While some of the debate in the popular press still questions whether global warming is slowing down or is even a reality to begin with, and whether human activities are a significant contributing cause of that warming or not, most governmental, corporate and scholarly discussion has firmly moved on to the question of how best to respond to the problem of global warming.

There are essentially two responses to climate change: mitigation and adaptation. Mitigation addresses the root causes by reducing greenhouse gas emissions (GHGs), especially carbon dioxide, and by lowering the concentrations of those gases in the atmosphere, through for example energy efficiency, renewable power, and cleaner vehicles. Adaptation seeks to lower the risks posed by the consequences of climatic changes like water stress, coastal flooding, community health issues, or supply chain disruptions, through for example climate-proofed infrastructure, flood protection, shifting farming practices.

From the offset there has been a split between advocates of mitigation strategies versus those who endorsed adaptation. It is fair to say that most efforts – both at international and national level – centred around installing mitigation regimes. However, in recent years, adaptation has stepped up, not least because of the so-called committed warming which is climate change that occurs regardless of mitigation measures as a result of the already accumulated GHGs in the atmosphere. The consensus nowadays

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1 The United Nations’ Intergovernmental Panel on Climate Change (IPCC) describes mitigation as: ‘Technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to climate change, mitigation means implementing policies to reduce GHG emissions and enhance sinks’ (IPCC, Fourth Assessment Report (2007) 818, http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg3_report_mitigation_of_climate_change.htm).

2 Adaptation is defined by the IPCC as ‘Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned’ (Ibid., at 809).

is that mitigation needs adaptation and vice versa and also that more synergies between the two should be forged.\textsuperscript{4}

The fact that climate change efforts so far have been overwhelmingly about mitigation, does not mean that there is room for complacency. It is indeed telling that whereas developing and implementing mitigation strategies have one clear regulatory goal (i.e. substantially reducing overall GHGs worldwide) and a rather limited number of available regulatory mechanisms (e.g. mandatory reductions for regulated emitters; cap-and-trade programmes; taxes), the international community nonetheless has been negotiating a global framework for almost two decades, and many countries failed to even adopt mitigation laws or instead take a ‘wait and see’ approach. Admittedly, establishing a functional mitigation legal regime – be it domestically or internationally – is not straightforward in light of numerous political, economic, technological, and practical difficulties.

Against this background, the aim of this Handbook is to bring together the variety of strategies and regulatory choices adopted across the world and, in doing so, to suggest more effective, comprehensive and responsive ways of managing climate change mitigation.

Despite its title referring only to climate change mitigation law, the Handbook does look at wider policy and economic considerations where appropriate as these play a key role in developing and adopting effective and fair climate change law which still is a fast-moving yet embryonic subject. This is reflected in the wide authorship of the book which gathers not only attorneys and law academics but also government officials, economists and scientists. They all share, however, technical knowledge and hands-on experience of climate change mitigation.

The breadth and depth of the legal, policy and economic considerations associated with climate change mitigation are obviously significant. Despite its deceptive size, the Handbook is therefore not a comprehensive treatise nor does it attempt to provide a detailed discussion on each and every topic. It rather seeks to provide a framework for those navigating their way through international climate change mitigation law.

Chapter 1 discusses international relations and global governance of climate change and design. Complementary to such a global climate arrangement is the sectoral approach taken by many countries

\textsuperscript{4} IPPC, above n. 1, 101: ‘[M]itigation will always be required to avoid “dangerous” and irreversible changes to the climate system. Irrespective of the scale of mitigation measures that are implemented in the next 10–20 years, adaptation measures will still be required due to inertia in the climate system.’
Editorial introduction

This approach is based on measures being put in place – typically by governments or companies – to reduce emissions in sectors which contribute significantly to GHGs, namely: (i) energy, (ii) transport, (iii) buildings, (iv) industry, (v) land use, land use change and forestry (LULUCF), and (vi) waste management. Individually the Parts offer thoughtful discussions of these sectors. Collectively they illustrate the wide range of strategies that could be adopted to meet the challenge of mitigating climate change on a sector-by-sector basis. Climate change is also a cross-cutting issue in terms of carbon trading and finance (Parts VII and VIII respectively), which are both under pressure in current times of recession and government austerity. Lawsuits are an inevitable part of any legal system and that is not different with climate change which has become a central challenge of our time (Part IX). Finally, a standalone Part X is provided for the BRICS countries in view of their importance as emerging economies and their growing impact internationally on climate change mitigation, and also in view of their joint positioning on certain issues.

The trans-boundary implications of climate change make it a global problem requiring a global solution. A global dimension is therefore added to each of the above subject-matters: EU, US and Asia-Pacific. This geographical focus was urged by the fact that none of the currently available climate change law handbooks brings together these regions whereas there is a growing interaction and tension between their legal systems, be it convergence or rather divergence. It is clear that covering the entire region is impossible so instead noticeable developments in certain countries (or at federal/state level in the case of the US) are discussed as a representative case study for the concerned region. Admittedly, by choosing one and the same ‘EU, US and Asia-Pacific’-taxonomy throughout all chapters, it may be that other interesting countries or regions are missed out with regard to a specific subject-matter (e.g. South America for LULUCF). However, as the chapters themselves are already diverse, and in order to allow for comparison across different subject-matters, one and the same geographic sub-categories make more sense than each time changing regions or countries.

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5 This mirrors the sectoral approach taken by the IPCC which discusses the same five sectors in its assessment reports.

6 BRICS countries are Brazil, Russia, India, China and South Africa. In climate change, the BASIC grouping is also prominent. BASIC is BRICS without Russia. Russia may have made limited progress in terms of climate change mitigation, but it is still a major GHG emitter and therefore the BRICS grouping was chosen above the BASIC one.

7 In view of their importance for climate change mitigation, India and China are chiefly analysed in detail in Chapters 31 and 32 respectively.
Research handbook on climate change mitigation law

in function of the concerned chapter. Finally, and as mentioned above, there is a separate part focusing on the BRICS countries in view of their emerging economies and common features.

Our hope is for this Handbook to broaden and stimulate the discussion on climate change and to encourage lawmakers and practitioners to look outside their own legal system and their own paradigm to see how the regulation of climate change mitigation is happening – and succeeding – in various places.

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