

INTERNATIONAL LAW ASSOCIATION

JOHANNESBURG CONFERENCE (2016)

INTERNATIONAL LAW AND SEA LEVEL RISE

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INTERIM REPORT (2016)

PART I: Background

A. Establishment of the Committee and its Mandate

The International Law Association (ILA) Committee on International Law and Sea Level Rise (hereinafter: Sea-level Rise Committee, or Committee) was established with the approval of the ILA Executive Council in November 2012.¹ The Committee was tasked with a two-part mandate:

- (1) to study the possible impacts of sea-level rise and the implications under international law of the partial and complete inundation of state territory, or depopulation thereof, in particular of small island and low-lying states; *and*
- (2) to develop proposals for the progressive development of international law in relation to the possible loss of all or of parts of state territory and maritime zones due to sea-level rise, including the impacts on statehood, nationality, and human rights.

The ILA Executive Council approved the appointment of Professor Davor Vidas (Norwegian branch) as the Chair of the Committee, and Professors David Freestone (British branch) and Jane McAdam (Australian branch) as Co-Rapporteurs.²

¹ ILA, *Minutes of the Meeting of the Executive Council* (London, 10 November 2012), at 5.

B. Background for the Establishment of the Committee

When the proposal for the Sea-level Rise Committee was made in October 2012, it was prompted by the findings and conclusions of the ILA International Committee on Baselines under the International Law of the Sea (hereinafter: Baselines Committee), as contained in its report adopted at the 75th ILA Conference in Sofia, Bulgaria, in August 2012;³ the discussions at the closed and open sessions of the Baselines Committee at the Sofia Conference;⁴ and the Resolution 1/2012 adopted at that conference.⁵ The proposal for the Sea-level Rise Committee was also prompted by scientific findings regarding the profound changes taking place in the Earth system, especially since the mid-20th century. The prospect of further and accelerating changes in the course of this century, including sea-level rise, will have consequent ramifications for the development of international law. This was the wider context motivating the proposal for a new ILA committee to focus on the international law implications of sea-level rise.

1. Conclusions of the Baselines Committee Sofia Report and Resolution 1/2012

The first international committee of the ILA set to study consequences of sea-level rise as regards the implications for international law was the Baselines Committee, formed in 2008.⁶ The Baselines Committee was established with a two-part mandate; as stated in the Committee's report, this was:

first, to “identify the existing law on the normal baseline” and, second, to “assess if there is a need for further clarification or development of that law”. The need to identify, and possibly clarify or develop, the existing law concerning the normal baseline *arises in response to possible sea level rise* that has been predicted to accompany the phenomenon of climate change, and the effects this may have in particular upon low-lying, small island developing states.⁷

In its 2012 Sofia report, the Baselines Committee concluded:

[I]f current predictions of sea level rise are realized, some States will become completely submerged. The resulting deterritorialization will likely mean, among other things, a total loss of baselines and of the maritime zones generated by coastal territory and measured from those baselines. Should the issue of deterritorialization fall to be considered by the international community at least in part as a baseline issue, the existing law of the normal baseline does not offer an adequate solution. Here the Committee raises the possibility of deterritorialization in the context of Article 5 baselines, *but the loss of a State's territory to rising sea levels is not primarily a baseline or law of the sea issue*. Substantial territorial loss is a much broader issue

² Ibid.

³ ‘Baselines under the International Law of the Sea: Committee Report’, in: International Law Association, *Report of the Seventy-Fifth Conference held in Sofia, August 2012* (London: ILA, 2012), 385–428. Hereinafter: *Baselines Committee Sofia Report*. That report is available also on-line at ILA Baselines Committee webpage, at <www.ila-hq.org/en/committees/index.cfm/cid/1028>. In further references to that report below, page numbers indicated relate to the ILA printed published report version, and pages referred to in brackets relate to the on-line report version.

⁴ ILA, *Report of the Seventy-Fifth Conference held in Sofia, August 2012*, at 429–431 (regarding the record of the open session).

⁵ Ibid, at 17. Available also on-line at ILA Baselines Committee webpage: <http://www.ila-hq.org/en/committees/index.cfm/cid/1028>.

⁶ The Baselines Committee was established with the approval of the ILA Executive Council in November 2008; see: ILA, *Minutes of the Meeting of the Executive Council* (London, 15 November 2008), at 4. The issue of sea-level rise was later also touched upon by the ILA Committee on the Legal Principles Relating to Climate Change, in its Second Report (Sofia, 2012), at 29–30 and 39–40; text available at the ILA website, at <www.ila-hq.org/en/committees/index.cfm/cid/1029>.

⁷ *Baselines Committee Sofia Report*, at 385–386 (on-line, at 1), referring to the *Proposal for the establishment of a new committee on baselines*, paras. 4 and 7; emphasis added.

encompassing concerns of statehood, national identity, refugee status, state responsibility, access to resources, and international peace and security. This issue requires consideration by a committee established for the specific purpose of addressing this range of concerns. The work of that committee should take into account the spirit of the modern law of the sea in which the interests of differently situated states are balanced. That committee should also recall the aims of the Convention: to strengthen peace, security, cooperation, and friendly relations among nations in conformity with the principles of justice and equal rights; to take account of the interests and needs of humankind as a whole; and to promote the economic and social advancement of all peoples of the world considering the special interests and needs of developing countries.⁸

Following on this, Resolution 1/2012 of the 75th ILA Conference recognised that:

substantial territorial loss resulting from sea-level rise is an issue that extends beyond baselines and the law of the sea, and encompasses consideration at a junction of several parts of international law, including such fundamental aspects as elements of statehood under international law, human rights, refugee law, and access to resources, as well as broader issues of international peace and security.⁹

The 2012 ILA Conference acknowledged that the issue requires consideration by a committee established for the specific purpose of addressing this broad range of concerns.¹⁰

2. Scientific Assessments of On-going Sea-level Change and Projections of Future Rise

As indicated above, it was new scientific evidence and findings that prompted the establishment of the Committee in 2012. These include in particular the findings of the Intergovernmental Panel on Climate Change (IPCC) concerning the trends in sea-level rise during the course of 20th century and the first decade of the 21st century, as well as its projections for further sea-level rise. Scientists agree that one of the most certain outcomes of a warmer world is an increase in global sea-levels; the amount and rate of future sea level rise is, however, still uncertain, even for the rest of the 21st century. A review of the scientific literature on sea-level rise, as referred to in the proposal for this Committee, was compiled in 2011;¹¹ the review indicated that, in a world that warms by 4°C by the year 2100, the rise in global sea levels was estimated in the literature between 0.5 and 2 metres.

At the time of the establishment of this Committee in 2012, the IPCC had issued four assessment reports, the last of which was published in 2007.¹² The First IPCC Assessment Report (FAR), issued in 1990, laid the groundwork and resulted in important general findings, including recognition that: (a) sea level had risen during the 20th century; (b) the rate of rise had increased compared to the 19th century; (c) ocean thermal expansion and the mass loss from glaciers were the main contributors to the 20th century rise; (d) during the 21st century the rate of rise was projected to be faster than during the 20th century; (e) sea level will not rise uniformly around the world; and (f) sea level would continue to rise well after GHG emissions are reduced. The FAR also concluded, however, that no major dynamic response of the ice sheets was expected during the 21st century, leaving ocean thermal expansion and the melting of glaciers as the main contributors to the 21st century rise. This was, in

⁸ *Baselines Committee Sofia Report*, at 424–425 (on-line, at 30–31); emphasis added.

⁹ Resolution No. 1/2012, para. 7.

¹⁰ *Ibid*, para. 8.

¹¹ R Nichols et al., ‘Sea-level Rise and Its Possible Impacts Given a “Beyond 4 C World” in the Twenty-First Century’, *Philosophical Transactions of the Royal Society–A*, 369 (2011), 161–181.

¹² The brief overview, contained in this and the next two paragraphs, of the previous four IPCC assessment reports, as related to sea-level change, is based on J.A. Church et al., ‘Sea Level Change’, in: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013), at 1142. Hereinafter: ‘Sea Level Change’, *Contribution of WG I to AR5*.

retrospect, a significant misconception in the context of our current understanding of sea level rise.¹³ The Second Assessment Report (SAR) in 1996 contained similar conclusions. However, by 2001, when the Third Assessment Report (TAR) was issued, new models replaced the energy balance climate models that had been previously used by the IPCC.

The 2007, Fourth Assessment Report (AR4) relied on more robust observations of the variations in the rate of global average sea level rise for the 20th century. Moreover, by the time of AR4, the satellite altimeter record¹⁴ was long enough to reveal the complexity of the time-variable spatial distribution of sea level. Nevertheless, three central issues remained in AR4. First, the observed sea-level rise over decades was larger than the sum of individual contributions as estimated by the AR4 methodology. Second, it was not possible to make confident projections of the regional distribution of sea level rise. Third, there was insufficient understanding of the potential contributions from the destabilisation (melting) of ice sheets – and AR4 recognized that existing ice-sheet models were unable to simulate the recent observations of accelerated ice-sheet melting. Indeed, understanding of ice-sheet dynamics was too limited to assess either the likelihood of continued accelerated melting or to provide a reliable estimate or even an upper bound for their future contribution.

When comparing the projections of sea level rise for 2100 contained in the earlier IPCC Assessment Reports, it is notable that they contain remarkably similar range of predictions, despite changes in the scenarios. However, there was a progressive reduction in the upper end of their predictions:

- FAR (1990): sea level rise from 31 cm, at the lower end, to 110 cm at the upper end;
- SAR (1996): from 13 to 94 cm;
- TAR (2001): from 9 to 88 cm;
- AR4 (2007): from 18 to 59 cm (not including dynamic ice-sheet response additions).

The Fifth Assessment Report (AR5)¹⁵ of 2013/14, issued soon after this Committee was established, was the first to reverse this trend of successive reductions in the upper end of projections for 2100. With an upper end prediction of 98 cm,¹⁶ it is the second highest so far. It is important, however, that this prediction is based on major scientific advances since AR4, resulting in a better understanding of 20th century sea level change and its components, and in an improved ability to project future rise.¹⁷ The AR5 also acknowledged, however, that significant challenges remain, in particular in incorporating the dynamics of the Greenland and Antarctic ice sheets.¹⁸ The findings of the AR5 provide a major context for the work of this Committee, therefore the next three subsections briefly review the salient aspects of AR5: its progress in the understanding of on-going sea level change; its improved projections of future sea level rise; and its analysis of the key challenges that remain.

2.1 Progress in the understanding of on-going sea level change

The findings of AR5 reflect a significantly improved understanding of the components that contribute to total sea level change.¹⁹ The evidence now available in AR5 gives a much clearer account of the observed sea-level change than did the AR4.²⁰

¹³ See further below in this section, especially in subsections 2.1, 2.2 and 2.3.

¹⁴ Satellite sea level altimetry began in 1993; see further below, especially notes 26 and 28, and the related text.

¹⁵ In addition to *Contribution of WG I to AR5*, two further reports of IPCC within AR5 were drawn upon for presenting the overview in this section: *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* (Core Writing Team, RK Pachauri and LA Meyer (eds)), IPCC: Geneva, 2015 (hereinafter: *AR5 – Synthesis*); and *Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2013), hereinafter: *AR5 – Summary for Policymakers*.

¹⁶ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1186. It is, moreover, noted that if the Antarctic precipitation increase is omitted from the process-based projections, the likely range increases to 103 cm; *ibid.*

¹⁷ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1204; also *AR5 – Synthesis*, at 62.

¹⁸ *AR5 – Synthesis*, at 56.

¹⁹ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1157-1159 and 1204; also *AR5 – Synthesis*, at 56.

AR5 confirms that the amount of global mean sea level rise in the course of the 20th century and up to 2010 was ~20 cm.²¹ A transition from relatively low mean rates of sea level change, that were characteristic for the previous two millennia (in the order of tenths of mm/year), occurred at some time between the end of the 19th to the early 20th century,²² and led to higher rates of rise in the course of the 20th century (in the order of mm/year) – with a global mean rate of rise of 1.7 mm/year over the span of the century.²³ The key distinction observed in the course of the 20th century, as compared to previous centuries and even previous millennia, is not only the absolute amount of rise but also the accelerating rate of mean sea level rise that was noted, especially in measurements since 1971.²⁴ Between 1993 and 2010, the observed rate is already markedly greater: 3.2 mm/year.²⁵ This indicates both a greater amount of rise and an acceleration in the rate in the late 20th and the early 21st century.²⁶

Current understanding of sea level rise identifies ocean thermal expansion and glacier melting (not including Antarctica) as the dominant contributors for most of the 20th century mean sea level rise; observations since 1971 result in estimates, with a degree of high confidence, that those two sources contribute about 75% of the observed rise.²⁷ However, the contribution of the Greenland and the Antarctic ice sheets to sea-level rise has increased since the early 1990s.²⁸ AR5 indicates a progressive trend in which the Greenland contribution has ‘very likely’ increased from 0.09 mm/year (for 1992–2001) to 0.59 mm/year (for 2002–2011), while the Antarctic contribution ‘likely’ increased from 0.08 mm/year (for 1992–2001) to 0.40 mm/year (for 2002–2011).²⁹ This trend is significant for future projections, and it also poses important challenges for the (process-based model) projections, especially regarding the dynamical responses of the Antarctic ice sheet.

2.2 Improvements in projections of future sea level rise

Confidence in the projections of global mean sea level rise has increased since the AR4, because of improved understanding of the physical components of sea level, the improved correlation between the process-based models and actual observations, and the inclusion of ice-sheet dynamical changes.³⁰ The projections of sea level rise contained in AR5 are larger than in AR4, primarily because of the improved modelling of land-ice contributions.

²⁰ Models used in AR4 were able to explain only about 60% of the observed sea-level rise, and consequently projections of future sea-level rise in AR4 were underestimated; see *Contribution of WG I to AR5*, at 1182.

²¹ That is: 0.19 [0.17 to 0.21, i.e., +/-0.02] m; see ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1150.

²² AR5 refers to most recent studies concluding that sea level began to rise above the late Holocene background rate (characteristic of the previous ca 2000 years) between 1905 and 1945; ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1146 and 1184–1185.

²³ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1146 and 1150, indicating the rate as ‘very likely’, meaning in AR5: 90 to 100 % probability; see also *AR5 – Summary for Policymakers*, at 9.

²⁴ Since 1971, significantly more ocean data became available and systematic glacier reconstructions began; global mean rate of sea-level rise since 1971 was estimated to approximately 2.0 mm/year.

²⁵ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1204, 1150; with the indication of this being ‘very likely’. This rate is found by the satellite sea-level altimetry data.

²⁶ In this context, 1993 is also important as the first year when satellite sea level altimetry record, and observations of all sea level components, became available; a 20-year span (1993–2012) enabled trend analyses as presented in AR5; see *AR5 – Synthesis*, at 41; ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1139 and, especially, at 1150. It is important to note here that satellite altimetry measures *sea surface height* (SSH), primarily in the open ocean, whereas tide gauges measure *relative sea level* (RSL) along the coastline. A change in RSL is the difference between the change in SSH and the vertical land motion. See also section I.B.2.3 below.

²⁷ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1139 and 1157.

²⁸ *Ibid.*, at 1153–1157. Data for those contributions comes primarily from satellite and airborne surveys.

²⁹ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1153. This translates into the average rate of ice loss from the Greenland, from 34 Gt/year (for 1992–2001) to 215 Gt/year (for 2002–2011), and from the Antarctic, from 30 Gt/year (for 1992–2001) to 147 Gt/year (for 2002–2011). As to contribution to global mean sea level rise: 100 Gt/year of ice loss is equivalent to 0.28 mm/year increase; *AR5 – Summary for Policymakers*, at 7.

³⁰ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1139.

The projections of the likely amount of sea level rise in the 21st century range in AR5 from 26 cm rise at the lower-end of the lowest scenario (RCP2.6) to 98 cm rise at the upper-end of the highest scenario (RCP8.5).³¹ The rate of rise, between 2081 and 2100, in the latter scenario is 8 to 16 mm/year.³² This is, in the upper-end, a five-fold increase if compared with the rate of rise from 1993 to 2010, or almost ten times the average rate of rise (of 1.7 mm/year) in the 20th century.

Two additional aspects are estimated by AR5 as ‘very likely’ in the 21st century. First, that sea level change will have a *strong regional pattern*, with some places experiencing significant deviations of local and regional change, which can differ from the global average rate by more than 100%; second, that there will be a significant increase in the occurrence of future sea level *extremes* in some regions (with a likely increase in the early 21st century).³³

While exact figures of amount and rates of future sea level rise still remain uncertain, even for the 21st century, AR5 states that it is ‘virtually certain’³⁴ that sea level will continue to rise during the 21st century, and for centuries beyond – even if GHG concentrations are stabilized (with the amount of rise in later centuries dependent on future GHG emissions).³⁵ For higher emission scenarios and warmer temperatures, surface melting of the Greenland ice sheet is projected to exceed accumulation, leading to its long-term decay and a sea level rise of several metres, consistent with paleo sea-level data,³⁶ which indicates – for the last interglacial (between 129 and 116 thousand years ago) – between 5 and 10 m higher than the present-day global mean sea level that has been relatively constant for the last several thousand years.³⁷

On current understanding, the only event that could cause global mean sea level to rise substantially above the *likely* range presented in AR5 during this century would be the collapse of the marine-based sections of the Antarctic ice sheet. However, the effect of this, which AR5 states ‘cannot be precisely quantified’, is, with *medium confidence*, predicted to be within several tenths of a meter of sea-level rise during the 21st century.³⁸ The distinction between Antarctica and Greenland is that the latter has no known large-scale instabilities that might generate an abrupt increase in sea level rise.³⁹

2.3 Challenges that remain

Despite the progress since AR4, it is clearly acknowledged in AR5 that significant uncertainties remain, particularly related to the magnitude and rate of the ice sheet contribution to sea level during the 21st century and beyond, as well as the regional distribution of sea level rise and the regional changes in storm frequency and intensity.⁴⁰ AR5 states that:

Although improved understanding has allowed the projection of a *likely* range of sea level rise during the 21st century, it has not been possible to quantify a *very likely* range or give an upper

³¹ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1180. ‘Representative Concentration Pathways’ (RCPs) are different future scenarios of concentration of GHGs, aerosols, and other climate drivers. RCPs are dependent on human activities, technology and policy developments, however these factors are not assessed in AR5.

³² ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1180.

³³ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1140.

³⁴ In AR5 terminology of likelihood, ‘virtually certain’ means 99 to 100% probability.

³⁵ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1205.

³⁶ *Ibid.*

³⁷ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1139 – implying, for estimates up to 10 m, substantial contributions from both the Greenland and the Antarctic ice sheets.

³⁸ AR5 – *Synthesis*, at 59; ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1140.

³⁹ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1179. For recent studies on the destabilisation of the West Antarctic ice sheet (especially around the Antarctic Peninsula and the Amundsen Sea area), see, e.g., Craig Rye et al, ‘Rapid sea-level rise along the Antarctic margins in response to increased glacial discharge’, *Nature Geoscience*, 7 (2014), 732–735, estimating that an excess of freshwater input of 430 (+/- 230) Gt/year is required to explain the observed sea-level rise. Compare this with AR5 data, as presented *supra*, in note 29.

⁴⁰ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1205.

bound to future rise. The potential collapse of ice shelves, as observed on the Antarctic Peninsula (...), could lead to a larger 21st century rise.⁴¹

It should be added here that, regarding ocean warming, the AR5 predicts the most pronounced warming at greater depth in the Southern (Antarctic) Ocean.⁴² Recent studies, including those following the publication of AR5, have focused on the destabilisation of the West Antarctic ice sheet and its potential for contributing rapidly to global sea level rise.⁴³

Another challenging aspect is the wide range of differences in the results for the upper bounds of projected sea-level rise, identified in assessments using process-based modelling, on the one hand, and those based on semi-empirical models, on the other – with the latter resulting in upper bounds of up to 2.4 m of global mean sea level rise by 2100.⁴⁴

A further important consideration is that of *relative* sea level rise, which is defined by the elevation of both the land and the sea. This concept acknowledges that as sea levels rise, complex feedbacks may occur on the shape or morphology of the coast as well as its associated systems (such as coral reefs) making some coasts highly responsive to changing sea levels.

Records of past sea level changes provide insights into the sensitivity of sea level to past climatic changes, and may also be able to contribute to our understanding of current changes and to provide a means of evaluating projections.⁴⁵ In contrast to the more recent gradual progressions of sea-level rise that have occurred over a very long period, there is geological evidence of significant ‘jumps’ over a relatively short time-span of centennial – perhaps even decadal – scale,⁴⁶ followed by longer periods of general stability or slower rises. The timing of such future ‘jumps’ is very difficult to predict.

Discussing risk and the management of an uncertain future, AR5 states that – while it is ‘unlikely’ for global mean sea level rise to exceed one meter in this century – the consequence of a greater rise could be so severe that this possibility must become a significant part of risk assessment.⁴⁷ Relatively low confidence but high consequence outcomes are policy relevant – and therefore an aspect pertinent also in the considerations of the present Committee.

3. Change of Epochs in the History of the Earth: A New Context for International Law

The wider context for the proposal for this Committee were recent scientific findings regarding the profound changes that have been taking place in the Earth system, especially since the second half of the 20th century. The prospects of further and accelerated changes in the course of this century (reflected in sea-level rise) have possible ramifications for the development of international law. Scientific evidence increasingly indicates that, due to the nature and size of on-going and predicted changes, the Earth may already be undergoing a shift from the conditions of the current officially

⁴¹ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1205. In AR5 terminology of likelihood, ‘likely’ refers to a probability between 66 and 100% (while ‘very likely’ is 90 to 100 % probability).

⁴² *AR5 – Synthesis*, at 60.

⁴³ See, e.g., Rye et al, ‘Rapid sea-level rise along the Antarctic margins’. A highly relevant study, supplementing the findings in AR5, is found in: RM DeConto and D Pollard, ‘Contribution of Antarctica to past and future sea-level rise’, *Nature*, 531 (31 March 2016), 591–597.

⁴⁴ See ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1179–1186. The semi-empirical approach regards changes in sea level as an integrated response of the entire climate system, reflecting changes in the dynamics and thermodynamics of the atmosphere, ocean and cryosphere – in contrast to process-based approach, which explicitly attributes sea level rise to its individual physical components; *ibid*, at 1182.

⁴⁵ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1145 – confirming also that important progress has been made since AR4 in understanding the amplitude and variability of sea level during the past intervals when climate was warmer than pre-industrial.

⁴⁶ See, e.g., M O’Leary et al, ‘Ice Sheet Collapse Following a Prolonged Period of Stable Sea Level during the Last Interglacial’, *Nature Geoscience*, 9 (2013), 796–800.

⁴⁷ *AR5 – Synthesis*, at 36.

accepted geological time interval, the Holocene, to a new planetary state.⁴⁸ The Holocene is the latest, and formally still current, geological epoch. It comprises the past 11,700 years,⁴⁹ which have been marked by an exceptionally long period of relative environmental stability, especially during the last few thousand years.⁵⁰ As such, the conditions of the Holocene were a key factor facilitating the development of human civilization and, ultimately, the territorial divisions of the political world as we know it today.

It has been argued that, because of the interaction between the global environmental effects of economic development and increased human population, the Earth system has already left the Holocene and has entered a new epoch: the Anthropocene.⁵¹ So far, the ‘Anthropocene’ is an unofficial scientific term referring to the human imprint on the Earth system that is already so profound as to have reached geological significance.⁵² Since 2009, the Anthropocene hypothesis is under formal scrutiny within geology. In that year, the Anthropocene Working Group (AWG) was set up within the International Commission on Stratigraphy to examine the stratigraphic basis and the scientific justification for possible formalization of the Anthropocene as the most recent geological time unit.⁵³ The AWG held its latest meeting in Oslo, 22-23 April 2016, and currently works on completing the interim findings and recommendations.

The Holocene has been characterized, especially in its late stage, by the longest period of stability in environmental conditions on Earth since the appearance of *Homo sapiens*. By contrast, the Anthropocene is seen as characterized by change, uncertainty and instability in the future behaviour of the Earth system.⁵⁴ This may have increasing relevance and, over time, important consequences for the organisation of international relations as currently reflected in international law.⁵⁵ It has been argued that within the current system of international law, the stability of the late Holocene has played a major role in the development of the political system which has in turn reflected the generally stable natural conditions of the Earth system.⁵⁶ Changes in that underlying element of stability contain the potential for new types of tension in relations between states.⁵⁷

One such core aspect, which is in the focus of this Committee, relates to the international legal implications of sea-level rise, as it is already projected for this century. The onset of changing Earth

⁴⁸ See especially the recent review by 24 members of the Anthropocene Working Group of the International Commission on Stratigraphy published in journal *Science*: C Waters et al, ‘The Anthropocene is functionally and stratigraphically distinct from the Holocene’, *Science*, 351 (2016) 137.

⁴⁹ M Walker et al, ‘Formal Definition and Dating of the GSSP (Global Stratotype Section and Point) for the Base of the Holocene Using the Greenland NGRIP Ice Core, and Selected Auxiliary Records’, *Journal of Quaternary Science*, 24 (2009) 3–17.

⁵⁰ The lower boundary for the ‘late Holocene’ is currently proposed at 4200 years BP; see M Walker et al, ‘Formal subdivision of the Holocene Series/Epoch’, *Journal of Quaternary Science*, 27 (2012), 649–659.

⁵¹ On the onset of the Anthropocene, see: J Zalasiewicz et al, ‘When did the Anthropocene Begin? A Mid-Twentieth Century Boundary Level is Stratigraphically Optimal’, *Quaternary International*, 383 (2015), 196–203. For the origins of the Anthropocene hypothesis, see: P Crutzen and E Stoermer, ‘The Anthropocene’, *Global Change Newsletter*, 41 (2000), 17–18; and P Crutzen, ‘Geology of Mankind’, *Nature*, 415 (2002), 23.

⁵² On the possible magnitude of that impact, see also a recent article in journal *Nature*: A Ganopolski et al, ‘Critical insolation- CO₂ relation for diagnosing past and future glacial inception’, *Nature*, 529 (2016), 200–203 – reporting a modelling study confirming findings that the Earth would already be entering a new glacial interval (an ‘ice age’) absent human impact on the CO₂ concentration in the atmosphere from the 18th century on, and concluding that the onset of a glacial interval is, due to that impact, postponed by at least 100,000 years.

⁵³ On the International Commission on Stratigraphy, see at: www.stratigraphy.org. On the Anthropocene Working Group, see at: <http://quaternary.stratigraphy.org/workinggroups/anthropocene/>.

⁵⁴ J Zalasiewicz, P Crutzen and W Steffen, ‘The Anthropocene’, in F Gradstein et al. (eds), *The Geologic Time Scale 2012*, Vol. 2 (Amsterdam: Elsevier, 2012), 1033–1040; and M Williams et al, ‘The Anthropocene Biosphere’, *The Anthropocene Review*, 2 (2015), 196–219.

⁵⁵ D Vidas, J Zalasiewicz and M Williams, ‘What is the Anthropocene – and Why Is It Relevant for International Law?’, *Yearbook of International Environmental Law*, 25 (2015), 3–23.

⁵⁶ D Vidas et al., ‘International Law for the Anthropocene?’, *Anthropocene*, 9 (2015), 1–13.

⁵⁷ *Ibid.*

system conditions in an Anthropocene epoch may draw into question some key aspects of international law, since these rely on the general stability of geographic conditions, and may require the re-examination of some currently accepted paradigms of international law.

C. Work of the Committee and Focus of this Interim Report

After the establishment of the Committee at the end of 2012, its membership was initially appointed during the course of 2013 in two rounds (May and November). The first meeting of the Committee was held at the 76th ILA Conference, in Washington DC, in April 2014.⁵⁸ An *Initial Discussion Paper* was prepared by Committee officers and several members in order to facilitate discussions at the first meeting, the primary purpose of which was to identify questions and issues related to the mandate, rather than to present pre-formed solutions.

Three main issue-areas to be dealt with by the Committee were defined at the Washington DC meeting: the law of the sea; forced migration and human rights; and issues of statehood and international security. Although each of these issue-areas has already attracted a lot of research and publications, the Committee considered that it could make a useful contribution, within the framework of its mandate, by synthesising these various issues, elaborating interlinkages and considering options for proposals *de lege ferenda*. In addition, the Committee discussed impacts of sea-level rise on other areas of international law, such as cultural heritage law and environmental law (e.g., in the context of biodiversity protection regimes), and it was suggested that these issues might as well be relevant in the later stages of the Committee's work.

The Committee agreed to divide its work thematically into two main stages. The first stage involved two parallel streams of study: one on the law of the sea issues, and the other on the migration and human rights issues. The second stage would then involve the study of the statehood question, but also other relevant issues of international law and broader issues of international security, as the point of commonality of both streams.

On this basis, the Committee agreed to plan its work around the two reports that would need to be presented at the next two ILA conferences, namely the Interim Report at the 77th ILA Conference in Johannesburg, South Africa in 2016; and the Final Report at the 78th ILA conference in Australia in 2018.⁵⁹ The Interim Report, it was agreed, would not be fully comprehensive and would focus on the two streams of study, identified above. The Final Report will be the subject of the work of the Committee thereafter, with the aim of presenting it at the 78th ILA conference in 2018. In order to facilitate the work of the Committee on the Interim Report, and to strengthen the communication and coordination between the two agreed streams of study, a two-day inter-sessional meeting was held in Oslo, 12-13 June 2015, organised and hosted by the Fridtjof Nansen Institute.

PART II: International Law and Sea-level Rise: Law of the Sea Issues

This part of the Committee's interim report addresses some of the law of the sea issues that are raised by both segments of its mandate, i.e., regarding the *study* of the "possible impacts of sea-level rise and the implications under international law", and some preliminary considerations in connection with *developing proposals* "for the progressive development of international law". This part draws upon the findings and recommendations of the *Baselines Committee Sofia Report* of 2012, and develops the issues for further consideration of the present Committee on that basis.

⁵⁸ See ILA, *Report of the Seventy-Sixth Conference, held in Washington D.C., April 2014* (London: ILA, 2014), at 877–881. At the time of the Conference, the Committee had 21 members and 4 alternates. Two-thirds of the members (14 out of the 21) took part in the work of the Committee at its first meeting in Washington DC. Minutes of the sessions (open and closed), held on 9 and 10 April 2014, are available at: <http://www.ila-hq.org/en/committees/index.cfm/cid/1043>. As of 6 May 2016, the Committee has 27 members and 5 alternates.

⁵⁹ This required the adjustment of the Committee time-frame, from November 2016 to November 2018.

A. Sea-level Rise and Maritime Zones

As already outlined in part I of this report, the IPCC in AR5, revising the predictions in AR4, posits global mean sea-level rise of up to approximately one metre by 2100. This may ultimately prove to be a conservative estimate. Moreover sea-level rise is likely to exhibit “a strong regional pattern, with some places experiencing significant deviations of local and regional sea level change from the global mean change.”⁶⁰ This degree of change in sea level may pose potentially serious, maybe even disastrous, threat to many coastal States, especially those with large, heavily populated and low-lying coastal areas, as well as for small, low-lying island States. Such sea-level variability is also highly likely to impact coastal areas where wetlands and other sites may be protected by international treaty regimes,⁶¹ although the highly variable responses of different coastal environments to changing sea levels also needs to be taken into account.

In addition to the threat posed to low-lying coastal areas and their associated populations, as well as to coastal infrastructure from inundation by rising seas, there are also threats to the ocean spaces adjacent to such threatened territories. In particular, sea-level rise has the potential to impact significantly the spatial extent of national claims to maritime jurisdiction.⁶²

Generally, the baseline from which States’ maritime zones are measured is the ‘normal’ baseline, determined in accordance with Article 5 of the 1982 United Nations Convention on the Law of the Sea (LOS).⁶³ From the baseline States may measure their territorial sea,⁶⁴ contiguous zone,⁶⁵ exclusive economic zone (EEZ)⁶⁶ and continental shelf.⁶⁷ Consequently, if those ‘normal’ baselines move inland as a consequence of sea level rise, so too will the outer limits of those maritime zones measured from such baselines, if the basepoints that control the definition of the outer limits to maritime zones are impacted. As a result of such shifting baselines and a re-adjustment of the boundary of maritime zones, waters previously under national jurisdiction could become part of the high seas. Moreover, changes to the baselines could impact upon maritime boundaries between adjacent or opposite States.

Further, sea-level rise has the potential to inundate small islands and other geographical features which may have generated their own maritime zones,⁶⁸ or been used by the coastal State as base

⁶⁰ ‘Sea Level Change’, *Contribution of WG I to AR5*, at 1140.

⁶¹ Under, e.g., the 1971 Ramsar Convention on Wetlands of International Importance, 996 UNTS 245; ILM, (1972), 963; as well as under regional conventions.

⁶² The literature on this is extensive. Early (legal) writers agreed that this was a consequence of ambulatory baselines: ECF Bird and JRV Prescott ‘Rising Global Sea Levels and National Maritime Claims’, *Marine Policy Reports*, 1 (1989), 177–196; AHA Soons ‘The Effects of a Rising Sea Level on Maritime Limits and Boundaries’, *Netherlands International Law Review*, 37 (1990), 207–232. DD Caron, ‘When Law Makes Climate Change Worse: Rethinking the Law of Baselines in Light of Rising Sea Level’ *Ecology Law Quarterly*, 17 (1990), 621. D Freestone, ‘International Law and Sea Level Rise’ in: RR Churchill and D Freestone (eds), *International Law and Global Climate Change* (London/Dordrecht: Graham and Trotman/Martinus Nijhoff, 1991), 109, 119–122. D Freestone and J Pethick, ‘Sea Level Rise and Maritime Boundaries: International Implications of Impacts and Responses’ in: G Blake (ed.) *International Boundaries: Fresh Perspectives*, Vol 5 (Routledge, 1994), 73–90.

⁶³ Article 5 of the 1982 United Nations Convention on the Law of the Sea, UN Doc A/CONF.62/122; text in 1833 UNTS 3; text reprinted in ILM, 21(1982), at 1261; available at <www.un.org/Depts/los>.

⁶⁴ Article 3, LOSC.

⁶⁵ Article 33, LOSC.

⁶⁶ Article 57, LOSC.

⁶⁷ Article 76(1), LOSC. Of course, defining the outer limit of the continental shelf is more complex as the continental shelf extends beyond a coastal State’s territorial sea “throughout the natural prolongation of its land territory to the outer edge of the continental margin”, and therefore for many coastal States it extends beyond 200 nautical miles from the baselines.

⁶⁸ Article 121, LOSC.

points for drawing straight baselines.⁶⁹ This too may have major impacts on the capacity of a feature to generate maritime jurisdictional claims.⁷⁰ As the discussion in part III of this report demonstrates clearly, some low-lying island States, already under pressure, may find their land area rendered uninhabitable well before they are overrun by the sea. In extreme cases this will raise questions as to the ability of some island States to maintain their statehood without a habitable land area, and to maintain sovereignty over the territorial sea, and sovereign rights over the resources of the maritime zones appurtenant to those land areas.⁷¹

The Sea-level Rise Committee has decided that in its final report in 2018 it will consider how international law may be able to respond to these unprecedented existential challenges as well as the serious human dimension of the issues. It will consider whether these issues need to be addressed by treaty law or whether customary international law and ‘softer’ methods of norm creation will be sufficiently flexible to address these challenges, and what might be the appropriate mechanisms for this.

In this first interim report the Committee considers some preliminary legal issues regarding the potential impacts of sea-level rise on coastal States’ maritime zones. The Committee decided that it was appropriate to begin its review by revisiting the findings of the Baselines Committee as regards its interpretation of Article 5 of LOSC as the basis for its own further deliberations.

B. The Existing Law of the ‘Normal’ Baseline

In its 2012 Sofia Report,⁷² the Baselines Committee considered at some length the legal implications of Article 5 LOSC which in the English text reads as follows:

Except where otherwise provided in this Convention, the normal baseline for measuring the breadth of the territorial sea is the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State.

The Baselines Committee concluded that “the legal normal baseline is the actual low-water line along the coast at the vertical datum, also known as the chart datum, indicated on charts officially recognized by the coastal State” and that “the phrase ‘as marked on large-scale charts officially recognized by the coastal State’ provides for coastal State discretion to choose the vertical datum at which that State measures and depicts its low-water line”. The charted low-water line “illustrates the legal normal baseline, and in most instances and for most purposes the charted low-water line provides a sufficiently accurate representation of the normal baseline”. However, the Committee considered that although the charted line appears to enjoy a strong presumption of accuracy, “where significant physical changes have occurred so that the chart does not provide an accurate representation of the actual low-water line at the chosen vertical datum, extrinsic evidence has been

⁶⁹ As permitted by Article 7, LOSC.

⁷⁰ See generally the detailed provisions of Part II, LOSC. For example, the low water line of islands may be used to measure maritime zones (Article 121(2)). The low water line of low tide elevations (LTE) may also be used to measure maritime zones if the LTE is situated “wholly or partly at a distance not exceeding the breadth of the territorial sea from the mainland or an island” (Article 13(1), LOSC). All these features are susceptible to change.

⁷¹ This may include the resources of the 200 nautical mile EEZ in which coastal States have “sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the sea-bed and of the sea-bed and its subsoil” (Part V, LOSC), and of the continental shelf over which coastal States exercise “sovereign rights for the purpose of exploring it and exploiting its natural resources” (Part VI, LOSC). See also R Rayfuse, ‘Sea Level Rise and Maritime Zones: Preserving the Entitlements of “Disappearing” States’ in: MB Gerrard and GE Wannier, *Threatened Island Nations: Legal Implications of Rising Seas and a Changing Climate* (Cambridge University Press, 2013), 167–191.

⁷² *Baselines Committee Sofia Report*, *supra* note 3.

considered by international courts and tribunals in order to determine the location of the legal normal baseline”.⁷³

In accordance with the Baselines Committee’s view, “it follows that if the legal baseline changes with human-induced expansions of the actual low-water line to seaward, then it must also change with contractions of the actual low-water line to the landward.”⁷⁴

The Baselines Committee therefore reached the view that

the existing law of normal baseline applies in situations of significant coastal change caused by both territorial gain and territorial loss. Coastal States may protect and preserve territory through physical reinforcement, but not through the legal fiction of a charted line that is unrepresentative of the actual low-water line.⁷⁵

Consequently, the Baselines Committee concluded that

the normal baseline is ambulatory, moving seaward to reflect changes to the coast caused by accretion, land rise, and the construction of human-made structures associated with harbour systems, coastal protection and land reclamation projects, and also landward to reflect changes caused by erosion and sea level rise. Under extreme circumstances the latter category of change could result in total territorial loss and the consequent total loss of baselines and of the maritime zones measured from those baselines. The existing law of the normal baseline does not offer an adequate solution to this potentially serious problem.⁷⁶

The Baselines Committee recommended “that the issue of impacts of substantial territorial loss resulting from sea level rise be considered further by a Committee established for the specific purpose of addressing the wide range of concerns it raises”.⁷⁷ This, therefore, was the wider issue that the Baselines Committee passed on to the new committee.

C. Preliminary Issues Addressed by the Sea-level Rise Committee

In considering the implications of this finding by the Baselines Committee, the Sea-level Rise Committee decided to address two important preliminary issues that the Baselines Committee had identified in its 2012 report:

[T]he prospect of significant sea level rise carries with it problems of global scale and effect and serious existential implications for some States. Among these problems are negative impacts on maritime boundaries negotiated in reliance on normal baselines in existence at the time of a delimitation, and the outer limits of a State’s maritime zones proclaimed in reliance upon a normal baseline.⁷⁸

It should be noted that the Baselines Committee had also identified a third issue, namely that:

⁷³ *Baselines Committee Sofia Report*, at 425 (on-line, at 31). This was the view of 28 of the 30 member Committee, with two statements of dissent, from Dr Oude Elferink (Netherlands) and Professor Yee (HQ), with reasons as further explained in footnotes 217 and 218 of the *Baselines Committee Sofia Report*, at 425 (on-line, at 31).

⁷⁴ *Baselines Committee Sofia Report*, at 422 (on-line, at 28).

⁷⁵ *Baselines Committee Sofia Report*, at 424 (on-line, at 30).

⁷⁶ *Baselines Committee Sofia Report*, at 426 (on-line, at 31).

⁷⁷ *Baselines Committee Sofia Report*, at 426 (on-line, at 31).

⁷⁸ *Baselines Committee Sofia Report*, at 422–423 (on-line, at 29).

[T]he likelihood that some offshore low-lying islands will be completely submerged ... which will give rise to debate as to whether a coastal state loses the totality of its entitlement to claim a normal baseline from territory that has become submerged.⁷⁹

All those issues were identified by the Baselines Committee independently of the extreme scenario of sea-level rise leading to the submergence of the entire territory, and actual low-water line, of low-lying small island States below the vertical datum, thereby, as stated by the Baselines Committee, “eliminating entirely the normal baseline and any entitlement to maritime zones generated from the baseline”.⁸⁰ The Sea-level Rise Committee will revert to and address this issue in its final report (in 2018), in conjunction with the discussion of statehood.

1. The Effect of Sea-level Rise on the Outer Limits of Maritime Zones

The issue simply stated is that as sea levels rise the low water line along the coast, which marks the ‘normal baseline’ for the purposes of Article 5, will usually move inland and some key geographical features used as base points may be inundated and lost.

If, as a matter of international law, the coastal baseline is ambulatory (as the Baseline Committee has concluded)⁸¹ then where a baseline moves inland⁸² and critical basepoints from which maritime zones are measured are inundated, then the outer limits of the maritime zones which are measured from this baseline may also move landward.⁸³ Where key geographical features which are used as basepoints for the construction of straight baselines are totally inundated then these movements inland may be even more substantial. This same principle of course applies to the archipelagic baselines of archipelagic States, where the effect of losses of key basepoint features may appear to be even more pronounced.

This is the issue which has exercised writers. For example, Judge Jesus has argued that “a substantial rise in sea level, whatever the cause, should not entail the loss of States’ ocean space and their rights over maritime resources, already recognized by the 1982 Convention and by the community of nations.”⁸⁴ However, this is the unavoidable legal consequence of the finding of the Baselines Committee that baselines are ambulatory.

Schofield has however cautioned that, extreme as this issue may seem in theory, the outer limits of broader maritime zones, notably the EEZ, are often less susceptible to change as they are reliant on a restricted number of contributing or critical basepoints. Thus, even significant changes in the location of the coastline may have only limited impacts in terms of 200 nautical miles outer limits so long as key basepoints are not subject to change.⁸⁵

⁷⁹ *Baselines Committee Sofia Report*, at 422 (on-line, at 29).

⁸⁰ *Baselines Committee Sofia Report*, at 422 (on-line, at 29).

⁸¹ *Baselines Committee Sofia Report*, at 426 (on-line, at 31).

⁸² Also, note that because of changes in sediment flows rising sea may in some circumstances also have an opposite effect in some places – accreting sediments to push the low water line seaward.

⁸³ Where the outer edge of the natural prolongation of the continental shelf is less than 200 nautical miles from the coastal baseline, then the outer limit of the shelf may extend to 200 nm from the baseline (Article 76(1), LOSC). Due consideration should be here also given to Article 76(9) LOSC, which states that the ‘coastal State shall deposit with the Secretary-General of the United Nations charts and relevant information, including geodetic data, permanently describing the outer limits of its continental shelf’.

⁸⁴ JL Jesus, ‘Rocks, New-born Islands, Sea Level Rise and Maritime Space’ in: J Frowein et al. (eds), *Negotiating For Peace – Liber Amicorum Tono Eitel* (Berlin/Heidelberg: Springer, 2003), 599, 602.

⁸⁵ CH Schofield, ‘Defining the “Boundary” between Land and Sea: Territorial Sea Baselines in the South China Sea’, in: R Beckman, MR Page and L Bernard (eds), *UNCLOS and the South China Sea* (Cheltenham: Edward Elgar, 2014), 21–54.

In the longer term however, as reported above,⁸⁶ the planet is already irrevocably committed to continued sea-level rises in the course of this and the coming centuries, and the actual amount and pace of sea-level rise is as yet unknown. Moreover, as IPCC reports in AR5,⁸⁷ the actual amount of sea-level rise is uncertain even in the course of the 21st century, and significant changes, especially in some most affected regions, cannot be excluded at this point.

This Committee considered the views of a number of scholars who have written on this issue. There was a common understanding that the unavoidable consequence of the impact of sea-level rise, using the existing law of the normal baseline, is the loss of maritime space. However, legal authors that have addressed this issue so far seem equally dissatisfied by this result, and have proposed different solutions *de lege ferenda*. Soons had pointed out in 1990 that coastal States may legally defend existing coastlines by artificial means but accepted that this was an extremely expensive option.⁸⁸ As the 2012 *Baselines Committee Sofia Report* summarized the issue: “Short of actual physical protection of the coast the authors do not find that the existing law provides for any other way to protect the maritime interests of States threatened with a total loss of territory.”⁸⁹

The Sea-level Rise Committee considered that this was an appropriate issue on which to make proposals for progressive development of international law. In order to preserve – at least provisionally – existing maritime zone entitlements, the Committee discussed two possible options for progressive development. The first option would be to propose a new rule freezing the existing baselines in their current position, using the “large scale charts officially recognized by the coastal State”;⁹⁰ the second option would be to propose a new rule freezing the existing defined outer limits of maritime zones measured from the baselines established in accordance with the LOSC.

The practical complications of divorcing the actual low water line from the ‘legal’ low water line had already been explored by the Baselines Committee, which had also looked at State practice in some detail. Although it had found evidence that at least one State took the view that the charted line was the definitive baseline for maritime entitlements even where it might depart from the actual low water line,⁹¹ this was found by the Baselines Committee to be at the extreme end of the spectrum of State practice studied, and the majority of State practice was to the contrary or hybrid,⁹² while also “the preponderance of the scholarship in this area appears to support the view that charts are not determinative of the naturally ambulatory normal baseline.”⁹³

The second option of proposing the freezing of the outer limits of maritime zones was the option also discussed by a number of authors cited, most of whom now take part in the work of the Committee as its members. Soons had suggested the creation of a new rule of customary international law which allows coastal States in case of sea level rise to maintain the original outer limits of their maritime zones.⁹⁴ Like Soons, Caron had recognized early on the waste of resources that would be involved in physically defending basepoints simply to protect maritime interests⁹⁵ and has suggested that, in order to address the problems of inefficiency and conflict, “States should move toward permanently fixing

⁸⁶ IPCC projections in AR5; see further above, in part I, section B.2.2 of this report.

⁸⁷ Ibid.

⁸⁸ Soons, ‘The Effects of a Rising Sea Level on Maritime Limits and Boundaries’, at 231.

⁸⁹ *Baselines Committee Sofia Report*, at 422 (on-line, at 29).

⁹⁰ Article 5, LOSC. Note there is no requirement in the LOSC for the coastal State to notify these ‘normal baselines’. Article 16(2) appears only to require coastal state to give ‘due publicity’ to such charts when lines are “determined in accordance with articles 7, 9 and 10.”

⁹¹ See *Baselines Committee Sofia Report*, at 412 (on-line, at 21), citing Netherlands Ministry of Defense press release of 22 December 2009, stating: “A change in the actual coastline thus has no effect, until it is included in the nautical chart” (translation by the Baselines Committee members Oude Elferink, Soons, and Kwiatkowska).

⁹² *Baselines Committee Sofia Report*, at 413 (on-line, at 21–22).

⁹³ *Baselines Committee Sofia Report*, at 413 (on-line, at 22).

⁹⁴ Soons, ‘The Effects of a Rising Sea Level on Maritime Limits and Boundaries’, at 231.

⁹⁵ Caron, ‘When Law Makes Climate Change Worse’, at 621.

ocean boundaries.”⁹⁶ He, like Jesus, is in favour of freezing baselines, whereas Rayfuse has proposed that a freezing of maritime zone outer limits “would be consistent with, and would significantly assist in, the promotion and achievement of the LOSC objectives of peace, stability, certainty, fairness, and efficiency in ocean governance.”⁹⁷ Schofield and Arsana had considered that one option would be to “legally fix or declare the location of normal baselines and/or the maritime limits derived from them.”⁹⁸

Hayashi thinks that “the idea of freezing, and thus permanently fixing, the baselines and consequently the outer limits of various maritime zones, has considerable merit.”⁹⁹ However he contrasts the two possible approaches pointing out that “the fixing of baselines would mean that the future submerged area becomes internal waters, whereas fixing only the outer limits of maritime zones would result in expanding the breadth of the territorial sea landward to the extent of the shifting baselines” and he considers the proposal to fix baselines, in contrast to fixing outer limits, as having “the merit of not changing the rules on the breadth of the territorial sea and the EEZ as stipulated in Articles 3 and 57, respectively.”¹⁰⁰

This issue was the subject of a preliminary discussion at the Oslo intersessional meeting of the Committee (June 2015) and there was preference expressed for considering modalities *de lege ferenda* for freezing the outer limits of maritime zones. It was felt that the issue would benefit from wider discussion within the Committee in its work on the 2018 final report.¹⁰¹ The legal consequences of ‘divorcing’ coastal baselines (which would still be ambulatory) from the outer limits of maritime zones, by freezing the outer limit without freezing the baseline, has implications for some of the key provisions of the LOS Convention, including the breadth of the territorial sea¹⁰² and of the EEZ.¹⁰³ Hayashi has also highlighted the risks of freezing what might already be ‘excessive’ claims where States have established baselines in violation of the rules of the Convention.¹⁰⁴ Moreover, a decision would also need to be made as to which specific point in time that any ‘freezing’ might be permissible. Concerns have also been raised about the fundamental principles of the law of the sea, such as the principle of the land dominating the sea, rather than vice versa.¹⁰⁵ Although the motive for

⁹⁶ DD Caron, ‘Climate Change, Sea Level Rise and the Coming Uncertainty in Oceanic Boundaries: A Proposal to Avoid Conflict’, in: Seoung-Yong Hong and JM Van Dyke (eds), *Maritime Boundary Disputes, Settlement Processes, and the Law of the Sea* (Boston/Leiden: Brill/Martinus Nijhoff, 2009), 1, 14.

⁹⁷ Rayfuse, ‘Sea Level Rise and Maritime Zones: Preserving the Entitlements of “Disappearing” States’, at 191.

⁹⁸ C Schofield and I Made A Arsana, *Imaginary Islands? Options to Preserve Maritime Jurisdictional Entitlements and Provide Stable Maritime Limits in the Face of Coastal Instability*, 6th IHO-IGABLOS Conference, 25–27 October 2010, at 6; see at: www.iho.int/mtg_docs/com_wg/ABLOS/ABLOS_Conf6/ABLOS_Conf6.htm. While considering the potential for unilateral state practice in this area to develop new customary law, they assert that a “preferable approach would be to seek multilateral agreement on, effectively, a revised legal regime applicable to normal baselines”.

⁹⁹ M Hayashi, ‘Sea Level Rise and the Law of the Sea – Future Options’, in: D Vidas and PJ Schei (eds), *The World Ocean in Globalisation: Challenges and Responses* (Boston/Leiden: Brill/Martinus Nijhoff, 2011), at 197.

¹⁰⁰ *Ibid.*, at 196.

¹⁰¹ Note that on 16 July 2015, seven leaders of Polynesian States and Territories signed at Papeete the Taputapuātea Declaration on Climate Change. This Declaration states (in para. 4) that, ahead of COP 21 in Paris, “the Polynesian Leaders Group call upon all State Parties to the UNFCCC to” ... “with regards to the loss of territorial integrity:... [A]cknowledge, under the [UNCLOS], the importance of the Exclusive Economic Zones for Polynesian Island States and Territories whose area is calculated according to emerged lands and permanently establish the baselines in accordance with the UNCLOS, without taking into account sea level rise.”

¹⁰² Article 3, LOSC: “Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with this Convention.”

¹⁰³ Article 57, LOSC: “The exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.”

¹⁰⁴ Hayashi, ‘Sea Level Rise and the Law of the Sea – Future Options’, at 196, citing T. Palmer, ‘Sea-level Change and Baselines’, in: *Proceedings of the Canadian Hydrographic Conference and National Surveyors Conference, 2008*, at 4.

¹⁰⁵ *Baselines Committee Sofia Report*, at 423 (on-line, at 29).

making such a proposal would be to facilitate stability and orderly relations between States, there might well be unintended negative consequences.

The Sea-level Rise Committee has also yet to discuss in detail how any proposal *de lege ferenda* might best be implemented. Hayashi has systematically adumbrated a number of options, some of which he admits may not be practical – they include the development of customary international law,¹⁰⁶ a protocol to the UN Framework Convention on Climate Change,¹⁰⁷ utilization of the amendment provisions of the LOSC, a decision of the Meeting of the State Parties to the LOSC (SPLOS), or by means of a diplomatic conference open also for States non-parties to the LOSC, or by an agreement adopted by the UN General Assembly after negotiation in its subsidiary bodies or informal consultations.¹⁰⁸

There is also the question of how long such a ‘freezing’ might be effective? Would it be regarded as a permanent solution or as a temporary provisional measure until such time as the international community might agree upon a more permanent approach?

2. Effects of Coastline Changes on Maritime Boundaries

The second issue flagged by the Baselines Committee was what it termed the “negative impacts on maritime boundaries negotiated in reliance on normal baselines in existence at the time of delimitation.” In other words, if the representatives of two (or possibly more) States negotiating a maritime boundary delimitation agreement have relied on the coastal baseline in order, for example, to measure an equidistance line, and then the coastal baseline changes as a result of inundation and resultant shift in the location of baselines landward caused by sea-level rise. Is it possible for one party then to argue that this is a fundamental change of circumstances which would undermine the validity of the maritime boundary agreement?

The concept of ‘fundamental change of circumstances’ or *clausula rebus sic stantibus*, is specifically referred to in Article 62 of the 1969 Vienna Convention on the Law of Treaties. Article 62(1) reads:

A fundamental change of circumstances which has occurred with regard to those existing at the time of the conclusion of a treaty, and which was not foreseen by the parties, may not be invoked as a ground for terminating or withdrawing from the treaty unless:

- a) the existence of those circumstances constituted an essential basis of the consent of the parties to be bound by the treaty; and
- b) the effect of the change is radically to transform the extent of obligations still to be performed under the treaty.

However, Article 62(2) does specifically exclude two situations from the application of this doctrine. It provides that:

A fundamental change of circumstances may not be invoked as a ground for terminating or withdrawing from a treaty: (a) if the treaty establishes a boundary;¹⁰⁹

Commenting on this provision in the Vienna Convention, Aust notes that “the principle cannot be invoked if the treaty establishes a boundary, that term being used so as to include treaties which cede

¹⁰⁶ As suggested by Soons, ‘The Effects of a Rising Sea Level on Maritime Limits and Boundaries’, at 255.

¹⁰⁷ As proposed in 1990 by the Coastal Zone Management Subgroup of the IPCC, reported by Freestone and Pethick, ‘Sea Level Rise and Maritime Boundaries: International Implications of Impacts and Responses’, at 76.

¹⁰⁸ All discussed further by Hayashi, ‘Sea Level Rise and the Law of the Sea – Future Options’, at 200–206.

¹⁰⁹ The second exception is not relevant here: “(b) if the fundamental change is the result of a breach by the party invoking it either of an obligation under the treaty or of any other international obligation owed to any other party to the treaty.”

territory, not merely delimit a boundary”.¹¹⁰ Some scholars have suggested that the application of this provision of the Vienna Convention to maritime boundaries is still an open issue. For instance, Caron has argued that “it is entirely plausible that a State might argue that circumstances had changed in that the parties had not foreseen such a rise in sea level.”¹¹¹

Lisztwan has looked in detail at the *travaux préparatoires* of the Vienna Convention text – itself based on an International Law Commission draft prepared by Rapporteur Sir Humphrey Waldock (building on the previous 1957 report of Sir Gerald Fitzmaurice). Her research reveals that many types of boundary treaties were referred to in the context of the negotiation and she concludes that “[a]lthough limited, those comments, and the absence of any contrary statements, suggest that the State Parties intended maritime boundaries to fall within the Article 62(2) boundary exception.”¹¹² From this, Lisztwan draws the conclusion that: “States cannot invoke coastline shift as grounds to terminate a maritime boundary.”¹¹³ She also cites the dicta in the *Aegean Sea case*, where the International Court of Justice (ICJ) said

Whether it is a land frontier or a boundary line in the continental shelf that is in question, the process is essentially the same, and inevitably involves the same element of stability and permanence, and is subject to the rule excluding boundary agreements from fundamental change of circumstances.¹¹⁴

As a matter of existing law, the Committee took the view that changes in coastlines arising through sea-level rise or any other reason did not affect, and had not to date affected, the validity of existing maritime boundary agreements. On the grounds of legal stability and certainty the Committee was sceptical as to whether this rule should be re-examined *de lege ferenda* or be subject to revision at this stage, since this could involve a revision of both the LOSC and the Vienna Convention on the Law of Treaties, Article 62(2).

Re-examination of the above rules may, however, become necessary in connection with the extreme scenario of sea-level rise leading to the submergence of the entire territory of low-lying small island States or to their territory becoming uninhabitable. The Sea-level Rise Committee will revert to and address this issue in its final report (in 2018), in conjunction with the discussion of statehood.

The preliminary view of the Sea-level Rise Committee was that, for any treaty negotiated since the time that the issue of climate change and consequent sea-level rise has been in the public domain, the negotiators must be deemed to have been aware of it, hence sea-level rise could not in that event be regarded as a fundamental change of circumstances.

The key question in this regard is to assess at which point in time it could be considered that sea-level rise, of such a magnitude as to impact objective criteria for negotiated boundaries, became a matter which was in the ‘public domain’. The First World Climate Conference hosted by the World Meteorological Organization (WMO) was in 1979, while the IPCC was established by UNEP and WMO in 1988 – and the First Assessment Report by the IPCC was published two years later, in 1990.¹¹⁵ As already mentioned, however, in 2014 the IPCC revised its predictions published in AR4

¹¹⁰ A Aust, *Modern Treaty Law and Practice*, 3rd edn (Cambridge University Press, 2013), at 264.

¹¹¹ Caron, ‘Climate Change, Sea Level Rise and the Coming Uncertainty in Oceanic Boundaries: A Proposal To Avoid Conflict’, at 13–14; cited by J Lisztwan, ‘Stability of Maritime Boundary Agreements’, *Yale Journal of International Law*, 37 (2012), 153, 186, who also cites cautious support from J Lusthaus, ‘Shifting Sands: Sea Level Rise, Maritime Boundaries and Inter-state Conflict’, *Politics*, 30 (2020), 113, 115–118.

¹¹² Lisztwan, ‘Stability of Maritime Boundary Agreements’, at 189.

¹¹³ *Ibid.*

¹¹⁴ *Aegean Sea Continental Shelf* (Greece v. Turkey), [1978] ICJ Reports 3, 85 (19 December 1978).

¹¹⁵ Regarding findings on sea-level rise in that and subsequent IPCC assessment reports, see *supra*, part I of this report, section B.2.1. Note also General Assembly Resolution 44/206, ‘Possible Adverse Impacts of Sea-Level Rise on Islands and Coastal Areas, Particularly Low-lying Coastal Areas’, UN Doc A/44/206, adopted on 22 December 1989, 85th plenary meeting; and General Assembly Resolution 43/53, ‘Protection of Global Climate

(2007), and posited sea-level rise of up to approximately one metre by 2100. IPCC estimates in AR5 are, already as of 2016, considered to be rather conservative.

This time could arguably be as early as at the time of the WMO First World Climate Conference in 1979. However, it has been noted that “during the Third UN Conference on the Law of the Sea [which was concluded in 1982], there was no widespread recognition of the possible problems of sea-level rise, and negotiators did not anticipate that there would be a significant global regression of coastlines”.¹¹⁶ There are therefore no provisions in the 1982 LOS Convention itself for dealing with possible rises in sea level;¹¹⁷ it can therefore hardly be expected that maritime boundary negotiators before that time could have been deemed to have been aware of the issue of sea-level rise as potentially relevant to the agreement they were negotiating.

On the other hand, it could be argued that the latest estimates by the IPCC, as contained in AR5 of 2013/2014, are now based on significantly improved understanding of components that contribute to sea-level rise, and have for the first time introduced in the public domain a well-founded scientific explanation of all components of sea-level rise and its projections for the 21st century, of such a magnitude as to have the potential to affect the objective criteria on which the negotiation of maritime boundaries is based.

There could also be various other points in time – before, between, or after those already discussed above – at which the knowledge or presumed awareness of the negotiators of the maritime boundaries about sea-level rise as the relevant circumstance might be regarded as being ‘foreseen by the parties’ at the time of the conclusion of the agreement. Moreover, in those instances in which negotiators are clearly aware that there may be changes to the relevant baselines subsequent to the conclusion of a boundary treaty, the fact that they opted for a defined boundary instead of allowing for later changes indicates a preference for legal stability. The views, suggestions and opinions of the Committee members on this wide range of issues will be required in the further work of the Committee towards its final report in 2018.

PART III: **International Law and Sea-level Rise:** **(Forced) Migration and Human Rights**

This part of the report focuses on a segment of Committee’s mandate relating to “the study of the ... implications under international law of the partial and complete inundation of state territory, or depopulation thereof, in particular of small island and low-lying states” by examining issues relating to human rights and mobility.¹¹⁸ The combined and cumulative impacts of relative sea level rise, sea-level extremes and other effects of climate change present a range of direct and indirect negative consequences for human lives and living conditions in coastal and low-lying areas. They pose risks to all aspects of human life, including mortality, food and water security, health and well-being, housing, land and other property, livelihoods and industry, infrastructure and critical services,¹¹⁹ and cultural heritage,¹²⁰ which may progressively threaten human security over the course of this century and beyond.¹²¹

for Present and Future Generations of Mankind’, UN Doc A/43/905, adopted on 6 December 1988, 70th plenary meeting.

¹¹⁶ Hayashi, ‘Sea Level Rise and the Law of the Sea – Future Options’, at 194, as well as the literature cited there.

¹¹⁷ Ibid.

¹¹⁸ For a more detailed analysis, see J McAdam, B Burson, W Kälin and S Weerasinghe, *International Law and Sea-Level Rise: Forced Migration and Human Rights* (FNI Report 1/2016), at <http://www.fni.no/pdf/FNI-R0116.pdf>.

¹¹⁹ AR5 – *Summary for Policymakers*, at 13.

¹²⁰ P Wong et al, ‘Coastal Systems and Low-lying Areas’ in *Climate Change 2014*, 381.

¹²¹ AR5 – *Summary for Policymakers*, 1–32; W Adger et al, ‘Human Security’ in *Climate Change 2014. Contribution of WG II to AR5, Chapter 12*, 755–791.

Current legal frameworks do not facilitate the movement of people across borders in anticipation of future climate change-related harm. As explained below, international refugee law generally will not apply. Likewise, it is a misconception that people will necessarily be rendered stateless as a matter of law if their small island country becomes uninhabitable.

The first section (A) provides a brief overview of the ways in which sea-level rise may affect the enjoyment of human rights, including people's ability to remain in their homes. The second section (B) identifies 'tools' that have the potential to address the implications of sea-level rise on human mobility, both in terms of interventions that would enable affected people to remain *in situ*, as well as those that would assist them to move either within their own country or to another country. The final section (C) draws out key areas and principles of international law with the capacity to lend clarity and content to States' obligations to address the mobility challenges presented by sea-level rise, which will be explored in greater detail in the Committee's final report in 2018.

A. Background

At the outset, it is important to note that sea-level rise does not automatically mean that people will need to leave their homes. Rather, legal, policy, technical and scientific interventions now and in the coming years, including through climate change adaptation and mitigation, will determine whether, and for how long, it is possible for people to remain *in situ* – and whether doing so enables them to lead dignified lives or exposes them to risks and increased vulnerability. The impacts of sea-level rise on the enjoyment of human rights can be favourably influenced by State action on disaster risk reduction and management, climate change mitigation and adaptation, and development policies, among others. Identifying the need for a broad, complementary set of policy strategies necessarily affects how international law should be progressively developed in this area.

Not all communities will experience the same pressures or have the same needs, and the needs of particular individuals within communities will also vary. This is because underlying socio-economic circumstances, differing degrees of exposure and vulnerability, general environmental and geographical circumstances, adaptive capacity and resilience, and the resources of governing institutions will all affect the ability of individuals, communities and governments to respond to change.

These impacts will, in turn, affect human mobility. Where people cannot live in safe conditions with access to livelihoods – or expect they will not be able to in the future – they may move elsewhere. Sometimes they may move because of a sudden-onset event, such as a storm surge, astronomical tide, or flooding. At other times, they may plan to move in anticipation of longer-term changes to their environment due to erosion, change in wetlands, or saltwater intrusion into groundwater. The nature of any movement – as well as its geography – will depend in part on mitigation and adaptation action, what assistance and protection is available to people, and on legal and policy frameworks regulating cross-border movement. Even so, the precise scale and timeframes remain unclear.

1. Sea-level Rise and Human Rights

There is already a substantial body of literature describing the impacts of climate change, including sea-level rise, on people's ability to enjoy their human rights.¹²² In successive UN Human Rights Council (HRC) resolutions, States have acknowledged that "the adverse effects of climate change

¹²² See, e.g., literature cited in J McAdam and M Limon, *Human Rights, Climate Change and Cross-Border Displacement: The Role of the International Community in Contributing to Effective and Just Solutions* (Universal Rights Group, Geneva, 2015); S Humphreys (ed), *Human Rights and Climate Change* (Cambridge University Press, Cambridge, 2010); W Kälin, 'The Human Rights Dimension of Natural or Human-Made Disasters', *German Yearbook of International Law*, 55 (2012), 119, 128–29.

have a range of direct and indirect implications for the effective enjoyment of all human rights”,¹²³ including “immediate and far-reaching threats to people and communities around the world”.¹²⁴ The rights to life, adequate food, health, housing, cultural identity and self-determination may be particularly affected.

Since climate change interacts with other stressors, there will always be multiple reasons why people’s rights are negatively impacted. As the HRC has stressed, “the effects of climate change will be felt most acutely by individuals and communities ... that are already in vulnerable situations owing to geography, poverty, gender, age, indigenous or minority status or disability”,¹²⁵ with “people in developing countries, particularly in least developed countries, small island developing States and African countries ... among the most vulnerable to the adverse effects of climate change on the full and effective enjoyment of all human rights”.¹²⁶ As such, it is impossible to isolate the precise role that sea-level rise will play in any given scenario (although this may change over time). Similarly, in most cases, more than one human right will be affected because of the interdependence of many rights.

Of course, identifying that the enjoyment of a right may be impacted by rising sea levels does not automatically render a State in breach of its international obligations. States have an obligation to respect, protect and fulfil human rights to protect people from *foreseeable* harm, including from the impacts of sea-level rise, and this may be tempered by a number of factors. In particular, the jurisprudence of both the European Court of Human Rights¹²⁷ and the New Zealand Immigration and Protection Tribunal has drawn a distinction between man-made and natural hazards, the latter noting that:

The disasters that occur in Tuvalu derive from vulnerability of natural hazards such as droughts and hurricanes, and inundation due to sea-level rise and storm surges. The content of Tuvalu’s positive obligations to take steps to protect the life of persons within its jurisdiction from such hazards must necessarily be shaped by this reality.¹²⁸

Accordingly, an affected State would be faced with ‘an impossible burden’ were it required, as a matter of law, to mitigate the underlying environmental drivers of these hazards in order to comply with the obligation to protect against the arbitrary deprivation of life.¹²⁹

Thus, while there is growing recognition that inherent in existing human rights obligations are duties that require States to address adverse impacts of climate change, greater clarity and guidance is needed on the ways in which international and regional human rights law obligate States to take action to adapt to and address the mobility-related impacts of sea-level rise on their populations. This is especially so where movement occurs across an international border.

2. Sea-level Rise and Mobility

In 2014, more than 19.3 million people fled their homes in the context of disasters stemming from natural hazards.¹³⁰ Each year since 2008, disasters have displaced an average of more than 26 million

¹²³ ‘Human Rights and Climate Change’, UN Doc A/HRC/26/L.33/Rev.1 (25 June 2014), para 1. Other resolutions on this subject include UN Doc A/HRC/RES/7/23, (28 March 2008); UN Doc A/HRC/RES/10/04 (25 March 2009); UN Doc A/HRC/RES/18/22 (17 October 2011); UN Doc A/HRC/29/L.21 (30 June 2015). Beyond these, resolutions on the thematic topic of the ‘environment’, including ‘human rights and the environment’, also reference climate change.

¹²⁴ UN Doc A/HRC/RES/18/22 (17 October 2011), para 1.

¹²⁵ UN Doc A/HRC/29/L.21 (30 June 2015), preamble.

¹²⁶ UN Doc A/HRC/26/L.33/Rev.1 (25 June 2014), preamble.

¹²⁷ *Budayeva v Russia* App Nos 15339/02, 21166/02, 20058/02, 11673/02, and 15343/02 (20 March 2008); *Öneryıldız v Turkey* (2005) 41 EHRR 20.

¹²⁸ *AC (Tuvalu)* [2014] NZIPT 800517–520, para 75.

¹²⁹ *Ibid.*

people.¹³¹ Most movement took place within countries, not across international borders – a trend that is predicted to continue.¹³² In some contexts, however, such as low-lying island States, international movement may become inevitable over time.¹³³

Global estimates for movements linked to slower-onset changes, such as sea-level rise, do not exist. However, an array of literature, including research and findings from the Nansen Initiative, shows that the gradual impacts of sea-level rise, such as erosion, saltwater intrusion into groundwater and rising water tables, will progressively affect living conditions and livelihood opportunities, which may spur migration.¹³⁴ Experience indicates that people will seek to migrate from at risk areas, rather than waiting for a crisis point.¹³⁵

A key point to note is that even when land is not submerged, it may become unsuitable for human habitation. Saltwater intrusion into groundwater, surface water and land may jeopardize fresh water supplies, diminish the fertility of agricultural land, and in turn affect livelihoods and food security. Immediate and short-term impacts, such as flooding, inundation and saltwater intrusion, are likely to be exacerbated by longer-term impacts, such as erosion.¹³⁶ Additionally, States whose governance capacity is already weak may be significantly challenged long before substantial portions of habitable territory are lost and populations are seriously affected. This has implications for human mobility.

It is also important to note that slow-onset processes like sea-level rise may have more immediate impacts. Indeed, most movement will be triggered by ‘interim’ extreme weather and sea-level events, such as storm surges, astronomical tides, and flooding. The ~20 centimetre increase in global sea levels since the mid-19th century means that there is now much more water riding on a storm surge, which makes flooding more extensive and severe.¹³⁷ Sea-level rise may also interact with other oceanic impacts associated with climate change. Such interactive effects were seen in Cyclone Pam in Vanuatu in March 2015, when higher water surface temperatures also created faster wind speeds and more damaging rainfall.¹³⁸ The cumulative effects of a series of sudden-onset events can erode resilience over time and contribute to further displacement.

¹³⁰ Internal Displacement Monitoring Centre (IDMC), *Global Estimates 2015: People Displaced by Disasters* (July 2015) 8, <http://www.internal-displacement.org/assets/library/Media/201507-globalEstimates-2015/20150713-global-estimates-2015-en-v1.pdf>.

¹³¹ Ibid.

¹³² The Government Office for Science, *Foresight: Migration and Global Environmental Change: Future Challenges and Opportunities* (The Government Office for Science, London, 2011) 37; Asian Development Bank, *Addressing Climate Change and Migration in Asia and the Pacific: Final Report* (Asian Development Bank, 2012) viii, 4; W Kälin and N Schrepfer, *Protecting People Crossing Borders in the Context of Climate Change: Normative Gaps and Possible Approaches* (UNHCR Legal and Protection Policy Research Series, Geneva, 2012), 32–34, <http://www.refworld.org/docid/4f38a9422.html>.

¹³³ Small island developing States are disproportionately affected by development associated with floods and storms (as well as earthquakes). Relative to their population size, between 2008 and 2014, they experienced levels of displacement that were three times higher than the global average; IDMC, *Global Estimates 2015*, 9.

¹³⁴ See, e.g., Nansen Initiative, *Pacific Regional Consultations: Outcome Report* (2013); Nansen Initiative, *Southeast Asia Regional Consultation: Background Paper* (2014); Nansen Initiative, *Greater Horn of Africa Regional Consultation: Background Paper* (2014), all available at <http://www.nanseninitiative.org/>.

¹³⁵ See *ibid*; J McAdam, *Climate Change, Forced Migration, and International Law* (Oxford University Press, Oxford, 2012); S Martin, S Weerasinghe and A Taylor (eds), *Humanitarian Crises and Migration: Causes, Consequences and Responses* (Routledge, London, 2014).

¹³⁶ R Nicholls, ‘Planning for the Impacts of Sea-level Rise’, *Oceanography*, 24 (2011), 144, 147.

¹³⁷ Climate Council, ‘Damage from Cyclone Pam was Exacerbated by Climate Change’ (Briefing Statement 2015) 3, <http://www.climatecouncil.org.au/uploads/417d45f46cc04249d55d59be3da6281c.pdf>. Regarding IPCC estimates of sea-level rise in the course of the 20th century, see *supra*, Part I in this report, section B.2.1.

¹³⁸ Climate Council, ‘Damage from Cyclone Pam was Exacerbated by Climate Change’, at 2.

Overall, the relationship between human mobility and climate change, including sea-level rise, is complex and non-linear, and depends on a range of interacting factors.¹³⁹ It is a multi-causal phenomenon in which climate change impacts interact with other economic, social, and political drivers (or stressors) that themselves affect migration.¹⁴⁰ In many cases, it will be impossible to disentangle the impacts of sea-level rise from other impacts when it comes to mobility decisions.

Finally, although movement away from the impacts of environmental change has long been an important adaptation strategy,¹⁴¹ it will not always be an option. The most vulnerable people may be ‘trapped’ because they do not have the resources to move at all.¹⁴² Those who can move may not be able to go very far because they do not have the economic or social networks to assist them. Movement across international borders may be hampered by immigration formalities and high costs.¹⁴³

B. Tools

Mobility issues associated with the impacts of sea-level rise¹⁴⁴ require both timely and proactive interventions, and pertinent reactive responses. International law has a role to play, but there are also many pragmatic national, regional and/or bilateral interventions that will not require the creation of new international legal principles or frameworks.

In short, legal and other measures are needed to help people: (a) remain *in situ*, where this is possible and desirable; (b) move elsewhere, in anticipation of harm; and (c) be protected and assisted if they are displaced (whether internally or across an international border). In all cases, the principles of human dignity, non-discrimination and international cooperation must be paramount.¹⁴⁵

1. Avoiding Movement: Disaster Risk Reduction and Climate Change Adaptation

Most communities likely to be adversely affected by the impacts of climate change and disasters want to remain in their homes for as long as they can. For example, in the South Pacific, where low-lying islands are particularly susceptible to sea-level rise, communities want to develop adaptation initiatives to enable them to remain in their homes for as long as possible, while also developing strategies to facilitate migration for those who wished to move.¹⁴⁶

Disaster risk reduction is a very important tool in this regard. It seeks to avert damage where possible, lessen its negative impacts when it does occur, protect the most susceptible through risk and vulnerability assessments, build people’s resilience, and take multi-sectoral approaches to creating national strategies.¹⁴⁷ The Sendai Framework on Disaster Risk Reduction 2015–30 highlights the need to develop disaster risk reduction policies based on information on persons and communities

¹³⁹ See W Kälin, ‘Conceptualising Climate-Induced Displacement’ in J McAdam (ed), *Climate Change and Displacement: Multidisciplinary Perspectives* (Hart Publishing, Oxford, 2010) 82.

¹⁴⁰ See, e.g., *Foresight* report; McAdam, *Climate Change, Forced Migration, and International Law*, in particular Chapter 1, synthesizing other research.

¹⁴¹ W Adger et al, ‘Human Security’ in *Climate Change 2014. Contribution of WG II to AR5*, at 758.

¹⁴² See Martin, Weerasinghe and Taylor (eds), *Humanitarian Crises and Migration*, in particular Chapters 1 and 14.

¹⁴³ Adger et al, ‘Human Security’, *Climate Change 2014. Contribution of WG II to AR5*, at 758.

¹⁴⁴ In general, throughout this part of the report, unless the context indicates otherwise or ‘sea-level extremes’ is explicitly mentioned, whenever a reference is made to sea-level rise, it is intended to also encompass sea-level extremes.

¹⁴⁵ See, e.g., The Nansen Principles, the recommendations stemming from the Nansen Conference on Climate Change and Displacement in the 21st Century, held in Oslo 6–7 June 2011, available at: https://www.regjeringen.no/globalassets/upload/ud/vedlegg/hum/nansen_prinsipper.pdf. Principle 1 specifically references human dignity.

¹⁴⁶ See, e.g., *Nansen Initiative Pacific Regional Consultation*.

¹⁴⁷ McAdam, *Climate Change, Forced Migration and International Law*, 242.

particularly exposed to disaster risks, and to formulate “public policies, where applicable, aimed at addressing the issues of prevention ... of human settlements in disaster risk zones”¹⁴⁸ It also calls for the promotion of “transboundary cooperation ... to build resilience and reduce disaster risk, including ... displacement risk”.¹⁴⁹ Likewise, national climate adaptation plans and similar instruments can importantly help people to stay in their homes, even when the impacts of climate change seriously affect their traditional livelihoods.

By enhancing resilience, any displacement that is triggered by a sudden-onset event may only be a short-term, emergency measure to get out of harm’s way. Where *in situ* adaptation is not viable, has been exhausted, or is unsatisfactory for other reasons, movement away from impacted areas may be another form of adaptation/disaster risk reduction.

2. Responding to Movement: The Role of International Law

Movement can be both a form of adaptation, as well as a sign that other types of adaptation have failed,¹⁵⁰ and will fall somewhere on a spectrum from forced to voluntary. For instance, ‘displacement’ describes the (primarily) forced movement of people, often at the point when disaster strikes. ‘Migration’ refers to (primarily) voluntary movement, which, in the present context, would likely occur in anticipation of future harm (and in stages, over a longer timeframe). The extent to which people can migrate voluntarily in anticipation of, or in response to, the impacts of sea-level rise, will depend upon the legal and policy frameworks in place, and the resources available to those wishing to move. ‘Planned relocation’ describes a process in which people move or are moved away from their homes, settled in a new location, and provided with the conditions for rebuilding their lives. It can be either forced or voluntary, large-scale or small-scale.¹⁵¹ It is generally carried out by the State as a risk mitigation strategy, but it is also possible that communities may take the initiative to relocate themselves.

Reflecting these forms of mobility and the critical role of policy in shaping their contours, paragraph 14(f) of the Cancun Adaptation Framework, adopted in 2010, invited States to enhance action on adaptation by undertaking, inter alia, “measures to enhance understanding, coordination, and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate at the international, regional and national levels”.¹⁵² Although non-binding, paragraph 14(f) has operational significance. First, it evidences States’ recognition of the impacts of climate change on human movement, the need for strategies to address this, and the recognition of three types of movements as forms of adaptation: displacement, migration and planned relocation. Secondly, it provides a basis for securing adaptation funding to develop strategies that support mobility as an adaptation option.

The Paris Agreement, adopted in December 2015, has moved towards a more action-oriented agenda. It calls for the establishment of a task force, under the auspices of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts, “to develop

¹⁴⁸ Sendai Framework for Disaster Risk Reduction 2015–2030, UN Doc A/RES/69/283 (23 June 2015) para 27, <http://www.preventionweb.net/files/resolutions/N1516716.pdf>.

¹⁴⁹ Ibid, para 28.

¹⁵⁰ E.g., K Warner et al, *Changing Climate, Moving People: Framing Migration, Displacement and Planned Relocation*, UNU-EHS Policy Brief (2013), <http://collections.unu.edu/view/UNU:1837#viewAttachments>.

¹⁵¹ E Ferris, *Protection and Planned Relocations in the Context of Climate Change* (UNHCR Legal and Protection Policy Research Series, Geneva, 2012) 11; <http://www.refworld.org/docid/5023774e2.html>. See also *Guidance on Protecting People from Disasters and Environmental Change through Planned Relocation* (Brookings/Georgetown/UNHCR, 2015). The term should not be confused with the notion of ‘resettlement’ in the refugee context, which refers to resettling refugees from a country of first asylum to a third State on a permanent basis.

¹⁵² Decision 1/CP.16, The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention, UN Doc. FCCC/CP/2010/7/Add.1, 15 March 2011, paragraph 14(f).

recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change”.¹⁵³ The agreement does not specify how the task force will operate, and it is not yet clear how its recommendations will be implemented, what weight they will carry, or how they will be financed. The Advisory Group on Climate Change and Human Mobility, comprised of a small number of academic, policy and operational actors, including the United Nations High Commissioner for Refugees and the International Organization for Migration, has recommended that the task force should have four key objectives in carrying out its mandate, namely to enhance (a) knowledge; (b) policy coordination; (c) action; and (d) technical expertise and capacity-building.¹⁵⁴

Cross-cutting all three forms of mobility – displacement, migration and planned relocation – is whether the movement in question occurs within a State, or involves movement across an international border. As noted above, most displacement, migration and planned relocation is likely to take place *within* countries. This is significant because the range of applicable international law is not identical in each case, and consequently the need for development of international law to address any resulting gaps differs.

The extent to which people feel compelled to move across international borders may be tempered by the degree to which assistance and protection is available to people who are internally displaced, as well as the legal and policy frameworks regulating cross-border movement. Some international movement is inevitable and is already occurring (although the scale is unclear).¹⁵⁵

Proactive interventions that can be put in place now to allow people to undertake planned migration can be an effective way to build long-term resilience, especially in the face of slower-onset impacts of sea-level rise and sea-level rise itself. Research has shown that resilience determines the extent to which people can use migration to ‘flourish’, rather than just to ‘survive’.¹⁵⁶ Any migration or relocation strategies must be developed and executed in a manner fully consistent with the minimum standards of protection articulated under human rights law.

2.1 Displacement

Some existing legal tools are relevant to displacement. With respect to internal movement, the UN Guiding Principles on Internal Displacement are particularly relevant. Although in themselves non-binding, the Guiding Principles reflect binding international legal standards and have been recognized by the international community as an “important international framework for the protection of internally displaced persons”,¹⁵⁷ addressing people’s needs and rights before, during and after displacement.¹⁵⁸

¹⁵³ Draft decision -/CP.21, Adoption of the Paris Agreement, UN Doc. FCC/CP/2015/L.9/Rev.1, 12 December 2015, paragraph 50; see also paragraph 51. The preamble also notes that when taking action to address climate change, States parties should “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”.

¹⁵⁴ Inputs from the Advisory Group on Climate Change and Human Mobility to Executive Committee of the Warsaw International Mechanism for Loss and Damage, Bonn, 2–5 February 2016, <http://www.unhcr.org/56b9a4c19.pdf>. The Executive Committee has already invited relevant organizations and experts to provide “knowledge, data and scientific information on both internal and cross-border migration, displacement and other forms of human mobility owing to factors related to climate change impacts, including in combination with other factors”: letter dated 30 March 2016 (on file with the Co-Rapporteur).

¹⁵⁵ See, e.g., reports by the Nansen Initiative above.

¹⁵⁶ Warner et al, *Changing Climate, Moving People*, 21.

¹⁵⁷ UNGA, 2005 World Summit Outcome, UN Doc A/RES/60/1 (24 October 2005) para 132.

¹⁵⁸ Guiding Principles on Internal Displacement, UN Doc E/CN.4/1998/53/Add.2 (11 February 1998), <http://www.un-documents.net/gpid.htm>. They are complemented by other international and regional instruments on human rights and disasters, including the 2009 African Union Convention for the Protection and Assistance to Internally Displaced in Africa (Kampala Convention), which has a specific provision (Article 5(4)) obliging States parties to take measure to protect and assist persons who have been internally displaced due to natural and

The challenge lies in strengthening the normative and operational implementation of the Guiding Principles and related instruments. They can be strengthened *normatively* through the development/amendment of national laws, policies and strategies, and/or sub-regional and regional instruments, to recognize and respond to displacement as a response to disasters including those linked to climate change. They can be strengthened *operationally* by building/enhancing the capacities of national and local authorities to implement and apply them.¹⁵⁹

At the international level, the 1951 Convention relating to the Status of Refugees, as well as complementary forms of protection under human rights law, are also potentially relevant. As explained elsewhere,¹⁶⁰ however, the existing international legal regime on refugees, complementary protection and stateless persons is unlikely to provide assistance in most cases. Further, there is no political will among States to expand their protection obligations under international law at this point in time.

Nevertheless, it may *already* be possible to engage States' existing refugee or complementary protection obligations in the context of sea-level rise and other environmental degradation or destruction – for instance, if a government were to restrict access to fresh water supplies or agricultural land, or to limit humanitarian assistance in the aftermath of an extreme weather event.¹⁶¹ The 'cause' of the harm would not be sea-level rise or environmental destruction per se, but it would provide the background setting.

2.2 Migration

Migration can be an effective way to build long-term resilience of people and communities, allowing them to cope with adverse impacts of sea-level rise and potentially reduce or avoid displacement at a later stage. Experience indicates that people will initially seek to migrate from at-risk areas rather than wait until a crisis point arrives.¹⁶² In this respect, proactively anticipating and planning for migration is an important policy option. Migration can enable people to move 'voluntarily' and relatively safely away from the impacts of sea-level rise, be a beneficial channel for livelihood diversification, and play an important role in risk management strategies. Increased migration could also help relieve population and resource pressures, particularly in some low-lying island States, where these are of pressing concern.¹⁶³

People who voluntarily migrate to another part of their home country to avoid the anticipated negative impacts of sea-level rise remain entitled to the full range of rights and protections afforded by international (and domestic) law as nationals of that country including, in particular, the right to liberty of movement and freedom to choose one's place of residence. While core norms of international human rights law, such as the prohibition on discrimination, will be important, the main challenges for international law in the case of internal (voluntary) migration will be more operational and compliance-oriented, than normative. In contrast, while there are some tools to address cross-border movement, there are also considerable legal gaps.

Many of the existing tools to address cross-border mobility are premised on the idea that it is too dangerous to return *now or in the immediate future*. One important tool in this regard is the use of temporary protection visas, or ad hoc adjustments to existing immigration processes, to assist people

human made disasters, including climate change. They are further complemented by non-State initiatives, such as the Peninsula Principles on Climate Displacement, which seek to contextualize the Guiding Principles to the specific context of climate change-related displacement.

¹⁵⁹ Kälén, 'Conceptualising Climate-Induced Displacement', at 94.

¹⁶⁰ McAdam, *Climate Change, Forced Migration and International Law*.

¹⁶¹ See *AF (Kiribati)* [2013] NZIPT 800413, paras 58–59.

¹⁶² See *supra*, note 135.

¹⁶³ McAdam, *Climate Change, Forced Migration, and International Law*, at 204.

who need to leave disaster-affected countries.¹⁶⁴ Such tools are more displacement-oriented and remedial than proactive, and do not facilitate movement that is anticipatory – namely, where people calculate future risks and decide to leave rather than stay.¹⁶⁵ International treaties concerning labour migration will typically not apply because they are designed to regulate movement across borders for purposes of employment.

Existing national immigration laws and regulations related to employment, family or education, as well as other forms of privileged access to territory, might allow for adaptive international migration.¹⁶⁶ In some parts of the world, processes of colonization and trusteeship have provided the foundation for sub-regional ‘clusters’ of States within which varying levels of privileged rights to temporary or permanent residence, or labour-market access, are conferred, particularly in the State that acts as a ‘cluster hub’. Examples in the Pacific include New Zealand, USA and France, and new clusters are emerging centred around countries such as Australia.¹⁶⁷ At the regional level, existing free movement agreements also present important existing frameworks for facilitating migration as adaptation, but require adjustment to be effective in the context of sea-level rise.¹⁶⁸

Nevertheless, targeted mechanisms for enabling people to migrate in the context of sea-level rise, and indeed the broader effects of climate change, need to be part of the policy mix. Some States affected by sea-level rise have already called for the expansion of existing migration opportunities to create planned movement pathways for their nationals and to enable them to ‘migrate with dignity’.¹⁶⁹ Managed regular admission schemes, including immigration quotas or targeted admission of migrants from particularly affected areas, would assist adaptation efforts, and at the same time potentially reduce the extent of irregular migration. These could be implemented through bi-lateral or (sub-) regional agreements between countries, building on historical migration flows and new patterns of movements.

2.3 Planned relocation

In the face of sudden- and slow-onset impacts of sea-level rise, planned relocation may be used as a preventative measure to reduce the risk of future displacement by moving people out of risk-prone areas. Planned relocation may also serve as a durable solution by enabling displaced people to return as a community to a new part of the country, in the event that their original place of origin has been destroyed or rendered uninhabitable. Most planned relocations are envisaged as taking place within countries, rather than across international borders (for practical, legal, cultural and related reasons). In cases where internal planned relocation is not a viable long-term solution, such as in some low-lying island States, it remains to be seen whether movement will take place as individual/household

¹⁶⁴ Ibid, Chapter 4; D Cantor, *Law, Policy, and Practice Concerning the Humanitarian Protection of Aliens on a Temporary Basis in the Context of Disasters*, States of the Regional Conference on Migration and Others in the Americas, Background Study for the Regional Workshop on Temporary Protection Status and/or Humanitarian Visas in Situations of Disasters, San José (10–11 February 2015) 42–54, available at: <https://www.nanseninitiative.org/central-america-consultations-intergovernmental/>.

¹⁶⁵ See discussion in *AC (Kiribati)* [2013] NZIPT 800413, para 89–91, where the NZ Immigration Tribunal discussed the requirement that harm be ‘imminent’, a standard it equated to the ‘real chance’ standard in refugee law as requiring more than conjecture or surmise.

¹⁶⁶ Family reunification may provide greater scope for more permanent international migration through sponsorship and other mechanisms.

¹⁶⁷ B Burson and R Bedford, *Clusters and Hubs: Toward a Regional Architecture for Voluntary Adaptive Migration in the Pacific* (Discussion Paper, Nansen Initiative, 9 December 2013), Executive Summary, https://www2.nanseninitiative.org/wp-content/uploads/2015/02/DP_Clusters_and_Hubs_Toward_a_Regional_Architecture_for_Voluntary_Adaptive_Migration_in_the_Pacific.pdf.

¹⁶⁸ See, e.g., the Economic Union of the Organisation of Eastern Caribbean States, the Caribbean Single Market and Economy, the Central American ‘4 Border Agreement’, the East African Community Free Movement of Persons Protocol, and the Economic Community of West African States (ECOWAS).

¹⁶⁹ Kiribati is one example; see McAdam, *Climate Change, Forced Migration, and International Law*, 175.

migration, or whether the planned relocation of whole communities across international borders will be possible. This will depend on what other States are prepared to offer.

The planned relocation of persons or groups of persons should be an option of last resort. This was the clear message from the Pacific Island consultation held by the Nansen Initiative in 2013,¹⁷⁰ and is borne out by fraught experiences of cross-border relocation in the past in that region,¹⁷¹ and the experiences of development actors in moving populations to facilitate various development projects.¹⁷² Over the course of this century and beyond, the planned international relocation of groups may, however, be necessary for those remaining in low-lying island States, as their territory becomes uninhabitable from the impacts of sea-level rise and other effects of climate change. In part, this will depend on what other mitigation and adaptation strategies are put in place – including migration strategies to enable people to move if and when they so desire.

In a context where planned relocation becomes a necessary and viable option, policymakers will need to pay acute attention to planning, embrace lessons learned from past experiences,¹⁷³ prioritize a human rights-centred approach throughout the process, and involve and consult those to be relocated as well as host communities.

Planned relocation is a tool with myriad complexities. Aside from the intricacies of securing agreement to relocate communities to the territory of another State, there are implications for fundamental issues such as self-determination, identity and status, as well as other important facets of daily life including livelihoods, health, shelter, culture, and property. Effects of dislocation can have intergenerational consequences. Experiences from the development field demonstrates that impoverishment of relocated groups is a distinct risk. There are also questions about how to balance the human rights of relocated groups with those of the communities into which they move.

C. Further Issues for the Consideration of the Committee

1. International Human Rights Law

Human rights law, and the different categories of obligations (respect, protect, and fulfil) intrinsic in specific rights, must inform the ways in which States undertake action to address the impacts of sea-level rise, including action to facilitate *in situ* adaptation and prevent and address internal and international movements. Greater clarity and guidance is needed on the ways in which international and regional human rights law obligate States to take action to adapt to and address the impacts of sea-level rise on their populations, including as they pertain to the three different types of mobility discussed above in section B.

Beyond this general duty, emerging jurisprudence from the European Court of Human Rights and UN treaty bodies have shed light on the ways in which States' obligations to respect, protect and fulfil certain human rights relate to phases of disaster response.¹⁷⁴ Arguments have also been made that victims of natural disasters can claim a right to humanitarian assistance when in need pursuant to extant human rights.¹⁷⁵ In these ways, there is growing recognition that inherent in existing human rights obligations are duties that require States to address adverse impacts of climate change. Various

¹⁷⁰ *Nansen Initiative Pacific Regional Consultation*.

¹⁷¹ J McAdam, 'Historical Cross-Border Relocations in the Pacific: Lessons for Planned Relocations in the Context of Climate Change', *Journal of Pacific History*, 49 (2014), 301.

¹⁷² See, e.g., Ferris, *Protection and Planned Relocations*.

¹⁷³ J McAdam, 'Relocation and Resettlement from Colonisation to Climate Change: The Perennial Solution to "Danger Zones"', *London Review of International Law*, 3 (2015), 93; J McAdam, "'Under Two Jurisdictions": Immigration, Citizenship, and Self-Governance in Cross-Border Community Relocations', *Law and History Review*, 24 (2016) (published online 6 April 2016).

¹⁷⁴ Kälin, 'The Human Rights Dimension of Natural or Human-Made Disasters', 128–29.

¹⁷⁵ *Ibid*, 141.

bodies are attempting to articulate and give meaning to the content of such duties.¹⁷⁶ In addition, some treaties expressly refer to disaster relief,¹⁷⁷ and there are also efforts to recognize a single, overarching right to a healthy environment.¹⁷⁸

However, the risks posed by sea-level rise for some States may, in turn, challenge contemporary understandings about State responsibility, including which State(s) bear legal duties when it comes to the protection and enjoyment of human rights.

2. Other Principles of International Law

States that have contributed the least to anthropogenic changes to the climate system will be many of the worst affected. They will require support to assist and protect their own populations and to respect, protect and fulfil their human rights obligations. Support may take the form of technical, financial and operational measures, aspects that are already envisioned under the UNFCCC and associated instruments.

In this context, greater clarity is needed on the role and responsibility of the international community to step into the breach. Further guidance is needed on the ways in which the international community's collective responsibility to adapt to the impacts of climate change should be translated into more specific obligations and discharged in specific situations.

In particular, two general principles of international law – the duty to cooperate, and the principle of common but differentiated responsibilities – have the potential to provide greater clarity on the role and responsibilities of the States. Additionally, elementary considerations of humanity and the closely connected concept of human dignity may provide overarching normative concepts to guide the development of strategies to respond to the impacts of sea-level rise, acting as meta-principles guiding necessary conduct.

Clarifying the content of States' existing duties under human rights law as they pertain to the impacts of sea-level rise, and complementing them by determining the content of the duty to cooperate in light of the principle of common but differentiated responsibilities, has the potential to provide a substantial contribution to the field and to lead towards developing options for the progressive development of international law. These aspects will be the subject of further research and discussion in the lead-up to the preparation of the Committee's final report in 2018.

¹⁷⁶ These aspects are expected to be the subject of further research within this Committee.

¹⁷⁷ Convention on the Rights of Persons with Disabilities, entered into force 3 May 2008, 2515 UNTS 3, Art 11; African Charter on the Rights and Welfare of the Child, entered into force 29 July 1999, OAU Doc CAB//LEG/24.9/49, Arts 23 and 25.

¹⁷⁸ J Knox, *Report of the Independent Expert on Issues of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean Healthy and Sustainable Environment: Preliminary Report*, United Nations Human Rights Council, UN Doc A/HRC/22/43 (24 December 2012) para 51.