme circumstances’ as a ‘last resort’ and instead advocated for water conservation and more traditional

884 Van der Vegt et al (n 869) 16.

885 *Ibid* 10.

886 *Ibid* 11.

887 Sedlak (n 882) 225.

888 IPCC, AR5 Synthesis Report: Climate Change 2014 (n 36) 258.

889 Sabine Lattemann and Thomas Höpner, ‘Environmental Impact and Impact Assessment of Seawater Desalination’ (2008) 220 *Desalination* 1, 11.

890 *Ibid* 12.

891 Sedlak (n 882) 231-37 (describing the cost impacts of reducing environmental impacts associated with desalination projects in Perth, Australia, and Carlsbad, California).

892 US Bureau of Reclamation and Sandia National Laboratories (n 871) 34 (‘Cost effective and environmentally sensitive concentrate management is recognized as the significant hurdle to widespread adoption of desalination technologies, especially for inland regions that seek to make productive use of brackish water resources.’).

893 McEvoy and Wilder (n 867) 358-60.

894 *Ibid*.

895 PS Kelkar et al, ‘Performance Evaluation of Reverse Osmosis Desalination Plants for Rural Water Supply in a Developing Country—A Case Study’ (2003) 89 *Environmental Monitoring & Assessment* 243.

methods of water supply that ‘do not involve sophisticated technology and power’ and can be ‘managed by the local population for a long time’.⁸⁹⁶

3.7.5 Desalination in Gaza

Many of the challenges involved in implementing a desalination project to address climate-exacerbated water scarcity are apparent in a current project to construct a large-scale regional desalination plant in the Gaza Strip. Lack of access to adequate, safe and clean water has been a longstanding problem in Gaza. Average consumption of water in the region is 90 litres per capita per day (l/p/c/d), ten litres below the 100 l/p/c/d recommended by the World Health Organization (WHO),⁸⁹⁷ and a large portion of the water consumed by Gazans falls below WHO water quality standards.⁸⁹⁸ Gaza’s water scarcity arises from a combination of issues, including reliance on a single aquifer, overpopulation, poor infrastructure and the political difficulties of managing water as a shared resource with Israel. Underlying Gaza is a shallow aquifer, contiguous with the coastal aquifer to the north. The Coastal Aquifer Basin stretches along the Mediterranean coast through Israel and Gaza, and marginally into the Sinai Peninsula in Egypt.⁸⁹⁹ Gaza is the downstream user of said aquifer, which is essentially the only source of freshwater in the region.⁹⁰⁰ The limited water available from the aquifer is insufficient; Gaza annually consumes around three times the sustainable yield of the aquifer.⁹⁰¹ Water rationing is common, especially in the summer months. Palestinians are often left with no choice but to purchase additional supplies from water tankers, which are often unregulated, expensive and of dubious quality.⁹⁰²

Environmental factors, including climate change, also contribute to water scarcity in Gaza. Pollution from untreated sewage, agricultural return flows and seawater intrusions coupled with continued over-abstraction has led to increased salinisation of the aquifer.⁹⁰³ Ninety-five per cent of the water supply is currently contaminated beyond WHO-acceptable levels⁹⁰⁴ and at the current rate of deterioration the aquifer will be unusable by 2016, and irreversibly damaged by 2020.⁹⁰⁵ Finally, climate change is already contributing to further decreases in water supply. Average rainfall in the Gaza Strip has fallen to 316.3mm, 12 per cent below the historic average and projections indicate that the region will be subject to significant increases in temperature, coupled with a decrease in

896 *Ibid.*

897 Palestinian Water Authority, ‘Gaza Strip: Desalination Facility Project: Necessity, Politics and Energy’ (March 2015) www.pwa.ps/userfiles/file/%D8%AA%D9%82%D8%A7%D8%B1%D9%8A%D8%B1/%D8%AA%D8%B5%D9%86%D9%8A%D9%81%201/Desalination%20Report%20English.pdf 1.

898 *Ibid.*

899 United Nations Economic and Social Commission for Western Asia (UN-ESCWA) and Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), ‘Inventory of Shared Water Resources in Western Asia’ (2013) <https://waterinventory.org/sites/waterinventory.org/files/00-inventory-of-shared-water-resources-in-western-asia-web.pdf> 490.

900 Nidal al-Mughrabi, ‘As Gaza Heads for Water Crisis, Desalination Seen Key’ *Reuters* (26 June 2013) www.reuters.com/article/us-israel-palestinians-water-idUSBRE95P0RK20130626.

901 *Ibid.*

902 Amnesty International, ‘Troubled Waters – Palestinians Denied Fair Access to Water: Israel-Occupied Palestinian Territories’ (2009) www.amnestyusa.org/pdf/mde150272009en.pdf 3.

903 UN-ESCWA and BGR (n 899).

904 The WHO allows for 250 milligrams of chloride per litre of drinking water and 50 milligrams of total nitrogen per litre of drinking water. WHO, *Guidelines for Drinking-Water Quality* (2nd edn, WHO 1993); Palestinian Water Authority ‘Gaza Strip: Desalination Facility Project: Necessity, Politics and Energy’ (n 905) 1.

905 Palestinian Water Authority, (n 897) 1.

precipitation.⁹⁰⁶ Periods of rainfall will also likely be concentrated in a shorter time, causing run-off and erosion, decreasing the absorptive capacities of the soil and decreasing the absorption of harvested water.⁹⁰⁷ Climate change is therefore anticipated to exacerbate pressure over Gaza's scarce freshwater resources.⁹⁰⁸

Large-scale desalination has often been suggested as a good option for the region, because of Gaza's proximity to the Mediterranean Sea and because desalination of seawater may ease the stress placed on the coastal aquifer, allowing it to replenish before becoming irreversibly damaged.⁹⁰⁹ Seven desalination plants have been built in Gaza over the past 20 years: six brackish water desalination plants and one seawater desalination reverse osmosis plant located in the middle area of the Gaza Strip. The plants are operated by the Coastal Municipal Water Utilities, the operating water body in the Gaza Strip, and are directly linked to the municipal water networks.⁹¹⁰ However, the plants have limited capacity; the desalinated water produced represents approximately four per cent of total water consumption.

The Palestinian Water Authority (PWA) has been focused on the construction of a large-scale desalination plant in the Gaza Strip for the better part of two decades.⁹¹¹ However, plans have often been halted due to the unstable political landscape of the region as well as power shortages, potential environmental impacts, and lack of funding.⁹¹² In 2011, however, the release of the Comparative Study of Water Supply Options for the Gaza Strip, funded by the Government of Norway, prompted another proposal to construct a large-scale desalination plant in the Gaza Strip.⁹¹³ The feasibility study built on a previous report by the US Agency for International Development (USAID),⁹¹⁴ and led to a high-level financial analysis of the economics of the sector. Concern about the potential adverse effects of climate change, which would exacerbate water insecurity in the region, fuelled support for the project,⁹¹⁵ and unlike past failed efforts, the project was endorsed by the 43 members of the Union for the Mediterranean, including Israel, which labelled it as the first official Union for the Mediterranean project.⁹¹⁶ The main objective of the project is to 'alleviate the health crises threatening Gaza people

906 UNDP, 'Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority' (n 857); Palestinian TEAM, 'Impacts of Climate Change on Water Resources in Palestinian Territories' (UN Sustainable Development Knowledge Platform, Spain, May 2014) <https://sustainabledevelopment.un.org/content/documents/388208.%20Palestinian%20Territories.pdf>.

907 UNDP, 'Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority' (n 857) 6.

908 *Ibid* xi.

909 Al-Mughrabi (n 900); Palestinian TEAM (n 906).

910 Yunes Mogheir and Nasser Al Bohissi 'Optimal Management of Brine from Seawater Desalination Plants in Gaza Strip: Deir AL Balah STLV Plant as Case Study' (2015) 6 *Journal of Environmental Protection* 599.

911 Palestinian Water Authority, (n 897) 1.

912 Palestinian Water Authority (n 905). Both the Gaza Middle Area Plant, initiated by the German Development Bank (KfW), and the Khan Younis Plant, funded primarily by the Government of Japan and implemented by UNDP-PAPP, have experienced extensive delays. The Gaza Middle Area Plant was initiated in 2003. Although work has resumed, the plant will not be operative earlier than 2018. Its full capacity will be 120,000 cm³/d (the first phase will produce 60,000 cm³/d). The Khan Younis plant has been delayed since early 2000 partly due to funding issues, and will not be operative before 2017-2018 under the most optimistic scenario. Oded Eran, Gidon Bromberg, and Michal Milner, 'The Water, Sanitation and Energy Crises in Gaza: Humanitarian, Environmental and Geopolitical Implications with Recommendations for Immediate Measures' (EcoPeace Middle East and Institute for National Security Studies, 2014) http://ecopeace.org/uploads/FoEME_INSS_Gaza_Report_Final.pdf 11.

913 Palestinian National Authority and Palestinian Water Authority, 'The Gaza Emergency Technical Assistance Programme (GETAP) on Water Supply to the Gaza Strip, Component 1—The Comparative Study of Options for an Additional Supply of Water for the Gaza Strip' (CSO-G) (2011), www.humanitarianresponse.info/system/files/documents/files/PWA%20-%20CSO-G%20updated%20Final.pdf.

914 Palestinian Water Authority, 'Donor Contributions to the Water and Sanitation Sector in Palestine' (2013) www.pwa.ps/userfiles/file/World%20Water%20Day%20Booklet.pdf.

915 UNDP, 'Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority' (n 857) xii; 2.

916 Union for the Mediterranean Secretariat, 'Gaza Desalination Project: "The Largest Single Facility to be Built in Gaza"' (Environment and Water Division, 14 May 2011) <http://ufmsecretariat.org/wp-content/uploads/2011/07/Gaza-Desalination-Project-Fact-Sheet-14-May-2012.pdf> 3; Palestinian Water Authority, (n 897) 4.

through the improvement of water supplies from quality and quantity prospective.⁹¹⁷ In addition, the project is meant to rehabilitate the coastal aquifer by reducing pumping rates and create job opportunities associated with the plant's construction and operation.⁹¹⁸

To date, the large-scale regional desalination plant appears to be moving forward according to plan. The Palestinian Land Authority allocated a plot of land in southern Gaza, near Deir El Balah, to PWA for the location of the plant.⁹¹⁹ Construction began in March 2014,⁹²⁰ and in February 2015, the EU and United Nations Children's Fund (UNICEF) completed phase one of the project which involved installing an 18-kilometre-long pipeline to transfer 6,000m³ of treated seawater from the facility to 75,000 citizens.⁹²¹

The Gaza desalination project has received an extraordinary level of international financial and technical support. The overall project has been estimated to cost approximately US\$435m not including the costs of the energy supply; development of the energy supply infrastructure is projected to vary depending on the type of energy chosen, ranging from US\$10–75m.⁹²² Three development banks (the World Bank, European Investment Bank (EIB), and Islamic Development Bank) and multiple donors (including the Arab Gulf countries⁹²³ and the French Government via the Agence Française de Développement)⁹²⁴ have been involved in the project's financing. The EIB and the EC – through the European Neighbourhood and Partnership Instrument and the Facility for Euro-Mediterranean Investment and Partnership – conducted and financed a first phase of preparatory studies, costing €4m.⁹²⁵

Even with this financial and technical support, important questions remain regarding the plant's future operation, particularly with respect to the source of energy to power the plant. As part of its preparatory studies, the EIB developed an Energy Supply Report and estimated that the plant would demand 25 megawatts (MW) of installed power.⁹²⁶ Gaza derives electricity from three sources: the Israel Electricity Company provides approximately 120 MW; the diesel-based Gaza Power Plant has a generating capacity of 140 MW, and Egypt provides up to 30 MW (usually between 23-25 MW).⁹²⁷ Since the Israeli bombings of 2006, and due to limited diesel supply, the Gaza Power Plant has been generating only 40-60 MW, causing a decrease in energy of about 35 per cent.⁹²⁸ This supply

917 Palestinian Water Authority, (n 897) 3.

918 *Ibid.*

919 *Ibid*; Shaddad Attili, 'Water Crisis in the Gaza Strip' (UN Seminar on Assistance to the Palestinian People, 2015) www.un.org/depts/dpa/qpal/docs/2015Vienna/P2%20Shaddad%20Attili%20%20%20Executive%20Summary.pdf 7.

920 AFP, 'Europe-Funded Desalination Plant to Supply Water to Gaza' *The Times of Israel* (Israel 20 March 2014) www.timesofisrael.com/europe-funded-desalination-plant-to-supply-water-to-gaza.

921 UNICEF Middle East and North Africa, 'EU and UNICEF Mark Completion of First Component of EUR 10 Million Seawater Desalination Plant in Gaza' (24 February 2015) www.unicef.org/sop/press-releases/eu-and-unicef-mark-completion-first-component-eur-10-million-seawater-desalination.

922 *Ibid.*

923 Palestinian Water Authority, (n 897) 4.

924 *Ibid* 6.

925 Union for the Mediterranean, 'EIB Launches Tender for the Provision of Technical Assistance to the Construction of the Desalination Facility for the Gaza Strip' (8 March 2013) <http://ufmsecretariat.org/eib-launches-tender-for-the-provision-of-technical-assistance-to-the-construction-of-the-desalination-facility-for-the-gaza-strip> (Technical Assistance for the Desalination Facility for the Gaza Strip project, under the title 'Assistance to the Palestinian Water Authority (PWA) for the implementation of the water supply to Gaza, Seawater Desalination Project').

926 Palestinian Water Authority, (n 897) 8.

927 Eran, Bromberg, and Milner (n 912).

928 Charlotte Silver, 'Israel-Backed 'Solution' Could Worsen Gaza's Water Crisis' (*The Electronic Intifada* 11 March 2014) <https://electronicintifada.net/blogs/charlotte-silver/israel-backed-solution-could-worsen-gazas-water-crisis>.

only meets around 46 per cent of the estimated total demand in the region⁹²⁹ and Gaza frequently experiences blackouts.⁹³⁰ As such, an additional source of energy is essential to run the desalination facility.⁹³¹

The EIB's Energy Supply Report considered several energy options. A new overhead line to import electricity from Egypt or Israel is initially expected to meet demand.⁹³² Second, the report recommended expanding Gaza Power Plant's capacity, which is currently diesel-based. The PWA has estimated that Gaza would need financial support from international sources for three years, at the cost of US\$20m, to support the plant's energy need.⁹³³ The difficulty with relying on electricity from these sources is that because they are based on Gaza's existing and unreliable sources of power, they too are likely to prove unreliable, potentially leading to operational problems at the plant. A third option would be to ensure a 100 per cent backup onsite by reciprocating dual fuel-fired engines through the construction of a gas-fired power plant of about 30 to 35 MW capacity as the primary source of power for the desalination plant.⁹³⁴ The plant design calls for the possible construction of a dedicated gas-fired power plant next to the seawater reverse osmosis plant.⁹³⁵ If the power plant were developed, the supply from the overhead line would remain as a stand-by source. However, as of April 2015, this plant project was still considered optional.⁹³⁶

Unfortunately, whether imported, supplied by the Gaza Power Plant or ultimately generated at an on-site gas-fired plant, the power for the plant will produce GHG emissions and contribute to climate change. The Energy Supply Report considered renewable energy as a source of power for the plant. About ten per cent of the plant's power could be generated by photovoltaic cells at peak load, as a source of renewable energy on site. Additional renewable sources could be secured from offsite interventions. Nevertheless, the Energy Supply Report ultimately did not recommend renewable energy for the plant.

Disposal of brine by-product presents another challenge for large-scale desalination in Gaza. Improperly disposed brine can seep back into the already-damaged coastal aquifer, further polluting the region's groundwater supply.⁹³⁷ Options for the disposal of brine include: disposal of brine to the sea; discharge of brine to a wastewater treatment plant; deep well injection; evaporation pond; and land irrigation. A cost-benefit study of these options showed that Gaza's wastewater treatment plant cannot accommodate the volume of brine associated with large-scaled desalination and recommended disposal of brine to the sea as the best option.⁹³⁸ Sea disposal of brine must,

929 Eran, Bromberg, and Milner (n 912) 9 (452MW as of 2014).

930 Palestinian Water Authority, (n 897) 1.

931 *Ibid.*

932 Attili (n 919) 8.

933 *Ibid.*

934 Palestinian Water Authority, 'Gaza Sustainable Water Supply Program: Terms of Reference for the Associated Works for Gaza Desalination Project, Project Implementation Consultant' (April 2014), www.pwa.ps/userfiles/file/%D8%AA%D9%82%D8%A7%D8%B1%D9%8A%D8%B1/PIC%20TOR%20%D8%BA%D8%B2%D8%A9.pdf; Palestinian Water Authority, (n 897) 8.

935 Attili (n 919).

936 *Ibid.* 8.

937 UNEP, 'Environmental Assessment of the Gaza Strip Following the Escalation of Hostilities in December 2008-January 2009' (UNEP, 2009), https://wedocs.unep.org/bitstream/handle/20.500.11822/8736/UNEP_Gaza_EA.pdf?sequence=2&isAllowed=71. Arwa Aburawa, 'Gaza Seawater Desalination Plant Backed by Europe' (*Green Prophet*, 18 March 2012) www.greenprophet.com/2012/03/gaza-seawater-desalination-plant-backed-by-europe.

938 Mogheir and Al Bohissi (n 910) 6.

however, be carefully managed to avoid negative impacts on hydrology and water quality.⁹³⁹ Improper disposal could lead to wastewater from the plant re-entering the natural water of the region, further contaminating it and potentially exacerbating the damage already done to the coastal aquifer.⁹⁴⁰ Indeed, to ensure long-term, sustainable access to fresh water in Gaza it will be necessary not only to create alternative sources of water, as with desalination plants, but also to recover the coastal aquifer. There are no formal or informal agreements for the optimisation of use or protection of the aquifer⁹⁴¹ and the present lack of appropriate sewage treatment causes nitrate pollution and salt accumulation in the aquifer, resulting in severe damage.⁹⁴²

It therefore appears likely that Gaza will soon be home to a large-scale desalination plant that, when coupled with significant improvements in water infrastructure, could help to ease acute water scarcity. As described above, however, the desalination project has proved expensive and complex and is further complicated by its dependence on significant financial and technical support from the international community. Securing reliable power to operate the plant remains uncertain. Producing that power is likely to generate GHG emissions that could contribute to climate change and exacerbate water scarcity in the region. Great care will need to be taken to dispose of brine so as not to generate local environmental harm, including further degradation of the coastal aquifer.

3.7.6 Conclusions

The complex considerations involved in deploying desalination as an adaptive response, including the rapidly evolving state of desalination technology, make desalination particularly useful for illustrating intersections between climate adaptation, technology transfer, and human rights:

- Climate change is projected to cause or exacerbate freshwater scarcity in some regions and desalination is often identified as a possible adaptive response.
- Constructing and operating desalination systems in a cost-effective and environmentally sound way demands technical expertise in everything from site selection and environmental review to facility design and operation.
- Many technologies conducive to the cost-effective and environmentally sound operation of desalination systems, such as renewable desalination and advanced management of reject streams, are emerging with patent ownership concentrated outside of LDCs.
- Poorly implemented desalination projects threaten to be maladaptive and to negatively affect the local environment.
- Regions most in need of help to adapt to climate-induced water scarcity may be least well-situated (in terms of pipeline, power, technical and political infrastructure) to manage complex desalination projects so that they are cost-effective, environmentally sound, and respect human rights.

939 Aburawa (n 937).

940 Aburawa (n 937).

941 UN-ESCWA and BGR (n 899) 486.

942 UNEP, 'Environmental Assessment of the Gaza Strip' (n 937) 71.

An overview of the technology, financing and environmental impacts of desalination provides a basis for evaluating desalination as an adaptation measure by underlining the need for financial support and technology transfer to support desalination projects and by identifying intersections between desalination projects, the environment and human rights. Our examination of desalination illustrates the need for substantial financial support and technology transfer to support some adaptive approaches and encourages caution in the choice and implementation of adaptive technology transfer to avoid impacts that are maladaptive or impose other local environmental or social harms.

3.8 Conclusions and summary of key recommendations

The developed world's obligation to transfer technologies to assist the developing world in reducing GHG emissions and adapting to climate change is widely recognised and reiterated in successive climate agreements. Moreover, as the impacts of climate change have come into greater focus, the need for successful technology transfer to protect and advance human rights has also become increasingly apparent. Technology transfer is key to disseminating mitigation technology to slow down climate change and limit its effect. Access to specific adaptation technologies is needed to help communities manage or deflect climate impacts. Low-carbon technologies permit development and progress toward poverty eradication that will not exacerbate climate change. Environmentally sound climate technologies are becoming widely available. Renewable desalination technology, for example, may provide communities with a means to adapt to climate-induced water scarcity and support social and economic development without exacerbating climate change.

The broad consensus about the need for and importance of technology transfer stands in stark contrast to the relatively halting pace of realised-in-fact technology transfer. We have sought to address the core question suggested by this gulf between aspiration and achievement (namely, how do you make technology transfer a reality?) without getting overwhelmed by its complexity. International institutions, national governments and regulators are starting to pursue initiatives to mobilise private funding in support of climate initiatives, including through mechanisms such as green bonds, sustainable stock exchanges, and adaptation tax credits. These initiatives often do not explicitly connect to the UNFCCC process, including with respect to identifying goals for technology transfer. Going forward, international institutions, national legislators, regulators and other standard-setting bodies should consider the requirements and principles of technology transfer in designing these interventions. We recommend that international institutions, national legislators, regulators and other standard-setting bodies consider including:

- technology transfer requirements in the criteria that they develop for standards for green loans or awarding preferential lending rates by public bodies for green loans when designing public sector initiatives to scale up the green bond market;
- technology transfer in reporting requirements in efforts to integrate environmental and sustainability goals in financial reporting;
- a technology transfer requirement in the development of priority sector lending criteria;
- a technology transfer requirement as criteria are developed for awarding adaptation tax credits for developers of adaptation projects.

There is no settled methodology for accounting for climate financing. Methodological uncertainty is particularly pronounced with respect to accounting for adaptation financing, private finance, and technology transfer. Developing methods to better identify and quantify these finance flows could promote such financing. Including technology transfer as a criterion in accounting for developed countries' contributions to the Cancun mobilisation commitment would, for example, create a powerful incentive for developed countries to pursue technology transfer in their effort to mobilise private finance. We recommend that stakeholders:

- Continue to develop, through a transparent process, an appropriate and comprehensive methodology for accounting for flows of climate finance, including adaptation and private finance.
- Reference technology transfer and the principles developed by the Technology Mechanism in methodologies to account for flows of climate finance. The Technology Mechanism and the Financial Mechanism can coordinate to support countries in implementing mitigation and adaptation. TNAs, which countries carry out to identify technology priority needs, provide a means by which collaboration can occur between the Technology and Financial Mechanisms. These assessments result in implementable action plans.

The existing IIL regime may hinder the goal of mobilising private investment flows for technology transfer by banning performance requirements and providing for enforcement through ISDS mechanisms. While performance requirements, if they were lawful, could be part of a range of policy tools considered by developing countries seeking to condition FDI to facilitate policy goals, including technology transfer, at present the use of performance requirements is foreclosed by various legal constraints. Specifically, most investment treaties and agreements outlaw performance requirements. Moreover, ISDS mechanisms are included in the majority of IIAs and allow private investors to sue a host state for alleged breaches of an IIA.

The Working Group:

- Endorses reform of the IIL regime to promote technology transfer, including by allowing the use of performance measures and state regulation to condition FDI.
- Encourages states to be mindful of the importance of retaining the flexibility to impose performance requirements and other state regulation supportive of adaptive technology transfer in future trade or investment agreements.

Annexes

Annex I. Key regional and sub-regional bodies

Key regional and sub-regional bodies ⁹⁴³	
Body	Sub-region(s)
Africa	Eastern Africa, Middle Africa, Northern Africa, Southern Africa, Western Africa
African Union	Eastern Africa, Middle Africa, Northern Africa, Southern Africa, and Western Africa
Arab Maghreb Union	Northern Africa
Common Market for Eastern and Southern Africa	Eastern Africa and Southern Africa
Community of Sahel-Saharan States	Eastern Africa, Middle Africa, Northern Africa, and Western Africa
East African Community	Eastern Africa
Economic Community of Central African States	Middle Africa
Economic Community of West African States	Western Africa
Intergovernmental Authority for Development	Eastern Africa
Southern African Development Community	Southern Africa
Court of Justice of the Economic Community of West African States	Western Africa
East African Court of Justice	Eastern Africa
Tribunal of the Southern African Development Community	Southern Africa
The Americas	North America, Central America, South America, the Caribbean
Organization of American States	North America, Central America, South America, and the Caribbean
North Atlantic Treaty Organization	North America (and Europe)
Central American Integration System	Central America
Union of South American Nations	South America
Caribbean Community	The Caribbean
Association of Caribbean States	The Caribbean
Community of Latin American and Caribbean States	Central America, South America, and the Caribbean
Mercosur (Southern Common Market)	South America
Asia	Central Asia, Eastern Asia, Southern Asia, South-Eastern Asia, Western Asia
Association of Southeast Asian Nations	South-Eastern Asia
South Asian Association for Regional Cooperation	Southern Asia
Bangladesh, Bhutan, India, Nepal (BBIN)	Southern Asia

⁹⁴³ Geographical group composition of world regions and sub-regions based on the UN Statistical Division Groupings.

Regional Comprehensive Economic Partnership	South-Eastern Asia, Eastern Asia, Southern Asia (and Australia)
Asia-Pacific Economic Cooperation	South-Eastern Asia, Eastern Asia (and Oceania, North America, Chile, Peru, Russia)
TAKM (Organisation of the Eurasian Law Enforcement Forces with Military Status)	Western Asia
Shanghai Cooperation Organization	Eastern Asia and Central Asia
Gulf Cooperation Council	Western Asia
Arab League	Western Asia
Organization of the Petroleum Exporting Countries (OPEC)	Western Asia
Turkic Council	Western Asia
Economic Cooperation Organization	Western Asia
Europe	Eastern Europe, Northern Europe, Southern Europe, Western Europe
Council of Europe	Eastern Europe, Northern Europe, Southern Europe, Western Europe
European Union	Eastern Europe, Northern Europe, Southern Europe, Western Europe
European Economic Area	Eastern Europe, Northern Europe, Southern Europe, Western Europe
Nordic Defence Cooperation	Northern Europe
Eurasian Economic Community	Eastern Europe
Commonwealth of Independent States	Eastern Europe
Collective Security Treaty Organization	Eastern Europe
Oceania	Australia, New Zealand, Melanesia, Micronesia, Polynesia
Melanesian Spearhead Group	Melanesia
Polynesian Leaders Group	Polynesia
Pacific Islands Forum	Australia, New Zealand, Melanesia, Micronesia, Polynesia

Annex II. Regional consultative processes⁹⁴⁴

(i) EUROPE AND THE FORMER SOVIET UNION

Almaty Process, initiated by Kazakhstan at the Regional Conference on Refugee Protection and International Migration, 2011.

- Region: Central Asia.⁹⁴⁵
- Key objectives: coordinate response and protection for refugee and asylum seekers; counter trafficking and human smuggling networks; manage migration flows.

Budapest Process, initiated by Germany, 1991.

- Regions: Eastern, Central and Western Europe.⁹⁴⁶
- Key objectives: reduce irregular migration toward Western Europe from Central and Eastern Europe.

Prague Process, initiated at the Building Migration Partnerships Ministerial Conference, 2009.

- Region: Southern Europe.⁹⁴⁷
- Key objectives: establish legal migration channels (especially legal labour migration channels); social integration; and migration and development initiatives.

(ii) WESTERN MEDITERRANEAN

Rabat Process, initiated at the Euro-African Ministerial Conference on Migration and Development, 2006.

- Regions: North, West and Central Africa, Europe.
- Key objectives: leverage the developmental aspects of intra-regional migration; manage migration; coordinate intra-regional policies.

Mediterranean Transit Migration Dialogue (MTM Dialogue), initiated by International Centre for Migration Policy Development, 2002.

944 Randall Hansen, *An Assessment of Principal Regional Consultative Processes on Migration* (IOM, 2010).

945 Afghanistan, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkey, Turkmenistan.

946 Albania, Australia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Moldova, Netherlands, Norway, Poland, Portugal, Romania, the Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, and United States

947 Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kosovo/UNSCR 1244/1999, the Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Luxembourg, the former Yugoslav Republic of Macedonia, Malta, Montenegro, the Netherlands, Norway, Poland, Portugal, Moldova, Romania, the Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, the United Kingdom and Uzbekistan.

- Regions: Africa and EU Member States.⁹⁴⁸
- Key objectives: promote transit migration, migration and development, mix-migration and migration management.

5+5 Dialogue on Migration in the Western Mediterranean, initiated at foreign ministers meeting, 2001.

- Regions: Maghreb and Europe.⁹⁴⁹
- Key objectives: establish security, stability and regional integration.

(iii) THE AMERICAS AND THE CARIBBEAN

Puebla Process (Regional Conference on Migration), initiated by Mexico, 1996.

- Regions: South and South America.⁹⁵⁰
- Key objectives: combat human trafficking, irregularity and human rights abuses.

South America Meeting on Migration, Integration and Development, 1999.

- Region: South America.⁹⁵¹
- Key objective: coordinate migrant protections and rights.

(iv) ASIA AND OCEANIA

Arab Regional Consultative Process, initiated by League of Arab States, 2015.

- Region: Arab region.⁹⁵²
- Key objectives: link migration to development; address regional brain drain, integration, data sharing and migration management.

Abu-Dhabi Dialogue (Ministerial Consultations on Overseas Employment and Contractual Labour for Countries of Origin and Destination in Asia), initiated by the Manila Process, 2008.

- Regions: East and Central Asia, Horn of Africa.⁹⁵³
- Key objectives: establish legal recruitment practices; promote workers protections; manage migration; and share knowledge on labour market trends.

Colombo Process (Ministerial Consultations on Overseas Employment and Contractual Labour), initiated by South and Southeast Asian States, 2003.

948 Algeria, Cape Verde, Egypt, Ethiopia, the EU 27 Member States, Ghana, Kenya, Lebanon, Libya, Mali, Morocco, Niger, Nigeria, Norway, Senegal, Switzerland, Syria, Tunisia, and Turkey.

949 Algeria, Libya, Mauritania, Morocco, Tunisia, France, Italy, Malta, Portugal and Spain.

950 Belize, Canada, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama and the United States

951 Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uruguay and Venezuela (joined by Surinam and Guyana in 2001)

952 Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, Yemen.

953 Afghanistan, Bahrain, Bangladesh, China, India, Indonesia, Kuwait, Malaysia, Nepal, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Thailand, United Arab Emirates, Vietnam and Yemen

- Regions: South and Southeast Africa, Gulf Region.⁹⁵⁴
- Key objective: protect South and Southeast Asian migrant workers in the Gulf region.

(v) AFRICA

Migration Dialogue for Southern Africa (MIDSA), 2000.

- Region: Southern Africa.⁹⁵⁵
- Key objectives: cooperate on data collection, analysis and border management.

Dakar Follow-up or Migration Dialogue for West Africa (MIDWA), 2000.

- Regions: West Africa, Western Europe and the United Kingdom.⁹⁵⁶
- Key objectives: protect migrants; link migration with development.

Common Market for Eastern and Southern Africa (COMESA), initiated by COMESA member states, 2013.

- Regions: Eastern and Southern Africa.⁹⁵⁷
- Key objectives: regularise migration flows; combat trafficking, data collection and sharing.

Migration Dialogue for Central African States (MIDCAS), initiated by countries in the Central African Region within the Central African Economic Community of Central African States, 2012.

- Region: Central Africa.⁹⁵⁸
- Key objectives: establish regular migration channels; counter trafficking and human smuggling; combat terrorism.

Inter-governmental Authority on Development Regional Consultative Process on Migration (IGAD-RCP), initiated by the Intergovernmental Authority on Development in East Africa, 1996.

- Regions: East Africa, Horn of Africa.⁹⁵⁹
- Key objectives: share information; combat trafficking and irregularity; link migration to development.

954 Afghanistan, Bangladesh, China, India, Indonesia, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam. Observer: Bahrain, Italy, Kuwait, Malaysia, Qatar, Republic of Korea, Saudi Arabia

955 Angola, Botswana, Comoros, the Democratic Republic of Congo (DR Congo), Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe

956 West African States (Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo), with representatives from Belgium, France, Italy, the Netherlands, Portugal, United Kingdom, Spain, Switzerland, the United States and intergovernmental organizations.

957 Republic of Burundi, Comoros, DR Congo, Republic of Djibouti, Egypt, Eritrea, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, Zimbabwe

958 Angola, Burundi, Cameroon, Central African Republic, Gabon, Equatorial Guinea, DR Congo, São Tomé and Príncipe, Chad.

959 Governments of Chad, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Niger, Somalia, Sudan, Tunisia, Uganda and Yemen, Intergovernmental Authority on Development (IGAD), African Union (AU), IOM, European Union, United Kingdom, Italy, Malta and the Netherlands.

(vi) OTHER

Like-minded States Intergovernmental consultations on migration, asylum and refugees, initiated at UNHCR conference, 1985.

- Regions: South Pacific, North America, Europe.⁹⁶⁰
- Key objectives: coordinate asylum and refugee procedures; expand immigration activities and integration processes.

Bali Process, initiated at the Regional Ministerial Conference on People Smuggling, Trafficking in Persons and Related Transnational Crime, 2002.

- Regions: Central and East Asia, the US, South Pacific.⁹⁶¹
- Key objectives: coordinate regional law enforcement; combat trafficking and human smuggling; assist countries in managing refugee and asylum seekers in line with 1951 Convention.

960 Australia, Belgium, Canada, Denmark, Finland, Germany, Greece, Ireland, The Netherlands, New Zealand, Norway, Poland, Spain, Sweden, Switzerland, The United Kingdom, The United States

961 Afghanistan, Australia, Bangladesh, Brunei Darussalam, Cambodia, China, Fiji, France, Hong Kong, Indonesia, Iran, Iraq, Jordan, Kiribati, Lao PDR, Malaysia, Maldives, Mongolia, Nauru, Nepal, New Zealand, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Syria, Thailand, Timor-Leste, Turkey, United Arab Emirates, United States of America, Vietnam.

Annex III. Important considerations to guide links between labour migration and adaptation strategies

Assessments from previous pilot projects that capitalised on cross-border mobility as a climate adaptation strategy suggest different dimensions that deserve consideration prior to the development of project frameworks or strategies at the regional level.

1. Labour market dimension

- Pilot projects should be based on labour market assessments at the regional, sub-regional, and national level with input from labour ministries, employers, and workers' organisations.
 - Recommended resource: ILO Guiding principles on the access of refugees and other forcibly displaced persons to the labour market
- Projects should respond to the labour market needs of both sending and receiving communities.
 - Recommended resources: ILO (2017) World employment and social outlook: trends 2017; ILO (2015) Global employment trends 2015
- Pilot projects should match state investment projects and growth forecasts wherever possible.
 - Recommended resource: ILO (2015) The employment dimension of infrastructure investments
- Training and skills upgrading should be beneficial to both native and migrant workers, as well as affected ecosystems.
- Pilot projects should build on established labour mobility channels from climate-vulnerable communities wherever possible.

2. Social protection and human rights standards

- Pilot projects should consider the state of social protection mechanisms in both sending and receiving countries. States that recognise social security and have ratified ILO Convention 143 or have established other national legislative measures protecting migrant workers will be more likely to provide favourable protection spaces.
- Committed states should recognise ILO Convention C143 and strive to uphold its standards.
 - Recommended resources: ILO Conventions: C143 Migrant workers (supplementary provisions); C97 Migration for employment (revised)
- Committed states should have well-defined labour standards for domestic and migrant workers.
- Committed states should have tripartite mechanisms in place.
 - Recommended resource: ILO Convention: C144 Tripartite consultation

3. Economic dimension

- Pilot projects should be economically viable for both sending and receiving countries.
- Projects should allow vulnerable local communities to improve or at least maintain their revenues.
 - Recommended resources: ILO Solomon Islands (2015) Cash for work helps natural disaster recovery; ILO Asia and the Pacific (2011) Community contracting initiatives in calamity-prone areas
- Projects should ensure a certain level of diversification of activities and sources of revenues.
 - Recommended resource: ILO (2013) The community work programme: building a society that works
- Projects and policies should be consistent with future environmental change projections (to avoid misalignment with economic growth).
 - Recommended resources: ILO (2016) A just transition towards environmentally sustainable economies and societies for all; ILO (2011) Local investments for climate change adaptation: green jobs through green works; ILO (2011) Assessing green jobs potential in developing countries: a practitioner's guide

4. Institutional, legal and administrative dimension

- Pilot projects should be consistent with the national legal, administrative, and institutional frameworks where they take place.
 - Recommended resources: ILO Conventions: C97 Migration for employment; C143 Migrant workers; C87 Freedom of association and protection of the right to organise; C98 Right to organise and collective bargaining; C189 Domestic workers
- Projects and policies should support national entrepreneurship frameworks.
 - Recommended resource: UNCTAD (2012) Entrepreneurship policy framework and implementation guide
- Projects should fit into national legal frameworks.
 - Recommended resource: ILO Convention: C122 Employment policy; IOM migration law database
- Projects should be launched and/or supported under regional bodies that have technical expertise on migration, climate, and development (eg, EU, AU, and ASEAN).

5. Environmental dimension

- Pilot projects and policies should be consistent with the nature and the dynamics of regional, sub-regional, and national climate adaptation and mitigation plans.

- Expertise should be used to provide a mapping of climate vulnerabilities at the regional and national levels with a focus on climate-vulnerable sectors and the populations that fill them.
- Recommended resource: USAID (2014) Climate-resilient development: a framework for understanding and addressing climate change
- Projects should do no harm to surrounding ecosystems and should support the regeneration of climate-affected lands in sending countries.
- Recommended resource: ILO (2011) Local investments for climate change adaptation: green jobs through green works
- Technical expertise should be used to account for the range of uncertainties concerning the impacts of climate change on regional labour markets.
- Recommended resource: ILO (2016) Guidelines for a just transition towards environmentally sustainable economies and societies for all.

Annex IV. Understanding climate displacement risk

Just as the impacts of climate change will vary depending on geographical location, so will climate change effects on humans and their environment. How these effects on humans and the environment will interact with other social and economic factors to drive displacement will also vary. In devising laws and policies to prevent and respond to displacement caused in whole or in part by climate change effects, governments will therefore need to understand how the various factors and dynamics that drive climate-related displacement or that prevent return are likely to play out within their own territories and regions. Relevant factors include:

- Anticipated climate change effects within a country/sub-region and on a local level (eg, changes in temperature, changes in weather, changes in precipitation, rising sea levels, ocean acidification, changes in disease vectors).
- Geographic areas of climate hazard exposure (GAE) within a country/sub-region and on a local level (eg, low-lying areas, coastal areas, rivers basins, glaciers, agricultural areas, pastureland, cities).
- Climate hazard vulnerability pathways, for example:
 - human settlements located within the GAE (eg, coastal communities, farming communities, indigenous lands/communities, urban areas);
 - social, economic and other demographic vulnerabilities of certain populations/households within the GAE; and
 - the environment, natural resources and livelihoods on which humans depend in the GAE (eg, fresh water availability, rain-fed agriculture, fishing, pastoralism).
- Types of human movements likely to result, for example:

- rapid displacement from destruction of housing, loss of livelihood (eg, large-scale flooding that destroys homes, crops, food stocks);
 - rapid displacement from loss of food or water (eg, large-scale storms that wipe out fresh water sources, crops/food stocks);
 - seasonal or permanent migration from loss of livelihood (either alone or in combination with other factors) (eg, repeated seasons of below average or failed rains, low agricultural output, depletion of household assets or food stocks leading certain individuals to migrate to other rural areas or to towns and cities either seasonally or permanently); or
 - permanent displacement from loss of land (eg, storm surge, coastal erosion, rising sea levels that render certain areas uninhabitable).
- Potential influence of existing patterns of displacement and migration.
 - Barriers to return, for example:
 - loss of housing, land, schools, or vital services;
 - loss of livelihood or lack of employment opportunities;
 - lack of access to recovery assistance;
 - lack of social networks; and
 - lack of affordable housing or secure land tenure.
 - Resilience of affected households and communities and of government institutions at the local, regional and national level, for example:
 - at the household/community level (income levels, savings, available social and familial networks, access to insurance, security of land tenure, etc);
 - at the institutional level (level of participatory decision-making, access to information and complaints procedures, accountability mechanisms, requisite human and financial capacity, etc).



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