



ARTICLE

Damages valuation in Climate Change Disputes

The changes in policy, regulation and trade induced by Climate Change and Energy Transition will lead to disruption and material changes on the markets and in business practices, which will undoubtedly trigger a significant number of disputes in the coming years.

The 2015 Paris Agreement signed by 189 countries represents the most significant milestone achieved in the fight against Climate Change. Based on the Intergovernmental Panel on Climate Change (IPCC) report, commitments were taken to reduce carbon emissions to limit global warming to 1.5°C above the pre-industrial level.

Achieving this objective means structural changes in policies affecting the global economy, especially for carbon-intensive sectors like energy and transport. Although the Covid-19 crisis may delay or postpone some of these structural reforms, some commentators expect that it will reinforce the focus on Climate Change and Energy Transition, with potentially more reforms introduced.

The changes in policy, regulation and trade induced by Climate Change and Energy Transition will lead to disruption and material changes on the markets and in business practices, which will undoubtedly trigger a significant number of disputes in the coming years.

There are already many climate-related lawsuits: according to Columbia Law School, more than 1,100

climate-related lawsuits are on-going, mostly in the US, although little case law exists due to a limited number of awards issued. International arbitration is expected to be a key resolution mechanism for such disputes.

A report issued in Paris in November 2019 by the ICC Task Force signed by more than 100 members from various sectors identified the current and potential uses and benefits of international arbitration in climate-related disputes.

One of the key advantages of international arbitration for commercial disputes is the confidentiality the process offers. But when public interest is at stake, as in climate-related issues, more transparency will be expected. This makes traditional confidentiality harder to justify as it may cast doubt and suspicion on the procedure. According to the ICC Task Force report, transparency could be achieved via either “(i) opening the proceedings to the public, including in the publication of submissions, procedural decisions and hearings” or “(ii) publication (or even redacted publication) of awards.”¹

¹ ICC Commission Report – Resolving Climate Change Related Disputes through Arbitration and ADR p.42

In addition to more transparency, the ICC report identifies the following actions designed to further improve effectiveness and efficiency:²

1. Securing relevant expertise of tribunal members and experts to ensure that decisions reflect sound and up-to-date knowledge;
2. Adopting measures to use faster and more effective procedures to respond to the special complexity and sensitivity of climate change disputes;
3. Exploring the opportunity for integration of climate change commitments or laws into the dispute resolution procedure;
4. Weighing the eventual benefits of some increased transparency;
5. Considering options for third party participation; and
6. Allocating costs in order to ensure that the appropriate stakeholders are able to participate in the process.

In this paper, we first outline the two categories of claims arising in Climate Change related disputes from a valuation point of view. These are claims for non-financial and financial compensation respectively. We then discuss the challenges in determining causation and in quantifying the corresponding damages.

Types of claims

Countries are increasingly implementing new or amended regulations in order to comply with their commitments under the Paris Agreement. Environmental Social Governance (ESG) criteria are becoming key indicators of companies' worthiness and viability. Major oil and gas companies such as BP and Total have recently pledged to be carbon emission neutral by 2050.³ This constant evolution of policies, standards and commitments aimed at successfully completing the Energy Transition increases the risk of new commercial and investment disputes.

To achieve the Paris Agreement objectives on carbon emission reduction, each country needs to set an action plan. For example, in the EU, this translates into 2030 targets to i) cut greenhouse gases ("GHG") emissions by 40%, ii) have a 32% share for renewable energy and iii) improve energy efficiency by 32.5%, all of which will

increase pressure on the high emitters (e.g. coal power plants).⁴ To achieve these targets, policies and regulations have been or may have to be amended, creating grounds for potential disputes.

Companies are exposed to different risks related to Climate Change: these could be physical risks but also transitional or policy risks. The first risk comes from possible physical damages to an asset caused by a natural incident or natural disaster. This can also come from an increase in extreme climate events. Physical damages may come from the multiplication of extreme events rather than as the consequence of a single event. The second type of risk arises from the decarbonisation of the economy. Radical change might affect the economic equilibrium of a contract or the entire economy of a country which relies mostly on fossil fuels. Due to the political and economic reach of Climate Change, the consequences for companies in the energy and transport sectors, both of which are carbon- and capital-intensive, could be significant. Since these sectors represent almost 50% of the arbitration cases per the 2018 breakdown of ICC Court,⁵ it is expected that they will "lead" in the number of Climate Change disputes in the coming years.

The ICC Task Force report identifies some illustrative examples of claims that could arise in non-commercial disputes:

- An indigenous population of farmers, fishermen and small businesses located around a REDD++ certified forest carbon project area suing foreign investors and the host State in the project alleging breach of human rights. The calculation of the compensation in such a case would be complex as it would be difficult to determine the economic position in both the actual and counterfactual situation. The main damage suffered in such a case would be mostly non-monetary and could hardly be compensated by cash.
- A group of small islands affected by rising sea level suing developed and bigger States for breach of the no-harm principle and environmental treaty protections. The issue would be here to evaluate the cost of the reparation or repatriation of displaced populations. But as in the example above, the main damage suffered may not be compensable only monetarily.

² ICC Commission Report – Resolving Climate Change Related Disputes through Arbitration and ADR p.7

³ "BP sets ambition for net zero by 2050, fundamentally changing organisation to deliver" - <https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bernard-looney-announces-new-ambition-for-bp.html>; "Total se dote d'une nouvelle ambition climat pour atteindre la neutralité carbone à horizon 2050" - <https://www.total.com/fr/medias/actualite/total-se-dote-dune-nouvelle-ambition-climat-pour-atteindre-la-neutralite-carbone>

⁴ European Commission – "2030 Climate & Energy Framework" – 23th November 2016 https://ec.europa.eu/clima/policies/strategies/2030_en

⁵ ICC Commission Report – Resolving Climate Change Related Disputes through Arbitration and ADR p.53

From a valuation point of view, two main categories of climate-related claims can be defined: claims seeking non-financial remedies and claims seeking financial compensation for damages caused.

Claims seeking non-financial remedies

These claims are often issued by NGOs or governmental agencies asking for the modification of business practices in order to comply with guidelines, the withdrawal of a given project, or increased transparency. Below are two illustrative examples:

NOTRE AFFAIRE À TOUS AND OTHERS V. TOTAL

In these legal proceedings launched in January 2020 against the French oil company, the claimants seek a court order forcing Total to issue a new corporate strategy identifying risks resulting from GHG emissions and climate-related harms, as well as undertaking action to align with the Paris Agreement.⁶ It is worth noting that Total since announced on 5 May 2020 its ambition to achieve net zero carbon emission by 2050,⁷ revealing a commitment and willingness to satisfy third parties.

URGENDA FOUNDATION V. STATE OF NETHERLANDS

The Court ordered the Dutch State to limit national GHG emissions to 25% by 2020 instead of 17% in 2019. As a consequence of this court order, the Dutch State needs to take some additional legal and regulatory measures to achieve the new target, one of them being an acceleration of the phasing out of coal-power plants.

Claims seeking financial compensation

In this type of claim, the plaintiff looks for compensation for the damages suffered, either as a direct or an indirect payment, which could, for example, be allocated to environmental compliance programmes or to city protection.

Another common relief requested in such climate-related disputes in the US is the disgorgement of profits or punitive damages in addition to compensatory ones. The following examples are illustrative of the range of claims:

RHODE ISLAND V. CHEVRON, TOTAL ET AL.

Claims were brought against oil majors on the grounds of nuisance, failure to warn or unjust enrichment. Several US States and cities sued various oil majors, seeking damages

for alleged responsibility in the sea level rise and thus the increased risk of flooding and extreme precipitation. They alleged that the “*production, promotion, and marketing of fossil fuel products, simultaneous concealment of the known hazards of those products, and their championing of anti-science campaigns, actually and proximately cause[d] Rhode Island’s injuries.*”⁸

LLIUYA V. RWE AG (2015)

A Peruvian farmer filed claims for damages against the German energy company RWE for having knowingly contributed to Climate Change by emitting GHGs by producing electricity from coal. The claimant argues that global warming has caused the melting of mountain glaciers near his home, increased flood risks for his hometown and affected its production. Although initially dismissed, the case was recognised in court of appeal in 2017, representing a major step in Climate Change claims and related damages.

Other potential disputes cases could emerge as a consequence of Climate Change related cases, although they may not qualify as Climate-Change disputes.

The best example can be found in the Netherlands, with the measures taken by the Dutch government following the Court order in the Urgenda Foundation v. State of Netherlands discussed above.

Uniper and RWE, German companies owning and operating coal power plants in the Netherlands, have threatened the Netherlands to trigger arbitration under the Energy Charter Treaty over a law forcing anticipated closure of coal plants in the country.⁹

If such cases resulting from measures aimed at fighting Climate Change were to actually develop, they would be under great scrutiny as they would determine the ability of states to act legally in seeking to meet their emission reduction obligations.

As illustrated by the examples above, Climate Change disputes could be very diverse in their nature and in the type of compensation sought. From a valuation of damages standpoint, as for any dispute, the first step is to determine causation. Once causation is established, damages can be properly evaluated.

As we discuss in the following section, these steps are coming with a great set of challenges.

6 Contentieux climatique : Total assigné en justice pour manquement à son devoir de vigilance » - <https://www.actu-environnement.com/ae/news/justice-contentieux-climat-total-devoir-vigilance-assignation-34876.php4>

7 “Total se dote d’une nouvelle ambition climat pour atteindre la neutralité carbone à horizon 2050 » - <https://www.total.com/fr/medias/actualite/total-se-dote-dune-nouvelle-ambition-climat-pour-atteindre-la-neutralite-carbone>

8 Complaint Rhode Island v. Chevron Total et al. – 2 July 2018 – \$10 page 4 - http://blogs2.law.columbia.edu/climate-change-litigation/wp-content/uploads/sites/16/case-documents/2018/20180702_docket-PC-2018-4716_complaint.pdf

9 GAR - “Shell and Exxon to arbitrate Dutch gas field dispute” – 27 May 2020

Challenges in the valuation of Climate Change damages

The challenges in valuing financial compensation in Climate Change disputes are similar in nature but they may be more complex than in any other commercial or investment case.

Causation

By definition, Climate Change is a global issue. To establish causation on matters such as air quality, rising sea level and greater frequency of extreme weather conditions, one would need to consider the entire global eco-system, which is a non-limited system, or rather a system with much wider limits than is usually analyzed.

In the case of the claim from the Peruvian farmer against RWE mentioned above, RWE's responsibility for the damages allegedly suffered must be assessed while considering how RWE's actions impacted the climate globally and how this then affected the farmer. This example demonstrates the difficulty in assessing causation.

Interestingly enough, in an issue such as Climate Change which seems to be based on facts and science, one would expect unanimity. However, the issue is still giving rise to controversy. The current debate on Covid-19 illustrates well that there are many different scientific opinions on the origins, effects and required responses around the world. Another similarity between Covid-19 and Climate Change is the importance of economic considerations alongside health/environment considerations and the balance to be achieved between them.

Scientific facts and data are required to determine causation. The difficulty for a Tribunal will be to base its opinion on scientific facts and data (for which Tribunal members are mostly not trained) when presented with potentially diverging opinions from experts. In the *Perenco v. Ecuador* case,¹⁰ concerning the environment, the tribunal appointed its own expert to determine causation, when party-appointed experts positions appeared to be biased and crossing the line of advocacy of their clients' positions.

Causation in Climate Change will rely on the outcomes of models. Unlike with some environmental cases, it would not be possible to have direct evidence of the impact of

the actions of the Respondent. Models will be complex and will require many assumptions as inputs. Demonstrating reliability and objectivity of these models will be key.

Once causation is established, the choice of the approach and the framework needs to be set out in order to run a proper valuation of the damages in a claim for monetary compensation.

Approach

Assessing damages in a dispute usually requires establishing a counterfactual scenario in which the breach or wrongful situation would not have occurred. The damages would be the difference in the economic position between the counterfactual scenario (what should have happened) and the factual scenario (what did happen).

Considering the long-term nature of the harm caused in Climate Change disputes, the Discounted Cash Flow (DCF) methodology seems to be the most appropriate. It is the most widely used method in capital-intensive and long-term projects in the energy and infrastructure sectors and it could be combined with probabilistic tools that may be required to deal with the complexity of the case.

A market approach seems difficult to envisage, at least in the near future, due to the lack of comparable market data from which the damages calculation could be derived.

Assuming that the valuation of damages was based on a DCF, the challenges faced by the valuation expert will be to define the counterfactual scenario and its related cash flows.

As mentioned above, the counterfactual scenario is defined as the scenario in which the alleged breaches did not occur and therefore no damages would have been suffered by the Claimant. For cases where actions effectively produced direct "physical" and observable consequences, the counterfactual scenario would assume that such consequences did not occur. But the difficulty for some Climate Change disputes, as illustrated by the examples above, is that the claims are related to an increase in the risks of occurrence of some extreme climate events. In these cases, it may be far from straightforward to determine the counterfactual scenario, as this would correspond to a reduced risk level in the occurrence of these extreme climate events compared with the actions or inactions of the Respondent of the factual scenario.

¹⁰ *Perenco Ecuador Ltd. v. Republic of Ecuador and Empresa Estatal Petróleos Del Ecuador (Petroecuador)*, ICSID Case No. ARB/08/6 | Itlaw. <https://www.itlaw.com/cases/819>

The difficulty in determining the counterfactual scenario comes from the multiplicity of such scenarios. More sophisticated valuation tools such as Monte Carlo simulation or real value options may be required to account for the differences in uncertainty and risks between both scenarios.

Another key question for lawyers is about the extent of the damages to be valued. Since Climate Change directly and indirectly impacts many stakeholders who may not be party to the commercial or investment dispute, it would need to be decided where to limit the extent of liability and damages to be valued. Taking as an illustrative example the Deepwater Horizon case in 2010, all companies in the region directly or indirectly affected by the oil spill could claim lost profits. However, certain claims were challenged by BP, which asked for more direct evidence of causality between the incident and the actual loss of business.¹¹ The valuation expert will need to value all damages deemed to result from the Climate Change event considered.

As evidenced by some cases of US States against energy companies, an important question for the valuation expert will be to define which damages could or should be included in their damage valuation. Assuming causation was established, costs such as transportation infrastructures, weather protection systems and healthcare may be considered as direct costs and be included. But for indirect costs like for example, the economic loss resulting from the unavailability of people (due to unavailability to commute for extreme weather conditions), inclusion and valuation in the claim are debatable.

Time period and date of assessment

One major difficulty is to put a starting date on actions or inactions contributing to Climate Change. In other words, it could be difficult to determine what would be the precise date on which the breach occurred, making the use of a valuation date difficult.

The alternative would be to use the current date as the valuation date. In that case, the date of breach would become a variable input in the valuation model, allowing for sensitivities to be run on this parameter. The benefit of using the current date for the valuation of damages in Climate Change disputes is that hindsight and more up-to-date information and data could be used, increasing the reliability of the valuation.

Discount factor

The discount factor is used in the DCF to reflect i) the time value of money and ii) the risk associated with the project, the investment or the company.

The discount factor is usually a much-debated point in a damage valuation as its variation could have a significant impact on the amount of damages to be claimed. In Climate Change dispute, there is little doubt that this will also be the case.

In the situations described above where a more sophisticated approach would be retained, attention should be given to avoiding double-counting of the same risks in both the probabilistic approach to determining the cash flow and in the discount factor.

Availability of data

Finally, similarly to the model used to determine causation, the valuation model in Climate Change disputes will typically rely on multiple sets of data in both the factual and the counterfactual scenario.

Data and assumptions such as supply, demand, prices, costs and general economic variables, need to be defined with reasonable confidence and accuracy. The challenge here is to ensure such reliability of assumptions for future periods for both the counterfactual and factual scenarios, but also for past periods in the counterfactual scenario.

Illustrative examples

To illustrate the issues in damages valuation in climate-related disputes, we looked at two of the representative existing cases.

RHODE ISLAND V. CHEVRON, TOTAL ET AL. COMPLAINT

In the case mentioned above, the claimant argued that the respondents caused a rise in the sea level and extreme weather due to their carbon emissions. Damages would be arising from multiple sources: infrastructures (flood and extreme weather protections), public health (illnesses due to heat or pollution), fishing industry (port charges, taxes) ...

A key challenge is obviously causation, as seen above, and apportionment, i.e. who is responsible for which proportion of the damage caused. With respect to the valuation, part of the challenge will be to determine i) what were, what would have been and what would be the costs (or loss of opportunities) that could be attributed

¹¹ BP Seeking Payment Reversals May Reignite Damages Fight – 6 October 2014 <https://www.bloomberg.com/news/articles/2014-10-06/bp-seeking-payment-reversals-may-reignite-damages-fight>

to Climate Change, ii) when to start accounting for them and iii) until when to account for them. As of today, information on quantum is not available on this case.

PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS V. CHEVRON ET AL

In this dispute, fishermen are claiming damages for the reduction of their activity and deprivation of their right to natural resources.

In this claim, damages are derived from the amount of fossil fuel extracted causing marine heatwaves and toxin outbreaks (domoic acid). For instance, the fishing season has been delayed to avoid fishing contaminated crabs, causing loss of profits for fishermen.

Causation is again key in this case, with the difficulty residing in the definition of the loss and the apportionment of such loss to the respondent's actions and to other causes that may have affected the amount of fishing.

The valuation of the losses could be based on a probabilistic approach as the annual quantity of fish captured in a fishing season can be affected by multiple other factors not related to Climate Change.

Even if some references start to emerge for the valuation of Climate Change damages and if a causal link may be established on the damage side, the economic position

in the counterfactual scenario (and sometimes in the actual scenario) may be difficult to assess in some cases. Furthermore, monetary compensation may not be the only or the most suitable remedy to compensate for the damages caused, which may be irreversible.

As focus on Climate Change is growing, it is anticipated that more disputes will arise in the near future on both commercial and investment fronts. Arbitration will have a major role to play in resolving these disputes, although it may require adapting to be an efficient and attractive means of resolution. Due to the nature of the damages claimed (or expected to be claimed) in Climate Change disputes, their valuation will be a challenge as counterfactual scenarios will be difficult to establish, and the metrics and indicators required for the valuation may not be available. This is notwithstanding the fact that it may not always be possible to define monetary compensation for the damages caused.

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