The Arbitration Review of the Americas

2021

Initial Views on Approaches to Quantum in Climate Change-Related Arbitrations

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Initial Views on Approaches to Quantum in Climate Change-Related Arbitrations

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Summary

IN SUMMARY

This article discusses how approaches to damages quantum could be augmented for unique characteristics and aspects of climate change-related arbitration. The article provides a brief overview of current climate trends, including the current physical and economic effects and governmental and other stakeholder responses. It builds on the framework to describe climate change-related arbitration from the 2019 International Chamber of Commerce (ICC) Commission Report to discuss how the traditional approaches to damages quantum in investor-state dispute settlement (ISDS) and commercial arbitration could be augmented to capture the effects of climate change, climate policy and climate change-related risks in asset values and economic damages quantum. Finally, it raises some possible legal issues with respect to damages quantum that may be relevant in climate change-related arbitration.

DISCUSSION POINTS

- Potential issues related to economic damages analysis in climate change-related arbitrations.
- Incorporating climate change risk and policy in damages analysis.
- Valuation of climate or environmental assets.

REFERENCED IN THIS ARTICLE

- 2019 ICC Commission Report.
- ICC Task Force.

The 'Anthropocene' is a proposed new geological epoch that, it is argued, began during the mid-20th century. Its predecessor, the Holocene, is understood to have begun around 11,700 years ago and gave rise to 'a more stable warm climate providing for the emergence of human civilization'.[1] The primary differentiating characteristic of the Anthropocene – as its name suggests – is the human-driven impact on the Earth's land, air, water and biological systems.

It is a belief of the arbitration community that climate change-related issues will increasingly become a component of, or central to, commercial and ISDS arbitrations. Practitioners point to, at least, two robust drivers: first, the Earth's climate is a ubiquitous aspect of all social and economic activities, and second, the industries traditionally involved in arbitration are particularly susceptible to climate change-related issues, namely, the energy and natural resource industries.

In this article, I consider to what extent the traditional, widely accepted approaches to valuation and damages quantum in arbitration are sufficient for the envisioned climate change-related arbitrations of the future. I discuss some augmentations to traditional valuation approaches that I consider may be useful for climate change-related arbitrations. I also raise some issues that may arise in the quantum phase of climate change-related arbitrations. Given the nascency of these types of disputes, I offer some initial views with respect to damages quantum, which may evolve as more climate change-related arbitrations are heard.

A BRIEF OVERVIEW OF CLIMATE TRENDS

In this section, I describe some key climate trends. This is not a review of the current climate science; I do not take a position, or speculate as to the potential physical, social or economic impact of climate change.

Figure 1 below shows that global surface temperatures have already increased, on average, by over 1°C since the pre-industrial period with a significant acceleration occurring after 1975. It is pertinent to recognise that the burden of global temperature increases has not been, and will not be, evenly distributed: the International Panel on Climate Change (IPCC) estimates that between 20 and 40 per cent of the world's human population live in regions that had already experienced average temperature increases above 1.5°C across 2006 to 2015.[2] The regions predicted to experience the strongest warming are central and eastern North America, central and southern Europe, including the Mediterranean, and western and central Asia.[3]

Figure 1: Change In Global Surface Temperatures Since 1880[25]

The weather events associated with higher average temperatures include more severe heatwaves, more frequent droughts and less frequent but more severe tropical cyclones.[4] The implications of higher average temperatures for human and natural ecosystems are presented in terms of escalating risks to key ecological infrastructure, including risks related

to water stress, soil erosion and degradation, biodiversity and subsequent human and animal displacement.

Figure 2 below shows that the global sea level has increased by an average of 8 centimetres (over 3 inches) since 1993. The IPCC reports that the rise in sea levels is accelerating with average global sea levels rising at 1.4mm per year between 1900 and 1990, and 3.6mm per year between 2006 and 2015; with anthropogenic drivers playing an important role.-[5] Similarly to global temperatures, rising sea levels are not uniform across the world: variation from the average can be as much as 30 per cent.[6] The greatest rises in sea levels are estimated to have occurred around the coastal areas of North America, Antarctica and Australasia.[7] Rising sea levels have multiple impacts on coastal regions, including permanent land submergence, more frequent and severe flooding events, accelerating coastal erosion and greater salination of soil, ground and surface water.[8]

Figure 2: Change In Average Global Sea Levels Since 1993 (mm)[26]

Figure 3: Outline Of Transition And Physical Risks Of Climate Change[27]

Transition risks	Physical risks	
Policy and legal Increasing carbon prices, enhanced	Markets Changing consumer and supplier behaviour, market	Acute Increased severity of extreme weather events

emissionreporting obligations, extra regulation of existing goods and services, exposure to litigation	signal uncertainty, increase raw material costs	
Technology Substitution of technologies towards lower emission options, investment in unsuccessful technology, upfront costs to transition to lower emission technology	Reputation Shift in consumer preferences, stigmatisation of sector, stakeholder concern or negative feedback	Chronic Changes in past weather patterns, rising volatility, mean

Urbanisation across the 20th century has led to human migration towards low-lying coastal regions alongside high concentrations of national infrastructure and commerce. Approximately 11 per cent of the world's population lived in coastal areas with at most 10 metres of elevation above sea level in 2010.[9] Climate change poses significant human and economic risks to developed and developing countries alike.

Climate change is a non-linear risk – there are tipping points that transform outcomes such as loss of ice shields. Warming above 1.5°C could trigger feedback loops that could accelerate physical impacts such as further warming, extreme weather and sea level rise.

Human emissions of CO_2 from industry and consumer behaviour are the main determinant of future warming, and many efforts to combat climate change have therefore focused on adapting or curtailing those behaviours. These efforts may be in adaptation to a changing climate or in mitigation of emissions. Companies and investors therefore face both physical risk (eg, incidence of flooding from sea level rise) and transition risk, from actions taken by governments, companies and other stakeholders in reaction to the looming threat of physical risk.

To date, 189 governments have ratified the Paris Agreement: the comprehensive climate accord formed at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 to combat global climate change. The central goal of the Paris Agreement is to achieve a global response that will 'hold the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C'.[10],[11] Additionally, it recognises the need to strengthen the ability of countries to adapt to the adverse impacts of climate change and foster climate resilience.

Article 4 of the Paris Agreement requires the parties to regularly develop and communicate Nationally Determined Contributions (NDCs): chosen measures to reduce emissions and adapt to the adverse impacts of climate change.[12] The UNFCCC's NDC registry currently includes more than 250 national NDCs that contain frameworks for national climate change mitigation and adaptation strategies.[13] Additionally, while the US at a national level is an exception, 25 US states representing 55 per cent of the US population, have formed the US Climate Alliance with a commitment to reduce emissions in line with the goals of the Paris Agreement.[14]

Non-governmental stakeholders are also taking action: at least 895 companies have explicitly committed to undertake science-based climate action consistent with the Paris

Agreement goals.[15] Climate is also increasingly being recognised as impacting asset values; for example, BP has recently impaired the value of its oil and gas-related assets by up to US$17.5 billion, announcing it has adopted a carbon price of US$100 per tonne from 2030 in its internal accounting assumptions.[16] This is more than four times the current EU carbon price of around €23 per tonne.[17]

CLIMATE CHANGE-RELATED ARBITRATIONS ENVISIONED BY PRACTITIONERS

In late 2019, the International Chamber of Commerce (ICC) released its report examining the role for arbitration and alternative dispute resolution (ADR) to resolve disputes related to climate change.[18] The ICC Task Force described three primary categories in which climate change-related arbitrations may arise. These are:

- directly related to transition, mitigation and adaptation: contracts specifically related to mitigation, adaption and transition activities in line with the Paris Agreement;
- indirectly related to transition, mitigation and adaptation: contracts without any specific climate change-related purpose, but incorporating a climate or environmental issue (eg, where climate risks or climate policy are considered to have materially impacted industrial assets and asset values); and
- submission agreements: submission or agreements entered into after a climate change or environmental dispute has arisen. The ICC Task Force considered disputes in this category would be rare.

The ICC Task Force envisaged that disputes in the first category result from contracts entered into by investors, funders, industry groups, states and state entities to implement systems of transition, mitigation or adaptation in line with Paris Agreement commitments. Examples given for the first category include: a contractor accused of failing to meet technical specifications for a wind farm to achieve public authorities financing; and non-approved use of climate change-related funding. From a damages perspective, these types of disputes would likely require the traditional approaches to quantum.

The second category captures climate change-related disputes across the broadest range of industries and parties. Disputes in this category will encounter climate change issues indirectly; for example, in damages quantum where scenarios may capture the effect of alternative climate change policies or climate change risks; or where damages quantum is determined by the costs of mitigation or adaptation. Examples for this category include: a contractor in charge of construction of a new deep-water harbour disputes whether increased salinity of fresh water sources was induced by rising sea-levels, owing to climate change, albeit that other contributing factors may exist, and requests an extension of time and additional costs; a car manufacturer's inability to use compliant components as a result of the destruction of one of its suppliers by a tsunami forces it to seek an indemnity from its suppliers; and a sudden loss or reduction in business in breach of a supply contract due to a client abruptly changing its strategy to achieve carbon neutrality. There is the potential for climate change-specific issues in valuation and damages quantum for disputes in this category that may require innovative solutions and other considerations to tailor the traditional approaches to damages quantum.

TRADITIONAL APPROACHES TO VALUATION AND DAMAGES QUANTUM REMAIN RELEVANT

I expect the traditional approaches to valuation and damages quantum will remain the primary approaches that are offered and accepted in climate change-related arbitration. However, there is potential for climate-specific considerations to tailor these traditional approaches to the specific circumstances of climate disputes. Additionally, given the novel and unique nature of these disputes, creativity and flexibility in approaches may benefit the damages and valuation analysis.

The three traditional approaches to valuation and damages quantum are the income, market and cost approaches. One or a combination of these approaches are usually adopted to quantify economic damages in arbitration. Economic damages typically reflect the difference in asset values across scenarios with and without ('actual' and 'but-for') the effect of a set of actions or events.

The income approach assesses value using projected future cash flows generated from the relevant productive asset or assets. The value of a productive asset can be equivalent to the present value of the future cash flows it is able to generate. Present value is calculated by discounting expected future cash flows using an appropriate discount rate, and therefore comprises two principal components on which an expert should opine: the level of expected future cash flows generated by the asset, and the appropriate discount rate to apply to the cash flows.

The market approach assesses value by benchmarking against the market values or transaction values of similar assets. The market approach adopts the principle that the value of an asset should be approximately equivalent to the value of comparable assets. There are two common methods within the market approach: comparable public company market values, and comparable asset transaction values. Both are usually calculated using value ratios, (eg, enterprise value-to-EBITDA); these ratios are then applied to the asset in the dispute to derive an equivalent market value.

The cost approach assesses value by quantifying the costs incurred to acquire and develop the asset. This approach does not reflect the future economic value of the asset but instead reflects the value to develop the asset; future economic value may be less than, equal to, or greater than this amount.

These approaches are well-established methods for assessing damages quantum and will continue to be applied to climate change-related arbitrations. However, climate change-related issues may provide material factors that would need to be incorporated into these damages approaches in novel ways. Below, I describe how these approaches may be augmented by relevant climate change-related issues.

CONSIDERATIONS IN TRADITIONAL VALUATION APPROACHES FOR CLIMATE CHANGE-RELATED DISPUTES

It is feasible to incorporate into the income approach the effects of alternative climate policies and climate risk scenarios by adjusting cash flow and discount rate estimates. For example, national climate policies commonly involve taxes to abate polluting activities and subsidies to encourage greener activities. Changes in government policy to reduce or remove subsidies for a particular clean technology will directly impact investors' returns in that technology but would also be likely to impact its relative competitiveness regarding competing technologies. The aggregate impact of policy change can be more than the direct effect and can often impact the competitive landscape of an industry. Cash flow scenarios that incorporate changes to government climate policy will need to consider not only the

direct tax or subsidy impacts but also the indirect industry competitive effects in the short and long-run.

Climate risks are myriad. Targeted climate policy may be effective at tackling a specific set of climate issues but may also exacerbate others. For example, electric car subsidies may be effective in reducing tailpipe emissions, but lead to greater power demands, which will, at the margin, increase emissions related to electricity generation. While the net impact may be desirable (from a climate perspective, assuming generation from renewable sources), there will be parties that disproportionately lose out. Furthermore, climate risks are likely to shift as a result of climate policy. For example, offshore wind capacity has increased significantly around the world, displacing coal and oil-powered electricity generation with commensurate reductions in direct greenhouse gas emissions while increasing the risks to national power grids of offshore and coastal weather events. A damages expert can consider the direct and indirect effects of climate change-related issues on affected asset values, while technical expertise may be used to calibrate any technical inputs.

Typically, economic risks can be divided into: diversifiable and non-diversifiable risks. Diversifiable risks are asset-specific risks (eg, key customer risks), for which investors can arbitrage away by holding a wide, diversified asset portfolio; while non-diversifiable risks are wider, systemic risks (eg, macroeconomic stability), that investors cannot arbitrage away because these risks are expected to impact all assets. Diversifiable risks can often be incorporated directly in the cash flow projections, whereas non-diversifiable risks are incorporated into the discount rate.

Climate risks can be both diversifiable and non-diversifiable risks. Diversifiable risk exists for a physical asset that is situated in a low-lying coastal area that faces a material threat from rising sea levels and flooding. Such asset-specific risks can be incorporated through expectations-weighted cash flow projections using management or technical guidance; for example, a 1-in-50 year major flooding event could be modelled as a 2 per cent (1-in-50) reduction in all future cash flows (ie, where such an event would destroy the asset). By contrast, major climate events that risk widespread economic disruptions are likely not diversifiable. These risks would most appropriately be incorporated into the discount rate, perhaps through the equity risk or country risk premiums or other components of the discount rate.

However, there is an ongoing debate about the extent to which investors and financial markets have been, and are, able to appropriately incorporate climate risks, especially broad-based climate risks, into asset valuations, including the equity and bond markets. In April 2020, the International Monetary Fund found: 'aggregate equity valuations as of 2019 do not appear to reflect predicted changes in physical risk under various climate change scenarios. This suggests that equity investors may not be paying sufficient attention to climate change risks'.[19] Therefore, it is unlikely that empirical risk premium estimates appropriately account for existing climate change risks, especially risk premium estimates calculated using data from the distant past. A damages analysis using an income approach can adjust the discount rate through the risk premium adjustments to incorporate alternative scenarios for broad-based climate risks.

For the market approach, novel considerations may be required where a monetary equivalent for the value of a non-economic asset is required: examples are assets that have no direct market-based analogues, such as ecosystems that act as carbon sinks, flood defences, and barriers to soil erosion and desertification. In such cases, a comparable asset approach

could be used by reference to climate mitigation and abatement projects around the world. National governments and international organisations provide detailed assessments of current and proposed climate mitigation and adaptation projects that can be used for monetary-equivalent benchmarking in the same way that comparable public companies and transactions are used to benchmark the value of traditional economic assets. While the same level of information may not be available, useful resources for information on climate adaptation and mitigation projects around the world include the Green Climate Fund,[20] the UNFCCC's Nationally Appropriate Mitigation Actions registry,[21] and the European Regional Development Fund among other EU-based funding programmes.[22]

POTENTIAL ISSUES RELATED TO DAMAGES QUANTUM IN CLIMATE CHANGE-RELATED ARBITRATION

I envisage that issues with respect to quantum may arise in climate change-related arbitrations, including with respect to the appropriate basis of value, proximity, foreseeability and mitigation efforts.

The most common basis of value in arbitration is market value (or fair market value): the expected monetary amount at which a willing buyer and seller with adequate knowledge would freely exchange in an arm's-length transaction. Market value may not be a reasonable basis of value in certain climate change-related arbitrations; for example, where assets relate to public goods that do directly generate cash flows because users cannot be reasonably excluded (ie, there is no basis for a competitive pricing mechanism) and where the cost of extending the good to another person is zero (eg, clean air).[23] Alternative bases of value that may be more applicable include: replacement value – equivalent to the cost of replacing an asset in an appropriate form or condition; equitable value – the price for the transfer of an asset between specific identified parties; or investment value – the total economic value of an asset to a specific identified owner. The appropriate basis of value is ultimately a legal question; however, expert opinion on damages quantum could be materially different for each of these value bases.

Legal (and potentially scientific) issues relating to proximity and causation will define relevant parameters around which a damages analysis is conducted. Issues relating to foreseeability and obligations of the injured party to reasonably mitigate losses could be material factors of disagreement between the parties that may have significant consequences for damages quantum. Parties may disagree on whether climate risks were reasonably foreseeable, especially if distinguishing between broader climate risks and asset-specific climate risks. The implication for damages quantum is which potential climate risks to incorporate into a damages analysis. The quantum expert would need to carefully consider how the relevant climate risks have impacted losses.[24] Similarly, with mitigation obligations, the damages expert may be guided by factual or scientific evidence as well as instruction on what mitigation options were available and reasonable. Defining mitigation capacities is unlikely to be a simple task as climate change is a creeping issue and, therefore, the range and cost of possible mitigation options would also be a function of time: defining the relevant set of dates would be an important consideration.

The valuation date is an important consideration for damages quantum in all disputes. It often dictates both the date on which to determine value and also the information set on which an expert should rely. For an ex ante (or date of breach) damages approach, the valuation date is often set to the date of a specific relevant event (eg, the date of a major breach of contract terms.) Given that climate change is predominantly a creeping set of

incremental impacts and risks, there may not be an obvious date on which damages should be assessed. This may lead the parties to concur that damages ought to be assessed using an ex post (date of award) approach; and using the current date as the valuation date.

CONCLUSIONS

The ICC and international arbitration community considers that arbitration and ADR can be relevant forums to resolve climate change-related disputes. The ICC Task Force envisaged climate change-related arbitrations related both directly and indirectly to climate adaptation and mitigation projects. Climate change-related arbitrations are likely to present unique challenges for experts and counsel with respect to damages quantum. I expect that the traditional methods for damages and valuation analysis will remain the most reasonable and effective approaches, but such analyses may require careful consideration to incorporate the wide array of both broad and specific impacts on asset values of climate policy and climate risks. Climate change-related arbitrations will also provide challenges for damages quantum: financial markets do not appear to be fully pricing climate risks into asset values and so a damages expert would need to consider what financial market data is appropriate and how best to incorporate the effects of climate policies and risks into valuation and damages analysis; additionally, issues around foreseeability, mitigation obligations and the relevant dates on which to estimate value may be more complex in climate change-related arbitrations.

Endnotes

1 IPCC, October 2018, Special Report: Global Warming of 1.5C, Chapter 1. Back to section

2 IPCC, October 2018, Special Report: Global Warming of 1.5C, Chapter 1. Back to section

3 ibid. Back to section

4 IPCC, October 2018, Special Report: Global Warming of 1.5C, Chapter 1. Back to section

5 IPCC, September 2019, Special Report on the Ocean and Cryosphere in a Changing Climate, Chapter 4: Sea Level Rise and Implications for Low Lying Islands, Coasts and Communities. Back to section

6 ibid. Back to section

7 ibid. Back to section

8 ibid. Back to section

9 IPCC, September 2019, Special Report on the Ocean and Cryosphere in a Changing Climate, Chapter 4: Sea Level Rise and Implications for Low Lying Islands, Coasts and Communities. Back to section

10 UNFCCC, 2015, Paris Agreement, Article 2. Back to section

11 The half-century between 1850 and 1900 is commonly used as a reference period to describe the pre-industrial period, see: IPCC, October 2018, Special Report: Global Warming of 1.5C, Chapter 1. Back to section

12 Paris Agreement, 2015, Article 4. Back to section

13 UNFCCC, 2020, NDC Registry at: www4.unfccc.int/sites/NDCStaging/Pages/LatestSubmissions.aspx. Back to section

14 See, www.usclimatealliance.org/. Back to section

15 See, www.sciencebasedtargets.org Back to section

16 See, for example, www.reuters.com/article/us-bp-writeoffs/bp-wipes-up-to-17-5-billion-from-assets-with-bleaker-oil-outlook-idUSKBN23M0QA Back to section

17 Equivalent to around US$25 per tonne. Back to section

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19 International Monetary Fund, April 2020, Global Financial Stability Report: Markets in the Time of COVID-19, Chapter 5: Climate Change: Physical Risk and Equity Prices. Back to section

20 See, www.greenclimate.fund/projects. Back to section

21 See, www4.unfccc.int/sites/publicnama/SitePages/Home.aspx. Back to section

22 See, https://ec.europa.eu/regional_policy/en/atlas/programmes/ Back to section

23 These are the 'non-excludability' and 'non-rivalry' attributes of public goods. Back to section

24 Which will most likely require major inputs from climate science specialists. Back to section

25 NASA/ GISS, Land-Ocean Temperature Index. Back to section

26 NASA Goddard Space Flight Center, Global Mean Sea Level Trend from Integrated Multi-Mission Ocean Altimeters TOPEX/Poseidon, Jason-1, OSTM/Jason-2 Version 4.2 Ver. 4.2 PO.DAAC, CA, USA. Back to section

27 Source: The Task Force on Climate-related Financial Disclosures – Overview Report, February 2020. Back to section

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