

Exploring the foundations: the principles of prevention, mitigation, and preparedness in international law, role of international law in disaster risk reduction

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Exploring the Foundations: The Principles of Prevention, Mitigation, and Preparedness in International Law

Marie Aronsson-Storrier

1. INTRODUCTION

Although disaster risk reduction (DRR) on an international level is regulated by non-binding instruments, it is underpinned by, and relates to, established rules and principles of international law. At the very heart of DRR, and of the Sendai Framework for Disaster Risk Reduction 2015–2030¹ (Sendai Framework) are the principles of prevention, mitigation, and preparedness. The foundational character of these principles was also confirmed in the 2016 International Law Commission (ILC) Draft Articles of the Protection of Persons in the Event of Disasters (ILC Draft Articles).² Building upon literature establishing close links between DRR and discrete areas of international law, this chapter examines the foundations of DRR obligations through these core principles. The analysis illuminates the interconnectedness, as well as the boundaries, of relevant areas of international law, and further assists in analysing how core principles of DRR have developed, what their legal status is, and how this can inform decisions and priorities going forward.

The emerging legal focus on DRR follows decades of progress in social sciences, where it has long been acknowledged that no disasters are ‘natural’, but that rather all disasters, including those triggered by ‘natural’ hazards, are caused by a combination of hazards and vulnerability, and thus (largely) social constructs.³ Over the past 10–15 years, there has been a significant increase in agreements and policies regulating DRR efforts. At the same time, there has also been a growing acknowledgement of the close connection between DRR, development, climate change, and human rights. Still, despite this growing recognition about the importance of close

¹ United Nations Office for Disaster Risk Reduction (UNISDR), Sendai Framework for Disaster Risk Reduction 2015–2030 (18 March 2015) A/CONF.224/CRP.1. Adopted by the United Nations General Assembly (UNGA) in Resolution 69/283, Sendai Framework for Disaster Risk Reduction 2015–2030 (23 June 2015) A/RES/69/283.

² ILC, ‘Draft articles on the protection of persons in the event of disasters, with commentaries’, adopted by the ILC at its sixty-eighth session and submitted to the General Assembly as a part of the Commission’s report covering the work of that session. UNGA, Report of the International Law Commission New York: 2 May–10 June and 4 July–12 August 2016) A/71/10. See arts. 2 and 9.

³ See, for example, E.L. Quarantelli, ‘Disaster and Human Action and Social Science and Social Science and Disaster, Gorizia, Italy 26th–27th June 1981’, *Disasters*, 6 (1982) 2, 2 (conference report); E.L. Quarantelli (ed.), *What is a Disaster?: Perspectives on the Question* (New York: Routledge, 1998); H.W. Fischer, ‘The Sociology of Disaster: Definitions, Research Questions, & Measurements Continuation of the Discussion in a Post-September 11 Environment’, *International Journal of Mass Emergencies and Disasters*, 21 (2003) 1, 91–107; B. Wisner, et al. (eds.), *At Risk: Natural Hazards, People’s Vulnerability, and Disasters*, 2nd edn (Routledge, 2004); B. Wisner, J.C. Gaillard, and I. Kelman (eds.), *The Routledge Handbook of Hazards and Disaster Risk Reduction* (Routledge, 2012).

interlinkages of efforts, these different areas of law have largely developed within their own silos, and are driven and monitored by their own institutions, which means that the language and principles do not necessarily translate seamlessly into DRR efforts.⁴

Since there are yet to be any multilateral binding treaties concerning disasters, any search for binding obligations to reduce disaster risk will have to be grounded in other areas of law.⁵ Seeking to implement DRR through international law offers significant opportunities, but also presents important challenges. One of the key questions is to what extent the core principles of DRR – prevention, mitigation, and preparedness – constitute (binding) international law? This in itself opens two sets of questions. The first concerns the extent to which the principles constitute customary international law, including the extent to which they have been used by states in bilateral, regional agreements, and implemented into national laws and policies. This has been explored elsewhere and will not be the focus of the analysis here.⁶ Instead, the focus of this chapter will be on the second question: To what extent are the principles grounded in other areas of international law? This question is closely tied to the challenge of creating a coherent framework and illuminates the challenges involved in the purposeful defragmentation of norms which forces us to break conceptual and institutional silos. The core question that this chapter explores is thus, to what extent are the policy definitions of the principles of prevention, mitigation, and preparedness, as developed primarily by the United Nations Office for Disaster Risk Reduction (UNISDR) and the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology relating to Disaster Risk Reduction⁷ (Expert Working Group), supported in international law? And what does this tell us about the validity of the principles as tools for lawyers working on DRR?

As discussed below, whereas the principles of mitigation and preparedness have largely developed as specific DRR concepts,⁸ the principle of prevention has long existed in other fields of international law, such as international environmental law (IEL), and international human rights law (IHRL). Numerous recent scholarly works discuss the role and meaning of the principle of prevention, as applied in the respective fields, to ground DRR policy in existing legal obligations.⁹ However, it soon becomes clear that the principle of prevention has numerous different meanings in the fields in which DRR obligations are grounded. This is unsurprising

⁴ The ‘fragmentation of international law’ has been subject to much debate, particularly in the beginning of the twenty-first century. See, especially, ILC, ‘Fragmentation of International Law: Difficulties Arising From the Diversification and Expansion of International Law’, submitted to the General Assembly as a part of the Commission’s report. UNGA, Report of the International Law Commission (1 May–9 June and 3 July–11 August 2006) A/61/10, p. 400. For ‘Conclusion of the work of the Study Group’, see p. 407.

⁵ This is notably different from the method of analogy which is (arguably) applied between international humanitarian law and international disaster response law, as discussed by Sandesh Sivakumaran in S. Sivakumaran, ‘Techniques in International Law-Making: Extrapolation, Analogy, Form and the Emergence of an International Law of Disaster Relief’, *European Journal of International Law*, 28 (forthcoming). Available at papers.ssrn.com/sol3/papers.cfm?abstract_id=3070445 (accessed 11 July 2018).

⁶ See, especially, ILC Draft Articles, art. 9, commentary, paras. 5–6.

⁷ Established through UNGA, Resolution 69/284, Establishment of an open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction (25 June 2015) A/RES/69/284.

⁸ With the exception of climate change mitigation (see section 2).

⁹ See, for example, J. Peel and D. Fisher (eds.), *The Role of International Environmental Law in Disaster Risk Reduction* (Leiden; Boston: Brill Nijhoff, 2016); K. da Costa and P. Pospieszna, ‘The Relationship between Human Rights and Disaster Risk Reduction Revisited: Bringing the Legal Perspective into the Discussion’, *Journal of International Humanitarian Legal Studies*, 6 (2015) 1, 64–86; T. Karimova, ‘Sustainable Development and Disasters’ in S.C. Breau and K.L.H. Samuel (eds.), *Research Handbook on Disasters and International Law* (Edward Elgar, 2016) 177; T. Stephens, ‘Disasters, international environmental law and the Anthropocene’ in S.C. Breau and K.L.H. Samuel (eds.), *Research Handbook on Disasters and International Law* (Edward Elgar, 2016), 153.

considering that the specific fields are seeking to prevent, for example, environmental harm, or human rights breaches, rather than disasters. For example, prevention of a breach of the right to life can be fulfilled through evacuation of affected areas before an imminent disaster, which is significantly different from a prevention of harm caused by that disaster itself.

It will be argued in this chapter that due to their unclear meaning, any attempt to ground DRR policy in other areas of international law should not be linked so much to the core principle as developed in international policy language, but rather that efforts to explore the extent to which law is, and can be, used to *prevent or minimise disaster losses*. This allows for a more functional approach, and opens up conceptual spaces where measures not firmly fitting in the specific principles, such as early warning systems (EWSs), can be accounted for. This is not necessarily controversial, but it is clear that there is a need to explore this further and to provide greater conceptual clarity than has been offered to date.¹⁰

The chapter builds its argument as follows. The next section introduces the principles and core concepts in more detail. Section 3 discusses the development of DRR (law and) policy, while section 4 explores the way in which the principle of prevention has developed in international law outside of the disaster context. Section 5 draws together these findings, before the concluding section provides some final reflections and recommendations for the future.

Some limitations should be mentioned. The analysis below explores disasters caused by ‘human-made’ and ‘natural’ hazards. It does not, however, involve an analysis relating to the prevention of violence and armed force, such as terrorist attacks and armed conflicts.¹¹ Further, the three principles explored here are closely related to other international law principles relevant to DRR, such as the duty to cooperate¹² and the principle of due diligence.¹³ While these will be engaged with to some extent, they will not be explored in any significant detail.

2. DEFINING THE CORE PRINCIPLES

The principles of prevention, mitigation, and preparedness have been defined in the terminology of the UNISDR. In 2004, the UNISDR published its report, *Living with Risk: A Global Review of Disaster Risk Reduction Initiatives*.¹⁴ Annexed to the report was the first terminology of DRR.¹⁵ When the Hyogo Framework for Action 2005–2015: Building the Resilience of Nations

¹⁰ See, for example, ILC Draft Articles, art. 9, commentary, para. 10.

¹¹ It should be acknowledged that the distinction between the two is increasingly blurry, especially considering the adverse effects of climate change. In relation to armed conflict, the principle of prevention is most clearly seen in the peaceful settlement of disputes (Chapter VI) and the prohibition of the use of armed force, in article 2(4) of the UN Charter. See Charter of the United Nations, San Francisco, 26 June 1945, in force 24 October 1945, 1 UNTS XVI. For an analysis of terrorist attacks and DRR, see K.L.H. Samuel, W.C. Banks and D. Richmond-Barak, ‘Improving Disaster Risk Mitigation: Towards a “Multi-Hazard” Approach to Terrorism’, Chapter 23 of this *Handbook*.

¹² See ILC Draft Articles, art. 7 with commentary. See also ILC, Sixth report on the protection of persons in the event of disasters by Eduardo Valencia-Ospina, Special Rapporteur (3 May 2013) A/CN.4/662, sect. C.

¹³ See ILC, Sixth report of the Special Rapporteur (2013) A/CN.4/662, sect. B(2(a)).

¹⁴ UNISDR, *Living with Risk: A Global Review of Disaster Reduction Initiatives*, vol. II: Annexes (Geneva: UN, 2004). Available at www.unisdr.org/files/657_lwr21.pdf (accessed 11 July 2018).

¹⁵ Ibid. The 2004 terminology defined prevention as ‘[a]ctivities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters’, p. 5. Mitigation was defined as ‘[s]tructural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards’, p. 5; whereas preparedness was defined as ‘[a]ctivities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations’, p. 5.

and Communities to Disasters (Hyogo Framework) was adopted in 2005, states called for this terminology to be updated and widely disseminated ‘for use in programme and institutions development, operations, research, training curricula and public information programmes’.¹⁶ The terminology was thus not intended to be of a legal nature, albeit still aiming to have significant policy impact. The revised terminology, published in 2009, was again updated by the Expert Working Group in 2017 following a recommendation in paragraph 50 of the Sendai Framework.¹⁷ In the Expert Working Group’s updated terminology, ‘prevention’ is defined as ‘[a]ctivities and measures to avoid existing and new disaster risks’; ‘mitigation’ is defined as ‘[t]he lessening or minimizing of the adverse impacts of a hazardous event’; and ‘preparedness’ is defined as ‘[t]he knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters’.¹⁸

Importantly, both the 2009 terminology and the work of the Expert Working Group were referred to in the commentary to the 2016 ILC Draft Articles. While non-binding, the Draft Articles are widely considered a core framework for international law regulating disasters, due to the process on which they were adopted, as well as the position of the ILC as being responsible for the codifications and progressive development of international law.¹⁹ The commentary to draft article 9, which sets out the obligations for states in relation to DRR,²⁰ states that the principles, as defined in the UNISDR terminology, describe the ‘purpose’ of the measures to be taken.²¹ It is further clear from the commentary that the terminology ‘illustrates the meaning’ of the terms,²² and that the terms are used in draft article 9(1) since they ‘[track] the formula used in major [DRR] instruments’.²³ What is not clear is how they relate to existing international law.

The principles are closely tied to the concept of ‘phases’ of disaster risk management (DRM), often considered parts of the ‘disaster management cycle’.²⁴ This way of organising DRM

¹⁶ UN, Report of the World Conference on Disaster Reduction (Kobe, Hyogo, Japan, 25 18–22 January 2005) A/CONF.206/6, ch. 1, Resolution 2: ‘Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters’, para. 3(i)(g)).

¹⁷ Sendai Framework, para. 50: ‘The Conference also recommends that the working group consider the recommendations of the United Nations Office for Disaster Risk Reduction Scientific and Technical Advisory Group on the update of the publication entitled “2009 UNISDR Terminology on Disaster Risk Reduction” by December 2016, and that the outcome of its work be submitted to the Assembly for its consideration and adoption.’

¹⁸ See UNGA, Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction (1 December 2016) A/71/644.

¹⁹ For details on the process of the adoption of the ILC Draft Articles, see A.N. Pronto, ‘The ILC’s Articles on the Protection of Persons in the Event of Disasters and Disaster Risk Reduction – A Legislative History’ in Chapter 4 of this *Handbook*. See also, UNGA, Resolution 174(II), Establishment of the International Law Commission (1 November 1947) A/519, p. 105; Charter of the United Nations, art. 13(1(a)).

²⁰ ILC Draft Articles, art. 9, ‘Reduction of the risk of disasters’, reads in full:

- ‘1. Each State shall reduce the risk of disasters by taking appropriate measures, including through legislation and regulations, to prevent, mitigate, and prepare for disasters.
2. Disaster risk reduction measures include the conduct of risk assessments, the collection and dissemination of risk and past loss information, and the installation and operation of early warning systems.’

²¹ *Ibid.*, art. 9, commentary, paras. 15 and 16.

²² *Ibid.*, art. 9, commentary, para. 16.

²³ *Ibid.*, art. 9, commentary, para. 15.

²⁴ See, for example, National Disaster Management Authority of India, ‘Disaster Management Cycle’. Available at ndma.gov.in/en/disaster-management-cycle.html (accessed 11 July 2018); UN Office for Outer Space Affairs (UN-SPIDER) Knowledge Portal, ‘Disaster Management Cycle’ (4 February 2014). Available at www.un-spider.org/glossary/disaster-management-cycle (accessed 11 July 2018). Disaster Management, Emergency Response and Search and Rescue Academy (DIMERSAR Academy), ‘Disaster Management Cycle’. Available at sites.google.com/site/dimersarred/disaster-management-cycle (accessed 11 July 2018); UN, Yokohama Strategy and Plan of Action for a Safer

measures has been widely used since the US National Governors Association introduced the phases of mitigation, preparedness, response, and recovery in 1979.²⁵ At the heart of the ‘disaster management cycle’ is the idea that activities take place on time continuum. This was highlighted in the 2007 ILC Memorandum by the Secretariat on the Protection of Persons in the Event of Disaster, which stated that ‘[p]revention, mitigation and preparedness activities lie on different points of the continuum of actions undertaken in advance of the onset of a disaster’.²⁶ However, it is clear that not all actions fit neatly into this idea and that there are benefits of taking a more functional approach. Indeed, as stressed by David Neal, ‘both researchers and practitioners have questioned the use of disaster phases since their initial use’.²⁷ At a closer look, the relationship between the principles is more complex than it first appears. For example, while often considered as being ‘on different points of the continuum of actions’,²⁸ mitigation and preparedness are often considered to be grounded in the principle of prevention.²⁹ At the same time mitigation of disaster losses also includes effective disaster response, which is more commonly linked to preparedness.³⁰

Central to this is the question of how we define *what* we are preventing, mitigating, and preparing for. The UNISDR terminology defines disaster risk as ‘[t]he potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity’.³¹ This is notably different from the definition of disaster.³² For example, preparedness for a disaster is a way of preventing and mitigating disaster losses and, for example, reducing the risk of loss life. At the same time, as mentioned, mitigation of losses is also conducted through disaster response, which is often held to be separate from DRR.

Consider, for example, the use of EWSs. In relation to a ‘sudden-onset’ event, such as a tsunami, EWSs are closely linked to evacuation, and would thus be considered a ‘preparedness’ measure.³³ However this is at the same time a prevention of the breach of the right to life, and a

World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation, adopted at the World Conference on Natural Disaster Reduction, Yokohama, Japan, 23–27 May 1994, ‘Yokohama Message’, para. 2.

²⁵ National Governors’ Association Center for Policy Research, *Comprehensive Emergency Management: A Governor’s Guide* (Washington, D.C.: US Government Printing Office, 1979), pp. 12–13. Earlier efforts at the conceptualisation of disaster phases include L. Julliard, ‘Disaster and the Sequence-Pattern Concept of Social Change’, *American Journal of Sociology*, 38 (1932) 2, 207–218; and, R.R. Dynes, *Organized Behavior in Disasters* (Lexington, Massachusetts: Heath Books, 1970).

²⁶ ILC, Protection of persons in the event of disasters: Memorandum by the Secretariat (11 December 2007) A/CN.4/590.

²⁷ See D.M. Neal, ‘Reconsidering the Phases of Disaster’, *International Journal of Mass Emergencies and Disasters*, 15 (1997) 2, 239–264 at 246.

²⁸ For example, ILC, Protection of persons in the event of disasters: Memorandum by the Secretariat (2007) A/CN.4/590 (Discussed below, section 3).

²⁹ ILC, Fifth report on the protection of persons in the event of disasters by Eduardo Valencia-Ospina, Special Rapporteur (9 April 2012) A/CN.4/652, para. 40: ‘Since, by definition, mitigation and preparedness imply the taking of measures prior to the onset of a disaster, they can be properly regarded as specific manifestations of the overarching principle of prevention, which lies at the heart of international law.’

³⁰ *Ibid.*, para. 39: ‘In terms of specific measures, mitigation came to be understood as aiming at structural or non-structural measures to limit the adverse effects of disaster.’ See also, UNISDR, *Living with Risk: A Global Review of Disaster Reduction Initiatives*, vol. I (Geneva: UN, 2004), p. 17.

³¹ See UNGA, Report of the expert working group on indicators and terminology relating to DRR (2016) A/71/644, p. 14.

³² Defined in the Terminology as: ‘A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.’ *Ibid.*, p. 13.

³³ See ILC Draft Articles, art. 9, commentary, para. 22, relating EWS to effective preparedness and response.

mitigation of losses. What is more, if we instead consider a drought, or sea level rise, EWSs can function on a much earlier point in the ‘time continuum’.

This is not to say that the division of DRR measure into ‘phases’ is completely without value. Rather, it is a reminder that while their simplification might be attractive, they are not without problems. In particular, the ‘clarity’ provided by the phases comes at a cost of failing to account for the complexity of the numerous simultaneous processes which contribute to, and address, disaster risk.

3. DEVELOPMENT OF INTERNATIONAL DRR POLICY: FROM LISBON TO SENDAI

The acknowledgement of disasters as something that can be prevented and mitigated is far from novel. Already in 1755, following the devastating Lisbon earthquake and tsunami, Jean Jacques Rousseau wrote, in response to a poem by Voltaire (where the latter had rejected the ‘act of God’ explanation of the disaster in favour of blaming natural forces), that ‘concede, for example, that it was hardly nature who assembled there twenty-thousand houses of six or seven stories. If the residents of this large city had been more evenly dispersed and less densely housed, the losses would have been fewer or perhaps none at all’.³⁴ Acknowledging also the unwillingness of people to leave their homes and belongings behind (‘we have to stay and expose ourselves to further tremors ... because what we would have to leave behind is worth more than what we could carry away’),³⁵ he continued by linking disaster risk with urbanisation taking place in earthquake prone areas:

[D]esert earthquakes have little effect on the animals and scattered savages who inhabit such spots – and who have no reason to fear falling roofs or tumbling buildings. What would such a privilege mean to us? Will we say that the order of the world must change to suit our whims, that nature must be subject to our laws, that in order to prevent an earthquake in a certain spot, all we have to do is build a city there?³⁶

Rousseau’s reflections are especially remarkable considering the prevalent view at the time of disasters as ‘acts of God’. They further demonstrate how the understanding of disasters as a social concept is at the very core of any regulation of DRR efforts. Indeed, it is when we ‘take the “natural” out of “natural disasters”’,³⁷ that focus can turn to prevention. Despite Rousseau’s observations, however, it would be a long time until the prevention of ‘natural disasters’ was even acknowledged as a possibility in international governance. This said, with the exception of ‘mitigation’, the principles explored in this chapter existed in international law long before the concept of DRR came into being.

Preparedness has long been part of disaster management through its close connection with humanitarian relief. Indeed, all agreements, exercises and arrangements around disaster response can be considered preparedness (at the same time as all relief efforts mitigate the devastating effects). However, as with relief efforts, early regulations focused on armed conflicts.³⁸

³⁴ J.A. Leigh (ed.), *Correspondence complète de Jean Jacques Rousseau*, vol. 4 (Geneva, 1967), ‘Rousseau to Voltaire, 18 August 1756’, pp. 37–50, translated by R. Spang. Available at www.indiana.edu/~enltnmt/texts/JJR%20letter.html (accessed 11 July 2011).

³⁵ Ibid.

³⁶ Ibid.

³⁷ As famously called for in P. O’Keefe, K. Westgate, and B. Wisner, ‘Taking the Naturalness out of Natural Disasters’, *Nature*, 260 (1976), 566–567.

³⁸ See, for example, International Committee of the Red Cross, ‘Resolutions of the Geneva International Conference’ (Geneva, 26–29 October 1863). Available at www.legal-tools.org/doc/aec5e5/pdf/ (accessed 11 July 2018). For an overview of the history of international disaster response law, see K.N. Bookmiller, ‘Closing “The Yawning Gap”? International Disaster Response Law at Fifteen’ in S.C. Breau and K.L.H. Samuel (eds.), *Research Handbook on Disasters and International Law* (Edward Elgar, 2016), p. 46.

Prevention on the other hand was part of the ill-fated 1927 Convention Establishing the International Relief Union,³⁹ which states as one of its objectives: ‘in the event of any public disaster, to co-ordinate as occasion offers the efforts made by relief organisations, and, *in a general way, to encourage the study of preventive measures against disasters* and to induce all peoples to render mutual international assistance’.⁴⁰ Despite this, in the decades that followed the Second World War, the progress made through the establishment of the International Relief Union was quietly forgotten, and it would take several decades until disaster prevention was back on the global agenda.⁴¹

The focus on disasters started to return in the 1960s, where scattered mentions of early ideas of DRR could be seen in the work of the United Nations (UN) General Assembly (UNGA).⁴² For example, following the 1962 earthquake in Iran, the UNGA adopted Resolution 1753(XVII).⁴³ The Resolution:

Request[ed] the Secretary-General, and invite[d] the United Nations Educational, Scientific and Cultural Organization, the World Meteorological Organization and other agencies concerned, to continue to promote actively international co-operation in the study of the origin and mechanism of earthquakes of the type which devastated north-western Iran and *in the improvement of the protective measures* which can be taken in earthquakes as well as the remedial measures designed to repair damage caused by them.⁴⁴

Albeit vague, this is a clear acknowledgement of the importance and possibility of DRR measures, seemingly including what would later be recognised as prevention, mitigation, and preparedness. Notably, paragraph 6 of the resolution also called for cooperation in research, including ‘codes and regulations for the design of earthquake resistant structures, *tsunami* warning systems, and relief measures’.⁴⁵ What is more, the 1970 UNGA Resolution 2717(XXV) on ‘Assistance in cases of natural disasters’⁴⁶ invited the UN Secretary-General to submit recommendations on ‘[p]re-disaster planning at the national and international levels, including the definition of machinery and contingency arrangements capable of coping immediately with disaster situations’.⁴⁷ It further invited the Secretary-General to submit recommendations on ‘[t]he application of technology to, and scientific research for, the prevention and control of natural

³⁹ Convention and Statute establishing an International Relief Union, Geneva, 12 July 1927, in force 27 December 1932, 3155 LNTS 247. For details on the International Relief Union, see P. Macalister-Smith, ‘The International Relief Union of 1932’, *Disasters*, 5 (1981), 2, 147–154.

⁴⁰ See *ibid.*, art. 2(2) (emphasis added). Around this time, in 1932, Carr acknowledged a cultural relativity of disasters, see L.J. Carr, ‘Disaster and the Sequence-Pattern Concept of Social Change’, *American Journal of Sociology*, 38 (1932), 207–218.

⁴¹ Another focus was the prevention of genocide. See, especially, Convention on the Prevention and Punishment of the Crime of Genocide, Geneva, 9 December 1948, in force 12 January 1951, adopted by the UNGA in Resolution 260 A (III), Prevention and Punishment of the Crime of Genocide (9 December 1948) A/RES/3/260 A.

⁴² Consider also the 1958 agreement between the United Kingdom of Great Britain and Northern Ireland and the United States, establishing a ‘cooperative meteorological program’ in order to achieve ‘greater accuracy and timeliness in forecasts of hurricanes and in warnings of accompanying destructive winds, tides, and floods’. See Exchange of Notes between the United Kingdom and the United States of America Constituting an Agreement for the Continued Operation of Hurricane Research Stations in the Cayman Islands established under the Agreement of 30 December 1958 as amended by the Agreement of 15 February 1960, of 23 November and 12 December 1966, 603 UNTS, No. 8735.

⁴³ UNGA, Resolution 1753 (XVII), Measures to be adopted in Connexion [sic] with the Earthquake in Iran (5 October 1962) A/RES/1753 (XVII).

⁴⁴ *Ibid.*, para. 7 (emphasis added).

⁴⁵ *Ibid.*, para. 6. Notable commentary in the 1960s also includes the 1965 UNGA, Resolution 2034 (XX), Assistance in Cases of Natural Disaster (7 December 1965) A/RES/2034 (XX); which, albeit focused on response, mentions pre-disaster planning in its preamble.

⁴⁶ UNGA, Resolution 2717 (XXV), Assistance in Cases of Natural Disaster (15 December 1970) A/RES/2717 (XXV).

⁴⁷ *Ibid.*, para. 5(b).

disasters, or a mitigation of the effects of such disasters'.⁴⁸ The resolution also acknowledged the link between poverty and disasters, which is central to contemporary debates and challenges. In other words, entering the 1970s, there existed the acknowledgement that at least some disasters could be prevented and that their effects could be mitigated.

It is unsurprising, then, that it was around this time when UN focus on disasters became institutionalised. Importantly, the 1971 establishment of the United Nations Disaster Relief Office included the advising of 'governments on pre-disaster planning',⁴⁹ and the promotion of 'the study, prevention, control and prediction of natural disasters'.⁵⁰ Further, an expert group initiated by the Office concluded after a meeting in 1979 that 'it is now also realized that the actual and potential consequences of natural hazards are becoming so serious and so increasingly global in scale, that much greater emphasis will henceforth have to be given to pre-disaster planning and prevention'.⁵¹

It is clear that there were significant developments in the understanding of disasters during this time,⁵² and towards the end of the 1980s, the need for disaster prevention efforts was widely acknowledged.⁵³ In 1987, this realisation was embraced by the UNGA, which designated the 1990s as the International Decade for Natural Disaster Reduction.⁵⁴ In this resolution it was further evident that the language of prevention, mitigation, and preparedness had started to emerge as guiding principles for DRR policy.⁵⁵ Resolution 42/169 was followed in 1989 by Resolution 44/236, which included an international framework for action for the following decade.

3.1. *International Decade of Natural Disaster Reduction*

The 1990s was a decade of significant regulatory progress for DRR. While DRR efforts still focused mainly on putting into place various agreements of cooperation in relation to preparation of relief operations, there was also an increased appreciation for the importance of addressing disaster risk in order for disasters not to thwart important development progress.

In 1991, UNGA Resolution 46/182 introduced a number of guiding principles for 'the coordination of humanitarian emergency assistance'.⁵⁶ In particular, it stated that '[s]pecial attention

⁴⁸ Ibid., para. 5(d).

⁴⁹ UNGA, Resolution 2816 (XXVI), Assistance in Cases of Natural Disaster and other Disaster Situations (14 December 1971) A/RES/2816 (XXVI), art. 1(g).

⁵⁰ Ibid., art. 1(f). See also UNGA Resolution 2959 (XXVII), Assistance in Cases of Natural Disaster and other Disaster Situations (12 December 1972) A/RES/2959 (XXVII), reaffirming in its preamble 'the vital importance, in order to lessen the impact of disasters, of assistance to disaster-prone countries in preventive measures, disaster contingency planning and preparedness'.

⁵¹ Office of the United Nations Disaster Relief Co-ordinator (UNDRO), Natural Disasters and Vulnerability Analysis: Report of Expert Group Meeting (9–12 July 1979) (August 1980) UNDRO/EXPGRP1, iii.

⁵² Evidenced also by the establishment in 1977 of the journal *Disasters* (published by Wiley Blackwell for the Overseas Development Institute).

⁵³ This was also reflected in bilateral agreements. See, for example: Republic of Austria and the Federal Republic of Germany Agreement Concerning Mutual Assistance in the Event of Disasters or Serious Accidents, Salzburg, 23 December 1988, in force 1 October 2002, 1696 UNTS 66, especially art. 13; Convention on Mutual Assistance in Case of Catastrophes or Serious Accidents, 21 April 1981, Belgium–France, 1437 UNTS, No. 24347, especially art. 11.

⁵⁴ UNGA, Resolution 42/169, International decade for natural disaster reduction (11 December 1987) A/RES/42/169.

⁵⁵ The resolution acknowledged in its preamble: 'the responsibility of the United Nations system for promoting international cooperation in the study of natural disasters of geophysical origin and in the development of techniques to mitigate risks arising therefrom, as well as for coordinating disaster relief, preparedness and prevention, including prediction and early warning'. Ibid.

⁵⁶ UNGA, Resolution 46/182, Strengthening of the coordination of humanitarian emergency assistance of the United Nations (19 December 1991) A/RES/46/182. See also the 1991 Inter-American Convention to Facilitate Disaster Assistance, Santiago, 7 June 1991, in force 16 October 1996.

should be given to disaster prevention and preparedness by the Governments concerned, as well as by the international community'.⁵⁷ The resolution notably also acknowledged the link between humanitarian relief and development.⁵⁸

Prevention and mitigation were in Resolution 46/182 dealt with under the same heading ('Prevention') and considered in terms of action that this would include the establishment of 'disaster mitigation strategies' and 'greater exchange and dissemination of existing and new technical information related to the assessment, prediction and mitigation of disasters'.⁵⁹ The same paragraph also talked about the importance of 'access to, and transfer of, relevant technology'. At the same time, preparedness was mainly concerned with early warning mechanisms.⁶⁰

In 1994, the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and Plan of Action established even further the need to manage hazards in order to avoid and mitigate disasters.⁶¹ The Yokohama Message stated that '[d]isaster prevention, mitigation and preparedness are better than disaster response in achieving the goals and objectives of the Decade'.⁶²

Taking place two years after the 1992 Rio Declaration on the Environment and Development (Rio Declaration),⁶³ the Yokohama Strategy embraced the link between disaster management and development, and stated that 'disaster prevention, mitigation, preparedness and relief are four elements which contribute to and gain from the implementation of sustainable development'.⁶⁴

It is worth noting that the 1990s was the decade when we started seeing a more frequent use of disaster mitigation in policy documents.⁶⁵ As mentioned, mitigation was central in the Yokohama Plan of Action, where it was closely tied to prevention and development. For example, Principle 9 stated that '[e]nvironmental protection as a component of sustainable development consistent with poverty alleviation is imperative in the prevention and mitigation of natural disasters'. Interestingly, Paragraph 9(d) (on strategy after 2000) stated that '[d]evelopment and strengthening of human resources and material capabilities and capacity of research and development institutions for disaster reduction and mitigation', with paragraph 9(e) stressing the importance of '[i]dentification and networking of existing centres of excellence so as to enhance disaster prevention, reduction and mitigation activities'. These provisions

⁵⁷ Ibid., para. 8.

⁵⁸ Ibid., para. 40.

⁵⁹ Ibid., para. 14.

⁶⁰ Compare with, for example, ILC, Protection of persons in the event of disasters: Memorandum by the Secretariat (2007) A/CN.4/590, para. 26, interpreting mitigation and preparedness as part of relief and early warning.

⁶¹ UN, Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation, adopted at the World Conference on Natural Disaster Reduction, Yokohama, Japan 23–27 May 1994.

⁶² Ibid., 'Yokohama Message', para. 3.

⁶³ UNGA, Report of the United Nations Conference on Environment and Development (Rio de Janeiro, 3–14 June 1992) (12 August 1992) A/CONF.151/26 (Vol. I), Annex 1: 'Rio Declaration on Environment and Development'. Discussed in section 4.

⁶⁴ Yokohama Strategy, 'Yokohama Message', para. 2.

⁶⁵ Climate change mitigation became a focus of the international community through the 1992 establishment of the UN Framework Convention for Climate Change (UNFCCC) and later also the Kyoto Protocol to the United Nations Framework Convention on Climate Change. See Conference of the Parties, Decision adopted by the Conference of the Parties (18 March 1998) FCCC/CP/1997/7/Add.1, Decision 1/CP.3: 'Adoption of the Kyoto Protocol to the United Nations Framework Convention on Climate Change', Annex. This is, of course, an area where the actions required of mitigation differs quite significantly from those in the disaster context.

raise questions as to the relationship between prevention, mitigation, and reduction. Indeed the additional use of reduction suggests that prevention and mitigation at the time were considered additional to, rather than part of, DRR. However, considering the early stage of DRR policy at the time and that the Yokohama Framework has not only one, but two, successors, the normative value of this discrepancy will not be discussed further here. It is, however, illustrative of the confusion of terms.

Still one of the most influential disaster law instruments to date despite its limited scope, the 1998 Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (Tampere Convention) defined disaster mitigation as ‘measures designed to prevent, predict, prepare for, respond to, monitor and/or mitigate the impact of, disasters’.⁶⁶ This is notably a quite different approach from the terminologies developed by the UNISDR in relation to DRR, which separate prevention and preparedness from mitigation. As mentioned above and discussed in section 5, much of the confusion comes down to pinning down exactly what is being mitigated. Is it the mitigation of disaster risk, the mitigation of disaster losses, or both?

By the end of the International Decade, the establishment of the International Strategy for Disaster Reduction and UNISDR clearly demonstrated how the international community had moved beyond a sole focus on response and embraced prevention (as well as preparedness and mitigation) as a necessary aspect of the management of disasters.⁶⁷ Still, the strategy is not a binding instrument and it was still for states to implement national strategies and to conduct bilateral and regional agreements around these principles.

3.2. DRR Policy in the Twenty-first Century

Since 2000, we have seen significant increase in agreements and policies regulating DRR efforts.⁶⁸

⁶⁶ Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations, Tampere, 18 June 1998, in force 8 January 2005, 2296 UNTS 5, art. 1(7). As suggested by its title, the scope of the Convention is limited to telecommunication resources.

⁶⁷ This was also clear from a number of bilateral instruments, including Memorandum of Understanding between the Government of the Russian Federation and the Government of the United States of America on Cooperation in Natural and Man-Made Technological Emergency Prevention and Response, Moscow, 16 July 1996, 2262 UNTS, no. 40312. Available at www.ifrc.org/Docs/idrl/I493EN.pdf (accessed 11 July 2018); also see the following instruments listed in ILC, Protection of persons in the event of disasters – Memorandum by the Secretariat: Addendum (31 March 2008) A/CN.4/590/Add.2: Agreement between the Ministry of National Defence of the Eastern Republic of Uruguay and the Ministry of the Interior of the Kingdom of Spain on Scientific and Technological Cooperation and Mutual Assistance in Civil Defence and Disaster Prevention, 25 September 1997; Agreement between the Ministry of the Interior of the Kingdom of Spain and the Ministry of the Interior of the United Mexican States on Scientific and Technological Cooperation and Mutual Assistance in Civil Defence and Disaster Prevention, 1997; Agreement on Cooperation on Disaster Prevention and Management and Public Safety, France-Malaysia, 25 May 1998.

⁶⁸ In addition to the below, consider also the following instruments listed in ILC, Protection of persons in the event of disasters – Memorandum by the Secretariat: Addendum (2008) A/CN.4/590/Add.2: Protocol of Intentions between the Federal Emergency Management Agency (United States of America) and the Ministry of Defence of the Republic of Bulgaria on Cooperation in Natural and Man-made Technological Emergency Prevention and Response, 24 January 2000; Protocol of Intentions between the Federal Emergency Management Agency (United States of America) and the Ministry of Defence of the Republic of Poland on Cooperation in Natural and Man-made Technological Emergency Prevention and Response, 9 May 2000; Memorandum of Understanding between the Government of the United States of America and the Government of the Ukraine on Cooperation in Natural and Man-made Technological Emergency Prevention and Response, 5 June 2000; Protocol of Intentions between the Government of the United States of America and the Republic of the Philippines Concerning Cooperation and

An important milestone in the development of ‘international disaster law’ (IDL), the 2000 Framework Convention on Civil Defence Assistance (Framework Convention) not only regulates disaster response (which, as discussed above is part of preparedness), but also requires states parties to ‘undertake to explore all possibilities for co-operation in the areas of prevention, forecasting, preparation, intervention and post-crisis management’.⁶⁹ Notable here is that prevention is considered a part of ‘assistance’, which is defined in article 1(d) as ‘any action undertaken by the Civil Defence Service of a State for the benefit of another State, with the objective of preventing, or mitigating the consequences of disasters’.⁷⁰ It is clear from this definition that prevention in the Framework Convention is conceived differently from prevention in the DRR context, as the prevention is not of the hazards turning into a disaster, but of the consequence of such.

Following the devastating 2004 Indian Ocean Tsunami, two significant instruments were agreed in 2005: The Hyogo Framework and the ASEAN Agreement on Disaster Management and Emergency Response (AADMER).⁷¹ Due to its binding force, the latter is widely considered one of the most important international instruments of DRR.⁷² Despite the focus on response suggested by its title, the agreement includes a number of obligations in relation to DRR,⁷³ including a requirement that states parties ‘give priority to prevention and mitigation’, and ‘take precautionary measures to prevent, monitor and mitigate disasters’.⁷⁴

Interestingly, when discussing the AADMER, Valencia-Ospina considered the obligation to ‘immediately respond to a disaster occurring within their territory’ a mitigation measure.⁷⁵ AADMER has ‘prevention and mitigation’ in one provision, calling on states parties to ‘develop strategies to identify, prevent and reduce risks arising from hazards’.⁷⁶ In relation to preparedness, article 8 provides that the states parties have an obligation to ‘jointly or individually, develop strategies and contingency/response plans to reduce losses from disasters’.⁷⁷ It is also worth noting that the agreement has a separate provision for EWSs (article 7), rather than positioning it within any of the principles.

Following up on the progress and shortcomings of the Yokohama Framework and taking into account disasters of the former decade, the 2005 Hyogo Framework set as one of its strategic goals ‘more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention,

Disaster Prevention and Management, 20 November 2001; Agreement on Cooperation on Disaster Preparedness and Prevention, and Mutual Assistance in the Event of Disasters, Russian Federation – Spain, 14 June 2000, 2153 UNTS, No. 37586.

⁶⁹ International Civil Defence Organisation (ICDO), Framework Convention on Civil Defence Assistance, Geneva, 22 May 2000, in force 23 September 2001, 2172 UNTS 213.

⁷⁰ The Convention defines disaster as ‘an exceptional situation in which life, property or the environment may be at risk’, art. 1(c). *Ibid.*

⁷¹ Association of Southeast Asian Nations (ASEAN), ASEAN Agreement on Disaster Management and Emergency Response, Vientiane, 26 July 2005, in force 24 December 2009.

⁷² See, for example ILC, Sixth report of the Special Rapporteur (2013) A/CN.4/662.

⁷³ AADMER, DRR is defined in art 1(6) as: ‘a conceptual framework of elements considered with the possibilities to minimise vulnerabilities and disaster risks throughout a society, to avoid through prevention or to limit through mitigation and preparedness the adverse impacts of hazards, within the broad context of sustainable development’. Article 3(5) also states that: ‘The Parties shall, to the extent possible, mainstream disaster risk reduction efforts into sustainable development policies, planning and programming at all levels.’

⁷⁴ *Ibid.*, art. 3(4).

⁷⁵ See ILC, Sixth report of the Special Rapporteur (2013) A/CN.4/662, para. 95: ‘Together, these provisions create a comprehensive duty on all States members of ASEAN to take measures necessary to prevent, prepare for and mitigate disasters.’

⁷⁶ AADMER, art. 6(1).

⁷⁷ *Ibid.*, art. 8(1).

mitigation, preparedness and vulnerability reduction'.⁷⁸ The Hyogo Framework called for a 'culture of prevention' and an integration of DRR measures into sustainable development.⁷⁹

Shortly after Hyogo, a significant step was taken towards regulation of DRR and disasters on an international level. In 2007, the ILC decided to commence the project of codifying regulation in relation to the protection of persons in the event of disasters.

In relation to the principles discussed in this chapter, the initial Memorandum by the ILC Secretariat stated that:

Prevention, mitigation and preparedness activities lie on different points of the continuum of actions undertaken in advance of the onset of a disaster (and increasingly as part of recovery efforts following a disaster). While prevention focuses on the avoidance of the adverse impact of a hazard, mitigation actions concern specific structural or non-structural measures to limit an adverse impact. Preparedness refers to those measures put into place in advance to ensure an effective response, including the issuance of timely and effective early warning and the temporary evacuation of people and property.⁸⁰

The language is very similar to the UNISDR definitions and also is in line with the reference to phases of a 'disaster management cycle'.⁸¹ It is clearly tied to the idea of a disaster as a specific event around which obligations can be centred,⁸² and it also clearly positions EWSs within preparedness, seemingly closely tied to evacuation and preparedness for response. However, as is discussed below, this is a simplistic way of considering EWSs, which can also be much more of a preventative measure, especially in relation to 'slow-onset' disasters.

When the Hyogo Framework was succeeded by the Sendai Framework in 2015, the three principles of prevention, mitigation, and preparedness remained central. Their further use in the Sendai Framework, unsurprisingly, fit very well with the definitions provided by the UNISDR and the Expert Working Group discussed above.

For example, Priority 1 stresses the need for 'understanding disaster risk', and how '[s]uch knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters'.⁸³ Paragraph 6 calls for the reduction of 'exposure and vulnerability', and the prevention of 'creation of new disaster risks'.⁸⁴ The Framework continues by stressing the need for 'a broader and a more people-centred preventive approach to disaster risk'.⁸⁵

The Sendai Framework continued the Hyogo Framework's 'culture of prevention',⁸⁶ and the close relationship between disaster risk prevention and 'the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment'.⁸⁷ In

⁷⁸ Hyogo Framework, para. 12(a).

⁷⁹ See, for example, Hyogo Framework, para. 13(i). See also para. 18: 'Disasters can be substantially reduced if people are well informed and motivated towards a culture of disaster prevention and resilience, which in turn requires the collection, compilation and dissemination of relevant knowledge and information on hazards, vulnerabilities and capacities.'

⁸⁰ For example, ILC, Protection of persons in the event of disasters: Memorandum by the Secretariat (2007) A/CN.4/590, para. 27.

⁸¹ See discussion above, section 2.

⁸² See also, ILC Draft Articles, art. 3, commentary, para. 3.

⁸³ Sendai Framework, 'Priority 1: Understanding disaster risk', para. 23.

⁸⁴ *Ibid.*, para. 6.

⁸⁵ *Ibid.*, para. 7.

⁸⁶ *Ibid.*, 'Priority 1: Understanding risk', para. 25(f): 'to promote a culture of prevention, resilience and responsible citizenship'.

⁸⁷ *Ibid.*, para. 29.

this regard the need for structural and non-structural measures driving innovation and growth is highlighted.⁸⁸

A year after the adoption of the Sendai Framework, the ILC adopted the Draft Articles on second reading, which included an obligation to reduce disaster risk (draft article 9). The inclusion of draft article 9 is of great significance as a foundational obligation, the content of which will have to be explored and developed further. As discussed above, paragraph 10 of the commentary to draft article 9 clarifies that ‘the focus should be placed on the reduction of the risk of harm caused by a hazard, as distinguished from the prevention and management of disasters themselves’ and that ‘[t]his is achieved by taking certain measures so as to prevent, mitigate and prepare for such disasters’.⁸⁹ Importantly, the obligation ‘is one of conduct and not result’.⁹⁰ It is thus clear that the inclusion of the principles in the commentary should not be confused with them constituting legal obligations. However, at the same time the ILC commentary continues by referring to, and positioning conduct into, the three principles.⁹¹ Such an approach is unproductive as it risks locking measures into specific boxes which are poorly suited for international legal discourse. This is not to undermine the value of the developed policy language, but rather to utilise fully the existing applicable law without conceptual hindrance.

4. THE DEVELOPMENT OF THE PRINCIPLE OF PREVENTION IN OTHER AREAS OF INTERNATIONAL LAW

Although the above is significant in terms of highlighting the progress made in relation to DRR policy over the past couple of decades, disasters have not been the main stage for developments on the principle of prevention, and DRR is yet to produce any binding rules beyond specific agreements and sectors.

Indeed, in the 1940s the principle of prevention developed as a central principle in the regulation of transboundary harm. In the monumental 1941 *Trail Smelter case*, the Arbitral Tribunal found that:

[U]nder the principles of international law ... no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.⁹²

The arbitration is widely held to be foundational for IEL.⁹³

The principle of prevention of transboundary harm was also confirmed in the 1949 *Corfu Channel case*,⁹⁴ and was later incorporated into the 1972 Declaration of the United Nations

⁸⁸ Ibid., para. 29 states that: ‘Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation.’

⁸⁹ ILC Draft Articles, art. 9, commentary, para. 10.

⁹⁰ Ibid.

⁹¹ Ibid., para. 11.

⁹² *Trail Smelter Case (United States v. Canada)*, Awards 16 April 1938 and 11 March 1941, Arbitral Tribunal Decision, UN Reports of International Arbitral Awards (UNRIAA), 3 UNRIAA (1941), p. 1905, at p. 1965.

⁹³ See, for example, P. Sands, et al., *Principles of International Environmental Law*, 3rd ed (Cambridge University Press, 2012), p. 26, arguing that the Tribunal’s ‘finding on the state of international law on air pollution in the 1930s has come to represent a crystallising moment for international environmental law’.

⁹⁴ *Corfu Channel case (United Kingdom v. Albania)* (1949) ICJ Reports 1949, pp. 4–169 (based on Alabama Claims Arbitration 1872).

Conference (Stockholm Declaration).⁹⁵ Principle 21 of the Declaration stressed the responsibility of states ‘to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction’.⁹⁶ It is notable that, at this early stage, the obligation was centred around state sovereignty and obligations, rather than the protection of the environment.

A decade later, the 1982 World Charter for Nature stressed the importance of taking the environment into account when preventing, controlling or limiting ‘natural disasters, infestations and diseases’.⁹⁷ Interestingly, it also stressed that measures should address root causes.⁹⁸ More specific progress was made in numerous agreements protecting the air and ozone layer. Important examples include the 1983 Convention on Long-Range Transboundary Air Pollution,⁹⁹ the 1985 Vienna Convention for the Protection of the Ozone Layer,¹⁰⁰ and the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer.¹⁰¹ The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, required its parties to ‘take the appropriate measures to ... prevent the import of hazardous wastes and other wastes if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner’.¹⁰² The reference to ‘appropriate measures’ together with a focus on the ‘environmentally sound’ supports a reading of prevention as a combination of due diligence and the precautionary principle (albeit with a lower threshold for action than the Rio Declaration discussed below).

The protection and preservation of the marine environment was regulated in the 1982 United Nations Convention on the Law of the Sea (LOSC).¹⁰³ At the core of the Convention is an obligation for states ‘to protect and preserve the marine environment’.¹⁰⁴ However, it remains the ‘sovereign right’ of states ‘to exploit their natural resources’ as long as this is ‘pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment’.¹⁰⁵ States must further ‘take, individually or jointly as appropriate, all measures

⁹⁵ UN, Report of the United Nations Conference on the Human Environment (Stockholm, 5–16 June 1972) A/CONF.48/14/Rev.1, Part One, Chapter I: ‘Declaration of the United Nations Conference on the Human Environment’.

⁹⁶ See, for example, B. Nicoletti, ‘The Prevention of Natural and Man-Made Disasters: What Duties for States?’ in A. de Guttry, M. Gestri and G. Venturini (eds.), *International Disaster Response Law* (Springer, 2012), p. 177, at p. 180: ‘It is commonly held that the concept of prevention finds its first pronouncement in Principle 21 of the 1972 Declaration of the United Nations Conference on the Human Environment’. See also, UNGA, Resolution 2995 (XXVII), Cooperation between states in the field of the environment (15 December 1972) A/RES/2995 (XXVII). Though note that Sands and Peel instead refer to ‘the principle 21/principle 2 obligation’ as ‘closely related’ to prevention. See Sands, et al., *Principles of International Environmental Law*, p. 200.

⁹⁷ UNGA, Resolution 37/7, World Charter for Nature (28 October 1982) A/RES/37/7, para. 13. See also para. 11 regarding the precautionary principle: ‘Activities which might have an impact on nature shall be controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used.’

⁹⁸ Ibid.

⁹⁹ Convention on Long-Range Transboundary Air Pollution, Geneva, 13 November 1979, in force 16 March 1983, 1302 UNTS 217. See, especially, art. 2.

¹⁰⁰ Vienna Convention for the Protection of the Ozone Layer, Vienna, 22 March 1985, in force 22 September 1988, 1513 UNTS 293.

¹⁰¹ Montreal Protocol on Substances That Deplete the Ozone Layer, Montreal, 16 September 1987, in force 1 January 1989, 152 UNTS 3.

¹⁰² Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Basel, 22 March 1989, in force 5 May 1992, 1673 UNTS 57, art. 4(2(g)).

¹⁰³ United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982, in force 1 November 1994, 1833 UNTS 397. See also International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, London, 17 February 1978, in force 2 October 1983, 1341 UNTS, no. 22484.

¹⁰⁴ LOSC, art. 192.

¹⁰⁵ Ibid., art. 193.

consistent with this Convention that are necessary to *prevent, reduce and control* pollution of the marine environment from any source'.¹⁰⁶ Article 194(3(d)) stresses the importance of measures 'for preventing accidents and dealing with emergencies'.¹⁰⁷

The adoption in 1992 of the UN Framework Convention for Climate Change (UNFCCC) properly brought climate change mitigation into international law.¹⁰⁸ Notably a different use of mitigation from DRR language, the mitigation of climate change is at its heart a disaster prevention measure.¹⁰⁹ Thus, although acknowledging that climate change cannot be completely prevented (see more below), climate change mitigation aims to prevent disastrous consequences.

At the same time, the precautionary principle was also established more firmly as a core aspect of sustainable development and IEL. Principle 15 of the 1992 Rio Declaration states that '[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation'.¹¹⁰ Principle 2 of the Rio Declaration also reaffirmed the requirement that states should prevent transboundary harm initially included in the Stockholm Declaration.¹¹¹ While arguably strengthening the precautionary principle, which in turn is a key aspect of the principle of prevention (together with due diligence), it should be stressed that Principle 2 is different from the precautionary principle in that it is focused on state sovereignty and the prevention of transboundary harm, whereas the precautionary principle concerns the prevention of environmental harm also on the state's own territory.¹¹² As discussed below, this is significant in relation to DRR, which to a large extent focuses on domestic efforts.¹¹³

The principle of prevention of transboundary harm was again confirmed in the 1996 International Court of Justice's (ICJ) Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons*,¹¹⁴ and the 2001 ILC Draft Articles on Transboundary Harm requires states to 'take all appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof'.¹¹⁵ Prevention is here dealt with as a 'concept' which, 'as a procedure or as a duty, deals with the phase prior to the situations where significant harm or damage might actually occur ...'.¹¹⁶

In the same vein, the ICJ held in the *Pulp Mills* case that an obligation to conduct environmental impact assessment is part of the principle of prevention, which in turn has customary

¹⁰⁶ Ibid., art. 194(1) (emphasis added).

¹⁰⁷ Ibid., art. 194(3)(d).

¹⁰⁸ United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 1771 UNTS 107.

¹⁰⁹ This is illustrated in article 2 of the UNFCCC, which states as the ultimate objective of the Convention the stabilisation of greenhouse gas concentrations 'at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system'.

¹¹⁰ Rio Declaration, Principle 15.

¹¹¹ Ibid., Principle 2.

¹¹² It further concerns uncertain or unknown risks, rather than the prevention of known risks.

¹¹³ See also, ILC, Protection of persons in the event of disasters: Memorandum by the Secretariat (2007) A/CN.4/590, para. 24.

¹¹⁴ *Legality of the Use by a State of Nuclear Weapons in Armed Conflict*, Advisory Opinion (1996) ICJ Reports 1996, p. 66, para. 27.

¹¹⁵ ILC, 'Draft articles on Prevention of Transboundary Harm from Hazardous Activities', adopted by the ILC at its fifty-third session and submitted to the General Assembly as a part of the Commission's report covering the work of that session. See UNGA, Report of the International Law Commission (23 April–1 June and 2 July–10 August 2001) A/56/10, art. 3.

¹¹⁶ Ibid., general commentary (1).

status and ‘has its origins in the due diligence that is required of a State in its territory’.¹¹⁷ The Court did, however, give significant scope for states to determine how such assessments should be carried out.¹¹⁸

Still, the precautionary principle has found support beyond the context of transboundary harm (and outside of the climate change context). For example, the obligation to prevent irreversible damage to the environment was stressed by the ICJ in the 1997 case of *Gabcikovo-Nagymaros Project*.¹¹⁹ The Court stated that it was ‘mindful that, in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage’.¹²⁰ Further, in the 2005 *Iron Rhine Railways arbitration*, the tribunal held the obligation to prevent significant harm to the environment to be ‘a principle of general international law’.¹²¹ Although not limited to the disaster context, this does provide further support to the obligation on states to prevent environmental disasters.

It should be reminded again, however, that prevention under IEL primarily regulates directly ‘human-made’ hazards. In this way it is a matter of a ‘negative’ obligation not to act in a way which causes harm, as opposed to a positive obligation to actively protect and adapt. Thus, while there is a clear connection between the precautionary principle and disaster prevention, it is important to remember that the former is at its heart about protecting nature from ‘human-made’ harms, whereas prevention in the DRR context – at least as it applies to ‘natural’ hazards – is often focused on protecting humans and human property from the forces of nature. This said, it is widely agreed that human activities can contribute to the risk of such hazards (thus, of course, leading to the question as to whether the hazards are ‘natural’), and IEL can play a significant role in preventing human creation of disaster risk.

In addition to the above, the start of the twenty-first century also saw numerous cases by the European Court of Human Rights (ECtHR) confirming and elaborating upon the positive obligations by states in relation to the protection of human rights, which illustrated the strong links between IEL and IHRL¹²² at the same time as they provided strong foundations for certain DRR measures.¹²³

The 2004 case of *Öneryildiz and others v. Turkey* concerned a methane explosion, which had destroyed a slum dwelling next to a rubbish tip, resulting in 39 people losing their lives and significant destruction of slum dwellings.¹²⁴ Concluding that the failure of Turkey to take

¹¹⁷ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (2010) ICJ Reports 2010, p. 14, para. 101.

¹¹⁸ *Ibid.*, para. 205.

¹¹⁹ *Gabcikovo-Nagymaros Project (Hungary v. Slovakia)* (1997) ICJ Reports 1997, p. 7.

¹²⁰ *Ibid.*, para. 140.

¹²¹ *Award in the Arbitration regarding the Iron Rhine (‘Ijzeren Rijn’) Railway between the Kingdom of Belgium and the Kingdom of the Netherlands*, 24 May 2005, Arbitral Tribunal Decision, 27 UNRIIA (2005), pp. 35–125.

¹²² See, for example, C. Hilson ‘Let’s get physical: Civil liability and the perception of risk’, *Journal of Environmental Law*, 21 (2009), 33–57; C. Hilson, ‘The margin of appreciation, domestic irregularity and domestic court rulings in ECHR environmental jurisprudence: Global legal pluralism in action’, *Global Constitutionalism*, 2 (2013) 2, 262–286.

¹²³ Although significant progress in relation to positive obligations did not take place until the 2000s, there had been an increase in the acknowledgement of positive obligations to prevent abuses, especially by the ECtHR and Inter-American Court of Human Rights (IACtHR), already in the 1990s. See, for example, *Guerra and Others v. Italy* (Application no. 14967/89), 19 February 1998, ECtHR; *Case of the ‘Street Children’ (Villagran Morales et al.) v. Guatemala*, 19 November 1999, IACtHR.

¹²⁴ *Öneryildiz and others v. Turkey* (Application no. 48939/99), 30 November 2004, ECtHR. See also *Tătar v. Romania* (Application no. 67021/01), 17 January 2009, ECtHR, in which where the ECtHR considered contamination of water from a gold mine to be a breach of article 8 of the European Convention on Human Rights (right to respect for

precautionary measures was in breach of the right to life (and the right to property), the Court stated that the right ‘does not solely concern deaths resulting from the use of force by agents of the State but also ... lays down a positive obligation on States to take appropriate steps to safeguard the lives of those within their jurisdiction’.¹²⁵

The arguably most significant case thus far in relation to DRR – due to its rejection of the ‘act of God defence’ – is *Budayeva and Others v. Russia*.¹²⁶ The case concerned a 2000 mudslide in the Russian town of Tymauz. The town, which suffers from mudslides on regular basis, is protected by a mud retention collector and a mud retention dam. The dam was seriously damaged in August 1999 and – despite repeated calls – was not repaired before the next mudslide season. In July 2000 a powerful mudslide destroyed the dam and caused severe destruction, resulting in eight people officially reported dead (and a further 19 allegedly missing). The regional government adopted a compensation scheme for loss of housing to the victims of the mudslide, but not for the loss of life.¹²⁷

When the case was brought before the ECtHR, the Court sided with the applicants and held that the authorities’ failure to take positive measures to prevent the deaths from the mudslides was a breach of the right to life.¹²⁸ It should be noted, however, that the Court did not go as far as to say that the failure to repair the dam was a breach of the right to life in and of itself. Rather, the Court stated that since the authorities were well aware that the dam was severely damaged and that mudslides were common, they should have been better prepared and ensured that a proper EWS was in place.¹²⁹ Importantly, the authorities had failed to set up 24-hour observation posts, despite repeated calls for the need for enhanced monitoring of the river. They had also failed properly to inform the population about the significant risk.¹³⁰

While these developments are certainly encouraging as a matter of grounding DRR efforts in binding human rights law, it is significant for the analysis here that the Court did not go so far as to say that the failure to repair the dam was the core issue. Although listing as shortcoming the lack of maintenance of the dam, the Court repeatedly referred to the wide ‘margin of appreciation’ – which it held to be wider in relation to ‘natural’ compared with ‘human-made’ hazards – and stated that ‘the authorities could reasonably be expected to acknowledge the increased risk of accidents in the event of a mudslide that year and to show all possible diligence in informing the civilians and making advance arrangements for the emergency evacuation’.¹³¹ In other words, such ‘preventative’ measures are to a large extent concerned with what in disaster policy would be considered ‘preparedness’ rather than prevention.

That said, although the main focus was on EWSs, and the Court stressed that the ‘margin of appreciation’ is wider in relation to ‘natural’ than ‘human-made’ hazards, it did conclude that ‘there was no justification for the authorities’ omissions in implementation of the land-planning

private and family life). See European Convention for the Protection of Human Rights and Fundamental Freedoms, 4 November 1950, in force 3 September 1953, ETS 5.

¹²⁵ *Öneryildiz and others v. Turkey*, para. 71. See also, para. 89: ‘The positive obligation to take all appropriate steps to safeguard life for the purposes of Article 2 ... entails above all a primary duty on the State to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the right to life.’

¹²⁶ *Budayeva and Others v. Russia* (Applications nos. 15339/02, 21166/02, 20058/02, 11673/02 and 15343/02), 20 March 2008, ECtHR.

¹²⁷ See, for example, *ibid.*, para. 35.

¹²⁸ *Ibid.*, para. 158.

¹²⁹ *Ibid.*, paras. 152, 154, and 156.

¹³⁰ For a discussion of the case, see K.C. Lauta, ‘Human rights and natural disasters’ in S. Breau and K.L.H. Samuel (eds.), *Research Handbook on Disasters and International Law* (Edward Elgar, 2016), p. 91.

¹³¹ *Budayeva and Others v. Russia*, para. 152. This is notably an example of the application of the principle of due diligence in IHRL.

and emergency relief policies in the hazardous area of Tyrnauz regarding the foreseeable exposure of residents, including all applicants, to mortal risk'.¹³² In this way, the judgment hinted towards a preference for prevention as perceived in the UNISDR definition, though it would be a stretch to say that it suggested a legal obligation in this regard.

The discrepancy between 'prevention' in the human rights context and 'prevention' in the DRR context is not surprising. Indeed, the focus of the former is on the prevention of human rights breaches, rather than the prevention of disasters. This is illustrated in the commentary to ILC draft article 9, which directly refers to IHRL,¹³³ highlighting that the obligation to 'protect' human rights 'entails a positive obligation on states to take the necessary and appropriate measures to *prevent harm* from *impending* disasters'.¹³⁴

5. CONCLUSION: PROMISES AND BOUNDARIES

By now there is no shortage of DRR policy, and the use of 'prevention', 'mitigation', and 'preparedness' in various instruments. In addition, the UNISDR and Expert Working Group has provided us with a glossary, which is commonly used. However, these uses are not easily translated into specific legal obligations. Since regional or bilateral agreements are restricted in their jurisdiction, international lawyers and legal scholars seek to ground multilateral policies not in agreements without jurisdiction, but in existing (international) law. In order to do so they need to turn to other areas of law. This is sound practice which should, and most likely will, continue. However, it is not unproblematic that when, for example, the principle of prevention is used in a disaster context based on human rights arguments, the content of the principle is significantly different from that found in UNISDR policy language, and it is important to keep the differences in mind in order to avoid confusion.

From the above, a number of conclusions can be drawn. First of all, whereas the principle of prevention has been developed in a number of areas of international law, perhaps most notably in IEL and IHRL, the principles of mitigation and preparedness have been developed more directly in the disaster context. A look at how these principles have developed further demonstrate the different narratives around the prevention of direct human attacks on other humans (for example, the prohibition of the use of force, prevention of genocide, negative obligations relating to right to life), prevention of humans from creating risk (IEL, climate change law), and regulations of efforts to protect people and assets from the forces of nature (positive obligations under IHRL). Indeed, this distinction is essential to keep in mind when assessing the extent to which principles of IEL and IHRL create (international) legal obligations relating to DRR. However, the distinctions are far from clear. In particular, DRR in the context of 'natural' hazards is about minimising risks from nature that, sometimes, have been amplified by human activities, such as urbanisation or deforestation. This is especially the case in relation to climate change disasters. As stated by Daniel Farber in 2015, '[i]t will become increasingly hard to find an extreme weather event that can be confidently attributed purely to nature'.¹³⁵

¹³² Ibid., para. 158.

¹³³ ILC Draft Articles, art. 9, commentary, para. 4: 'the obligations undertaken by states to respect and protect human rights, in particular the right to life'.

¹³⁴ Ibid., art. 9, commentary, para. 4 (emphasis added).

¹³⁵ Quoted in J. Peel and D. Fisher, 'How Can International Environmental Law Reduce Disaster Risk?', Workshop Report Stanford Law School (June 2015), p. 4, available at www.asil.org/sites/default/files/Stanford%20disaster%20law%20workshop_final%20report_c63015.pdf (accessed 13 July 2018).

Second, the above analysis provides an opportunity to explore the promises and boundaries of the foundations of the principles. In addition to climate change mitigation preventing climate change disasters, IEL can be productive in regulating risk. IEL does, however, have the clear limitation that it only applies to certain kinds of disasters and would not be as helpful in relation to hazards such as earthquakes. Prevention under IHRL on the other hand is related to the protection of human rights regardless of the type of hazard. With the important benefits of putting the affected persons at heart of the analysis and being applicable to disasters relating to all kinds of hazards, the obligation to protect human rights in this context, particularly the right to life, can often be satisfied through limited measures taken shortly before an event, such as evacuation procedures and other ‘preparedness’ measures, as well as response and relief operations.

Third, considering the ways in which the principles have developed, and how they relate to each other, it is unhelpful to think about them as ‘phases’ operating on a time continuum. For example, the commentary to the ILC Draft Articles suggests that EWS is an aspect of preparedness (and response), whereas the Hyogo Framework seems to suggest that early warning is an aspect of mitigation, and the current UNISDR terminology suggests that preparedness measures should take be ‘based on ... good linkages with early warning system’,¹³⁶ which supports the reading that EWSs go beyond preparedness and can be part of mitigation or, in some cases, even the prevention of disasters. And, of course, successful mitigation and preparedness for an event can prevent the hazard from creating mass losses and/or from ‘seriously disrupting the functioning of society’,¹³⁷ thus preventing a disaster.¹³⁸

Fourth, due to the significant ambiguity as to their meaning, the principles of prevention, mitigation, and preparedness as regulated in the policy language are not suitable to establish legal obligations. Further, considering the analysis in section 3, it is clear that neither preparedness nor mitigation are grounded in international law as principles, but rather the actions relating to these principles are considered as part of the principle of prevention and better understood as activities to *prevent or minimise disaster losses*.

Finally, the analysis in the chapter further leads to the question of the very existence and nature of an (international) ‘DRR law’. It is argued here that any attempt clearly to separate law relating to DRR from law regulating disaster response (international disaster response law) is misleading as it fails to account for the complexities involved in addressing the efforts needed to minimise disaster losses. Regulations relating to DRR are, therefore, better considered as part of international law regulating disasters in the broader sense.

It is imperative that lawyers working in the field of DRR are able to recognise the limits of specific approaches and that we continue to explore, and systematise, the ways in which DRR can be supported by international law. This is by no means to suggest that efforts to establish DRR obligations are not productive, or in any way unwanted, quite the opposite. Whether considering DRR as an emerging area of law, or a cross-cutting lens through which to engage with law and address specific issues, it is original in its viewpoint which puts the challenge at heart and cuts through existing silos, thus speaking to different areas of law, as well as to scholarship from disciplines. When doing so it is essential to explore the connections between the areas and sectors, and to engage in depth with their commonalities and differences.

¹³⁶ UNGA, Report of the expert working group on indicators and terminology relating to DRR (2016) A/71/644, p. 21.

¹³⁷ ILC Draft Articles, art. 3(a).

¹³⁸ In this way, the very definition of ‘mitigation’ comes back to the definition of disaster itself.