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Role of Technology in Climate Change Disputes Resolution-

By: ***Kenneth Wyne Mutuma*** [*]

1.0 Introduction

The inclusion of force majeure and Acts of God clauses in the law of contract, which date back from common law doctrines in England, illustrates man's early acknowledgement of his helplessness in some circumstances. It is also a testament to man's acceptance that disputes will likely occur due to any of these events. Natural calamities such as forest fires, tsunamis, tornadoes, earthquakes and extreme weather in general are a common occurrence in these clauses. While thought to be naturally occurring, evidence from the scientific community shows that these events have been exacerbated by climate change.[1] The widespread effects of these events, the mainstreaming of the polluter pays principle and climate justice questions in public discourse, coupled with increased scientific knowledge on the causes of climate change has seen a corresponding increase in climate change disputes.[2]

Use of technology, especially in the aftermath of disruptions such as the Covid-19 pandemic, is becoming a mainstay in both the litigation and ADR

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[1] Bernai, R. R. (2013). Managing the risks of extreme events and disasters to advance climate change adaptation. *Economics of Energy & Environmental Policy*, *2*(1), 101-113.

[2] National Research Council, 'Advancing the Science of Climate Change. Division on Earth and Life Studies, Board on Atmospheric Sciences and Climate' (2020)

fields.[3] The fact that technology can play a role in climate change dispute resolution is a restatement of the ironic and bittersweet relationship between technology and climate change. The industrial revolution and the technological advancement that came with it have been the universal culprits as the biggest causes of climate change.[4] A multisectoral study conducted in 2006 confirmed that there is a positive correlation between technological advancement, greenhouse gas emission increase and environmental degradation.[5] However, as will be discussed in this paper the benefits of technology in ameliorating climate change far outweigh the costs, for example digital technology is estimated by the World Economic Forum to help reduce global carbon emissions by up to 15%.[6] But it is still responsible for 1.4 to 5.9 percent of all greenhouse emission. [7]

The chapter seeks to analyze climate change and its implications, as well as the nature of climate change disputes. It will also examine the efficacy of climate change dispute resolution mechanisms within the Kenyan and international framework. The chapter concludes by making suggestions for requisite reforms required based on the gaps identified.

2.0 Climate Change and its Implications

The United States National Aeronautical Space Agency has described climate change as a protracted change in the average weather patterns defining earth's climates.[8] The Agency uses data records and observations

[3] Michael Peters, Fazal Rizvi and others, 'Reimagining the new pedagogical possibilities for universities post-Covid-19'' (2020) 54(6), 717-760.
[4] Christine Wamsler and Jamie Bristow, 'At the intersection of mind and climate change: integrating inner dimensions of climate change into policymaking and practice' (2022) 173(1), 1-22.
[5] Muhamad Ramzan, Tomiwa Adebayo and others, 'Do green innovation and financial globalization contribute to the ecological sustainability and energy transition in the United Kingdom? Policy insights from a bootstrap rolling window approach. Sustainable Development. (2022)
[6] Erica Zaja, Ariane Dubost and Matilde Oliveri, 'GHG Emissions Monitoring and Avoidance Strategy'
[7] Ipek Tunc, Serap Türüt-Aşık and Elif Akbostanci, 'CO2 emissions vs. CO2 responsibility: an input–output approach for the Turkish economy' (2007) 35(2) ERC Working Papers in Economics 06/04
[8]Accessed at

from the air, space, and ground, along with computer generated models, to observe climate change. It postulates that since the mid-20th century, climate change has been caused by anthropogenic activities. These are human-induced activities such as fossil fuel burning. These activities have resulted in an increase in global, land and ocean temperatures; increase in the recurrence and intensity of extreme weather such as wildfires, hurricanes, droughts, heat waves, floods, and precipitation; rise in the sea levels; cloud and vegetation cover change, and ice loss at the north and south poles and in mountain glaciers.[9] Changing precipitation patterns leading to droughts and shorter severe rainfall have led to food insecurity and has spurred conflict.[10] This is especially so among the pastoralists communities as resources become scarce and the dry season grazing land becomes less. Livestock herds became diminished as there is more competition over grazing lands.[11] The end result is a contest for resources and migration which can sometimes lead to increased conflict. The increased intensity of conflict in the Kenya Ethiopia border around the lower Omo River valley between the Turkana and Daasanach has been partially attributed to climate change.[12] Although the dispute has been long standing, locals fear that raids will be more frequent. While acknowledging that conflict is driven by a number of variables, a 2015 Human Rights Watch Report noted that climate change has altered traditional livestock raid patterns by increasing the frequency and intensity.[13] It has a multiplier effect on perennial factors such as state security, proliferation of arms, and developments in neighbouring countries.

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https://climate.nasa.gov/global-warming-vs-climate-change/#what_is_climate_change on 8th November 2022

[9] Szira, Z., & Alghamdi, H. The Achievements Of The Kyoto Protocol. *PaKSoM 2020*, 175.

[10] Castro de la Mata, Tim Benton and others, 'Food security and health in a changing environment'

[11] Philip Obaigwa Sagero, 'Assessment of past and future climate change as projected by regional climate models and likely impacts over Kenya' (Doctoral dissertation, PhD Thesis] (2019)

[12] Thomas Temesgen and Berisso Taddesse, 'Pastoral Conflict, Emerging Trends and Environmental Stress in Nyangatom, Southern Ethiopia' Ethiopian Journal of the Social Sciences and Humanities, (2020) 16(2), 111-132.

[13] Available at *https://www.hrw.org/report/2015/10/15/there-no-time-left/climate-change-environmental-threats-and-human-rights-turkana* accessed on 8th November 2022

It serves to amplify threats and risks to peace and development. In its Worldwide Threat Assessment brief, a 2018 U.S National Intelligence Council report warned that global warming, biodiversity loss, increased pollution and decreased water supply are likely to fuel social and economic unrest.[14] The Shalom Centre for Resolution and Conflict Resolution notes that it is becoming harder to mediate the conflicts between the two communities.[15]

To counter this, concerted effort to lower global warming needs to be undertaken. The IPCC in 2018 published a finding that reducing global warming to 1.5°C will positively benefit biodiversity and human beings.[16] According to the UN, the global average temperature from 1880 to 2012, rose by 0.85°C. As sea level rises, the amount of snow and ice have decreased as large water bodies warm up.[17] The average sea level increased by 19 cm between 1901 and 2010, as oceans expanded due to the warming and melting of ice. Glaciers are melting at an alarming rate, and the effects of decreased water supply in the drier months will affect future generations.[18] These occurrences need to be at least halted and ultimately reversed so as to ameliorate climate change's adverse effects.

3.0 The Nature of Climate Change Disputes

A dispute is basically a disagreement. The ICC taskforce has described a climate change related dispute as *"any dispute arising out of or in relation to the effect of climate change and climate change policy, the United Nations Framework Convention on Climate Change ("UNFCCC") and the Paris Agreement".*[19] As discussed, climate change effects are far reaching and

[14] Available at https://www.dni.gov/files/documents/Newsroom/Testimonies/2018-ATA---Unclassified-SSCI.pdf accessed on 8th November 2022

[15] Available at https://shalomconflictcenter.org/briefing-paper-no-2-an-analysis-of-turkana-dassenach-conflict/ accessed on 8th November 2022

[16] Rex Chidera, 'Climate change, its palpable impacts in Sub-Saharan Africa and the measures to be taken'

[17] Available at https://www.un.org/en/global-issues/climate-change accessed on 8th November 2022

[18] Ibid note 157

[19] Accessed at *Resolving Climate Change Related Disputes through Arbitration and ADR* on 8th November 2022.

correspondingly some climate change disputes transcend the constraints of contracts such as the doctrine of privity of contract.[20] They in effect become transnational and matters to be addressed through such forums as the UN. There is also the fact that climate change has the potential to adversely affect human rights which makes limiting such disputes to a two-party affair virtually impossible.[21] Government mega projects either as interventions to limit the effects of climate change or to spur economic development have the potential of causing climate change thereby affecting millions of people even outside the borders of the given state. A good example is Ethiopia's Grand Ethiopian Renaissance Dam (GERD) dispute between South Sudan, Sudan, Ethiopia and Egypt which had to be mediated by the US.[22]

The simplest form of disputes in climate change would be based on frustration and non- performance of contractual obligations due the effects of climate change.[23] This occurs where a party is unable or does not perform its obligations due to the effects of climate change such as flooding, forest fires, drought, tsunamis or tornadoes.[24] The dispute is straightforward and simple and will be resolved according to the agreement between the parties and/or the statutory regime governing the law of contract and arbitration in the given jurisdiction. If the agreement contains an ADR clause, such as for mediation, arbitration or adjudication then the mediator, arbitrator or adjudicator will make a determination. Climate change has the potential to particularly affect the speed of construction projects in the construction industry, including power transmission, water dams, oil and gas, and road

[20] Jakko Salminen, Mikko Rajavuori, Viljanen and others, Greenhouse Gas Emissions in Global Value Chains: Governance, Regulation and Liability (2022) *Copenhagen Business School, CBS LAW Research Paper*, (22-03).
[21] Giada Giacomini, 'Indigenous Peoples in International Law and Governance. In Indigenous Peoples and Climate Justice' (2022) 151-225
[22] Tawfik Amer, 'Revisiting hydro-hegemony from a benefitsharing perspective: the case of the Grand Ethiopian Renaissance Dam' (No. 5/2015). Discussion Paper.
[23] Daniel Farber, 'Basic compensation for victims of climate change' (2007). *University of Pennsylvania law review* 1605-1656.
[24] Craig Brown and Sara Seck, 'Insurance law principles in an international context: Compensating losses caused by climate change' (2012) Alberta *Law Review 50*, 541.

construction.[25] Contracts for these projects usually contain a dispute resolution clause, with disputes arising from the sectors historically generating the largest number of ICC arbitration referrals.[26] The determiner can harness the use of technology to make the process more seamless. This can be done through the application of e-briefs, electronic submissions, video conferencing, Artificial Intelligence (AI), email communication, electronic signatures and e-filling.[27] The ICC has developed a manual on how to resolve disputes related to climate change using ADR including arbitration; which integrate the use of information technology.[28] The gains of adopting technology in climate change dispute resolution cannot be gainsaid.

4.0 Transnational Climate Change Disputes

As discussed earlier, climate change and human rights are very closely related.[29] The effects of climate change tend to diminish the enjoyment of fundamental freedoms and human rights including social economic rights. As a result, disputes are likely to arise between authorities and citizens with regard to provision and accessibility of such rights such as sanitation in case of flooding, food in times of drought and search and rescue services when forest fires break out.[30] This is exacerbated by the recognition that climate change has varying global impacts, the effects are felt more in the global

[25]Roberto Schaeffer, Alexandre Szklo and others, 'Energy sector vulnerability to climate change: A review. Energy' (2012) 1-12.

[26] Thi Hoa and Hoang Tu Linh, T, 'Alternative Dispute Resolution and the Application of the Multitiered Dispute Resolution Clause in the International Construction Sector' (2012) Journal of Legal Affairs and Dispute Resolution in Engineering and Construction, 15(1), 04522049.

[27] Kariuki Muigua and Jeffah Ombati, 'Achieving expeditious Justice: Harnessing Technology for Cost Effective International Commercial Arbitral Proceedings' (2018)

[28]Available at *https://iccwbo.org/publication/icc-arbitration-and-adr-commission-report-on-resolving-climate-change-related-disputes-through-arbitration-and-adr/* last accessed on 8th November 2022

[29] Marion Suiseeya, Laura Zanotti, L and Kate Haapala, 'Navigating the spaces between human rights and justice: cultivating Indigenous representation in global environmental governance' (2022) *The Journal of Peasant Studies* 604-628.

[30] Dennis Mutama Masika, George Oduol and Edna Kowenje, 'Indigenous Knowledge and Practices for Sustainable Water Resources Management: A Case of Luo and Banyala in Kenya. In From Traditional to Modern African Water Management' (2022) 179-193

south. These regions with fewer resources double as low-income countries with the least capacities to prevent and mitigate for the impacts of climate change[31]. In effect, the poorest and most vulnerable people bear the brunt of climate change despite contributing a minimal proportion to the crisis. Their populations have more challenges in accessing basic needs such as food, water, health and security. This has in some instances led to conflict. Of the 25 countries deemed most susceptible to climate change, 14 are mired in conflict[32]. This is because the adverse effects of climate change tend to make existing dismal social, economic and environmental factors worse.[33]

Therefore, disputes arise between nations on the apportionment of liability, who pays for the cost of mitigation and rehabilitation and also who should curb pollution more. These disputes are dealt with at the UN through such agreements as the Paris agreement.[34] In fact one of the purposes of the ICC working group on arbitration of climate change disputes was to find ways of arbitrating "*contracts relating to the……. mitigation or adaptation in line with the Paris Agreement commitments* and contracts related to "*change or related environmental disputes, potentially involving impacted groups or populations."*

5.0 Climate Change Dispute Resolution Mechanisms

The choice of the mechanism applied to the resolution of climate change disputes depends on the legal and institutional frameworks available in the jurisdiction and the nature of the dispute. Most climate change disputes are currently being resolved through litigation in national courts with cases going all the way to the supreme courts and apex courts of the countries[35]. Such cases include the *Urgenda* case,[36]where an NGO successfully sued the

[31] Climate change 2022: Impacts, adaptation and vulnerability. *IPCC Sixth Assessment Report https://www.ipcc.ch/report/ar6/wg2/* accessed 20/11/2022

[32] *https://www.icrc.org/en/document/climate-change-and-conflict*

[33] Ibid pg 44

[34] Grubb, Ml. "Seeking fair weather: ethics and the international debate on climate change." *International affairs* 71.3 (1995): 463-496.

[35] Mark C. & Stebbing H. Climate-related disputes: Adaptation and innovation (2018).

[36] Urgenda Foundation (on behalf of 886 individuals) v The State of the Netherlands (Ministry of Infrastructure and the Environment), First instance decision, HA ZA

Netherlands Government over laxity in implementing climate change mitigation policies and the *Lliuya v RWE AG* case,[37] where a Peruvian farmer is suing a German power utility company over its action in producing power in Germany which purportedly led to melting of ice glaciers in Peru.[38] The fact that the case survived the first preliminary hurdles in German courts is a testament to the global nature of climate change disputes.[39]

The other forum for climate change dispute resolution is the United Nations bodies such as the general assembly. Disputes are also resolved through the various summits organised and held by the United Nations State parties on climate change. In these summits aggrieved state parties are able to present their grievances and agreements reached.[40] An example is the United Nations climate summit held in Copenhagen in 2009, where rich nations made a pledge to contribute US$100 billion a year to less wealthy nations by 2020, to help them adapt to climate change and mitigate the adverse effects of climate change.[41]

ADR mechanisms such as arbitration are slowly also being adopted in resolving climate change disputes.[42] Article 14 of the UNFCCC on the settlement of disputes provides that in a case of a dispute between parties to

13-1396, C/09/456689, ECLI:NL:RBDHA:2015:7145, ILDC 2456 (NL 2015), 24th June 2015, Netherlands; The Hague; District Court. ECLI:NL:RBDHA:2015:7145

[37] Saul Ananias Luciano Lliuya v RWE AG, 2015

[38] The Norton fulbright international arbitration report 2018 available at *https://www.nortonrosefulbright.com/-/media/files/nrf/nrfweb/imported/international-arbitration-review---issue-11.pdf?revision=f23f1aee-4947-4743-86a2-b9b74ed6e191&revision=5248422353367387904* accessed 0n 8th November 2022.

[39] Thornton, F. (2021). Of harm, culprits and rectification: Obtaining corrective justice for climate change displacement. *Transnational Environmental Law*, *10*(1), 13-33.

[40] Bailey, S. D., Bailey, L., & Daws, S. (1995). *The United Nations: A concise political guide*. Rowman & Littlefield.

[41] Joycelyn, T. (The Guardian). The broken $100-billion promise of climate finance — and how to fix it. (2021).

[42] Ng, I. (2022). Beyond the Litigation Narrative: The Place and Roles of ADR in Climate Change Disputes. *Asian Dispute Review*, *24*(1).

the convention, a party may refer the dispute to arbitration.[43] However, the article requires the conference of parties to adopt procedures to be used in the annex mediation which has not yet been done.[44] The potential for use of ADR in climate change dispute resolution is best illustrated by the fact that sectors that are impacted or impact climate change accounted for around 70% of all new ICC arbitration cases in 2018. The construction, engineering and energy sectors were responsible for 40% of these.[45]

The UK global law firm of Norton Rose Fulbright has identified some areas of opportunity for application of ADR techniques, especially arbitration. These include: disputes pertaining to changing climate-related policy or mandating conduct; cases brought to seek financial redress for damages associated with the effects of climate change; contractual disputes arising out of the industry transitions; contractual disputes resulting from climate-related weather events; disputes between foreign investors and host state and; disputes between states and disputes between other transnational actors.[46]As more businesses go green, financial investment will be required to fund the transitions. This will inevitably lead to increased disputes between the actors in the field. This is in part due to a rise in the number of transactions. For instance, it is estimated that in order for businesses in the energy sector to achieve net zero emissions by 2030, approximately USD $4 trillion will be required in annual clean energy investment.[47] A percentage of these will invariably result in some form of dispute. A high proportion of disputes administered by arbitration institutions involve this sector. More green technology companies are also resorting to arbitration to resolve their

[43] Article 14. UNFCC available at *http://unfccc.int/resource/ccsites/zimbab/conven/text/art14.htm* accessed on 8th November 2022.
[44] Resolving climate change disputes through arbitration. Outlaw analysis (2021).
[45] Thomas, R. S. (2022). Resolving Climate Change Disputes through Arbitration: The ICC Perspective
[46] Available at *https://www.nortonrosefulbright.com/en/knowledge/publications/9dd6b170/what-are-climate-change-and-sustainability-disputes* accessed on 8th November 2022
[47] Glemarec, Y. (2022). How to ensure that investment in new climate solutions is sufficient to avert catastrophic climate change. In Handbook of International Climate Finance (pp. 445-474). Edward Elgar Publishing.

disputes.[48] The value of arbitration disputes in the energy sector can be best illustrated by the case of a Columbian utility company, Empresas Públicas de Medellín (EPM), which has filed a claim against the Spanish insurance company Mapfre with the Arbitration Court of the Medellín Chamber of Commerce (MCC) after the collapse of a hydroelectric dam that caused a severe flood seeking USD $1.6 billion in compensation and damages.[49] The potential for use of ADR in climate change dispute resolution is therefore exponential.

6.0 Climate Change Dispute Resolution Frameworks

6.1 Kenyan Context

Kenya has been at the forefront in Africa in trying to manage climate change and mitigate its effects.[50]It was one of the first countries in Africa to enact a comprehensive law and policy to guide national response to climate change. It has developed the National Climate Change Response Strategy (2018-2022)[51], and the National Climate Change Action Plan (NCCAP 2015-2030)[52] and it also enacted the Climate Change Act 2016[53] which established the Climate Change Council. The framework for resolution of climate change disputes can be found at Article 42, and 70 of the Constitution of Kenya 2010. Under Article 42 every person is guaranteed a clean and healthy environment, Article 70 provides that if the right guaranteed under Article

[48] Desierto, D. A. (2022). Environmental Protection in International Investment Arbitration: From Defences to Counterclaims. In The Environment Through the Lens of International Courts and Tribunals (pp. 325-349). TMC Asser Press, The Hague.

[49] Londoño Vargas, A. N. (2021). La gestión de la comunicación en la crisis del túnel de desviación del proyecto Hidroeléctrico Ituango (Master's thesis, Escuela de Ciencias Sociales).

[50] Yanda, P. Z., & Mubaya, C. P. (2011). *Managing a changing climate in Africa: Local level vulnerabilities and adaptation experiences*. African Books Collective.

[51]Available at *http://www.environment.go.ke/wp-content/uploads/2020/03/NCCAP_2018-2022_ExecutiveSummary-Compressed-1.pdf* accessed on 8th November 2022

[52] Ibid

[53] Available at *http://www.environment.go.ke/wpcontent/uploads/2018/08/The_Kenya_Climate_Change_Act_2016.pdf* accessed on 8th November 2022

42 is threatened a person may apply to a court for redress at the land and environment court established under article 162(2). Section 23 of the climate change act also provides that a person may, pursuant to Article 70 of the Constitution, apply to the Environment and Land Court alleging that a person has acted in a manner that has or is likely to adversely affect efforts towards mitigation and adaptation to the effects of climate change. These provisions seem to be pointing at litigation as the first port of call for resolution of climate change disputes. The cases of *Cortec Mining Kenya Limited v Cabinet Secretary, Ministry Of Mining & Attorney General* [54] and *KM & 9 Others v Attorney General & 7 Others*[55] are illustrative of parties using the Environment and Land court in the first instance. The Environmental Management and Coordination Act (EMCA) also established the National Environment Tribunal with the jurisdiction to hear and determine appeals from the National Environment Management Authority on issuance, denial, or revocation of environmental impact assessment licenses.[56] It also has jurisdiction to resolve disputes arising out of forest conservation, management, utilization Forest Conservation and Management Act.[57] Like the Environment and Land Court, the tribunal falls under the ambit of the judiciary. The judiciary gazetted the practice directions on electronic case management on 24th March 2020 vide Kenya Gazette Notice No. 2357. They provided for virtual hearings, use of email communication between the parties and the court and also for electronic service. The system also allows for e-filing and e-payments. Rulings and judgements are also delivered virtually with links sent to the litigants via email. This is convenient and saves costs for the parties involved. It enhances transparency and accountability.

The application of ADR in resolving climate change disputes in Kenya is anchored in law. The Environment and Land Court Act, states that if an ADR mechanism is a condition precedent to any proceedings before the Court, the

[54] Cortec Mining Kenya Limited v Cabinet Secretary Ministry of Mining & 9 others [2017] eKLR.
[55]KM & 9 others v Attorney General & 7 others[2020] eKLR
[56] Environmental Management and Co-ordination Act Act No. 8 of 1999, Section 129
[57]Forest Conservation and Management Act 2016, Section 34

Court shall stay proceedings until such condition is fulfilled.[58] This is in tandem with the Constitution which requires the judiciary to promote all forms of ADR including mediation, traditional dispute resolution, reconciliation, and arbitration while exercising their judicial function.[59] In addition, mediation has been successfully utilised in projects in Kenya. For example, in Olkaria IV, when the Kenya Electricity Generating Company (KenGen) needed the land to expand geothermal production, the government and the occupying community agreed to negotiate.[60]The community elected representatives which negotiated a relocation and compensation package to allow the project to take off. The constitution also provides that any treaty or convention ratified by Kenya shall form part of the law of Kenya.[61] Therefore Bilateral Trade Investments (BTI's) entered into by Kenya with arbitration clauses can be determined by an arbitration tribunal.

For example clause 53 of the model production sharing contract between Kenya and oil contractors provides that a dispute can be resolved through arbitration in accordance with UNCITRAL arbitration rules adopted by the United Nations Commission on International Trade Law.[62] The decision of the arbitrator is final and binding. An example of a climate change dispute that was determined by an arbitration tribunal is the *Cortec Mining Kenya Limited v Republic of Kenya*[63] where an ICSID tribunal dismissed the claims of British investors in a mining project in Kenya whose licenses were suspended.[64] The agreement in this case included an arbitration clause. In a

[58] Ibid section 20(2)
[59] The Constitution of Kenya 2010, Article 159(2)(c)
[60] Muigua, K. Status of Participation of Women in Mediation: A case Study of Development Project Conflict in Olkaria IV, Kenya By: Lilian NS Kong'ani &. Typesetting by, 149.
[61] Ibid Article 2(6)
[62] Ngachu, C. N. (2022). Arbitration of oil and gas disputes in the upstream petroleum sector in Kenya: a critical appraisal (Doctoral dissertation, Strathmore University).
[63] ICSID Case No. ARB/15/29 available at http://icsidfiles.worldbank.org › DS11650_EnPDF 22 Oct 2018 — CORTEC MINING KENYA LIM
[64] Mohamadieh, K., & Uribe, D. (2016). The rise of investor-state dispute settlement in the extractive sectors: Challenges and considerations for African countries (No. 65). Research Paper

decision dated 19 March 2021, an ICSID ad hoc Annulment Committee refused to annul the determination of the arbitration tribunal.[65]

According to its website, the ICSID provides comprehensive services and technology for virtual hearings in its dispute resolutions such as in arbitrations, mediations and fact-finding proceedings. They also have a dedicated hearings team that works with parties and tribunals prior to the hearing to discuss hardware requirements and test-run the video-conferencing software. The institute also offers a variety of state-of-the-art video conferencing platforms with high-definition audio and video, real-time document display, and virtual chat functions that allow participants to communicate seamlessly.[66]

6.2 International Context

Climate change and its effects became a global concern in the 1960's.[67] In 1972, the first United Nations Conference on the environment was held in Stockholm. This Conference resulted in the Stockholm declaration, the Action Plan for the Human Environment and the creation of the United Nations Environment Programme (UNEP). [68] The outcome of this conference only led to broad and aspirational environmental policy goals and objectives rather than a detailed normative position.[69] However, it set the ground for future conferences and conventions such as the 1992 Conference that led to the establishment of the United Nations Framework Convention

[65]Available at *https://jusmundi.com/en/document/decision/en-cortec-mining-kenya-limited-cortec-pty-limited-and-stirling-capital-limited-v-republic-of-kenya-decision-on-annulment-friday-19th-march-2021* accessed on 8th November 2022

[66] Zekos, G. I. (2022). Courts and Arbitration Advancements. In Advanced Artificial Intelligence and Robo-Justice (pp. 285-320). Springer, Cham.

[67] Weart, S. R. (2010). The idea of anthropogenic global climate change in the 20th century. *Wiley Interdisciplinary Reviews: Climate Change*, *1*(1), 67-81.

[68] Kumar, R. (2020). The united nations and global environmental governance. *Strategic Analysis*, *44*(5), 479-489.

[69] Nyekwere, E. H., Okogbule, I., & Agwor, D. O. (2022). Understanding the Principles of International Environmental Law and Their Reflections in International Environmental Treaties and Non-Binding Soft Law Instruments. JL Pol'y & Globalization, 123, 73.

on Climate Change (UNFCCC) treaty which was ratified by 154 countries.[70] The UNFCCC aims at limiting dangerous human interference on the climate by in part stabilizing greenhouse emissions. It reaffirmed and built upon the Stockholm Declaration and has been hailed as a major environmental legal landmark.[71] The treaty has economic and development implications between state parties capable of fostering disputes.[72] It contains declarations on legal rights of nations and obligations bearing on environment and development.[73] The UNFCCC has near universal membership with 197 contracting states.[74] Next was the Kyoto Protocol in 1995 which legally binds developed state parties to emission reduction targets.[75] Next followed the Conference of Parties Agreements (COP) all the way from COP 1, to COP 27 held at Sharm el-Sheikh, Egypt in November 2022.[76] The conference's aim is to come up with inclusive, rules-based and substantive science-backed outcomes that commensurate with the challenges.[77] States make agreements and issue pledges as well as commitments on different aspects of climate change mitigation and adaptation such as financing.

[70] Orlove, B. (2022). The Concept of Adaptation. Annual Review of Environment and Resources, 47, 535-581.

[71] Petersmann, M. C. (2022). When Environmental Protection and Human Rights Collide (Vol. 173). Cambridge University Press.

[72] Addaney, M.Williams, E. L. (2022). Interrogating the 'science of climate accountability': Allocating responsibility for climate impacts within a frame of climate justice (Doctoral dissertation, UC Santa Barbara). (2023). Climate Change and the Realization of Human Rights in Africa. Promoting Efficiency in Jurisprudence and Constitutional Development in Africa, 207-237.

[73] Atapattu, S. (2022). Emergence of International Environmental Law: A Brief History from the Stockholm Conference to Agenda 2030. In The Environment Through the Lens of International Courts and Tribunals (pp. 1-33). TMC Asser Press, The Hague.

[74] Citaristi, I. (2022). United Nations Environment Programme—UNEP. In The Europa Directory of International Organizations 2022 (pp. 193-199). Routledge.

[75] Baldocchi, D., Ciais, P., Cramer, W., Ehleringer, J., Farquhar, G., Field, C. B., ... & Jarvis, P. G. (2022). The terrestrial carbon cycle: Implications for the Kyoto Protocol.

[76] EL-SHEIKH, S. H. A. R. M., & JUSTICE, C. ACT4EARTH.

[77] Belis, D., Joffe, P., Kerremans, B., & Qi, Y. (2015). China, the United States and the European Union: Multiple bilateralism and prospects for a new climate change diplomacy. *Carbon & Climate Law Review*, *9*(3), 203-218.

Notably, one of the most contentious issues within the climate change discourse is the finance of mitigation and adaptation measures.[78] The question of how to apportion liability for the damage occasioned by climate change, taking into account the disproportionate nature of its effects versus causation, has always plagued the international community.[79] The conversation has shifted to elements of equity, historical responsibility and per capita emissions.[80] This is informed by the fact that developed countries are the largest contributors to climate change due to centuries-long industrialization activities which have resulted in significant greenhouse gas emissions.[81]

However, developing countries with a much lower carbon footprint suffer the brunt of climate change adaptation and mitigation. As a result, these countries have been advocating for differentiated responsibilities based on common law and equity as well as the polluter pays principle.[82] A group of 54 African states supported by 24 other states including India proposed at the COP26 in Glasgow that developed countries should deliver a minimum of US $1.3 trillion per year in climate finance, to be split equally between climate mitigation and adaptation.[83] They claim that $100 billion committed per year previously at C0P 17 was not based on any meaningful scientific

[78] Labatt, S., & White, R. R. (2011). *Carbon finance: the financial implications of climate change*. John Wiley & Sons.
[79] Táíwò, O. O. (2022). Reconsidering reparations. Oxford University Press.
[80] Pellizoni, L., Leonardi, E., & Asara, V. (2022). Introduction: what is critical environmental politics?. In Handbook of Critical Environmental Politics (pp. 1-21). Edward Elgar Publishing.
[81] Raimi, D., Carley, S., & Konisky, D. (2022). Mapping county-level vulnerability to the energy transition in US fossil fuel communities. *Scientific Reports*, *12*(1), 1-10.
[82] Sobenes, E., & Devaney, J. (2022). The Principles of International Environmental Law Through the Lens of International Courts and Tribunals. In The Environment Through the Lens of International Courts and Tribunals (pp. 543-577). TMC Asser Press, The Hague.
[83] Ciplet, D., Falzon, D., Uri, I., Robinson, S. A., Weikmans, R., & Roberts, J. T. (2022). The unequal geographies of climate finance: Climate injustice and dependency in the world system. Political Geography, 99, 102769.

justification.[84] However, the developed countries have strongly opposed any mention of compensation and rehabilitation.[85]

7.0 Mechanism for International Climate Change Dispute Resolution

Article 14(1) of the UNFCCC, as transposed into subsequent COP Agreements provides that in the event of a dispute between the parties concerning the interpretation or application of the Paris Agreement, parties *"shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice."* The article incorporate ADR mechanisms in international climate change dispute resolution. Article 14(2) provides that a party may also declare that in case of a dispute concerning the interpretation or application of the Convention, it recognizes as compulsory submission of the dispute to the International Court of Justice, and/or arbitration. To date, 72 States have made such declarations recognising the compulsory jurisdiction of the Court.[86] The path therefore to be followed are: negotiation or any other peaceful means of dispute resolution followed by compulsory conciliation and finally recourse to the ICJ or arbitration. The caveat is that the conference of parties have to adopt the processes and procedures for the negotiation, arbitration which is yet to be done.

8.0 Role of Technology in Climate Change Dispute Resolution

As discussed, one of the main impediments to fruitful engagements on compensation for loss and damage due from developed countries to least developed ones is costing. Computer simulations can be used to obtain these figures. In 2022, researchers from the Potsdam Institute for Climate Impact Research used computer simulation models to develop new approaches which suggest carbon taxation can be used to reduce people living under

[84] Schwager, S. (2022). Allocating climate finance: a contributor's view. In the Handbook *of International Climate Finance* (pp. 318-332). Edward Elgar Publishing.

[85] Pill, M. (2022). Towards a funding mechanism for loss and damage from climate change impacts. *Climate Risk Management*, *35*, 100391.

[86] Lentz, C. State Withdrawals of Jurisdiction from an International Adjudicative Body. The Crisis of Multilateral Legal Order, 105-124.

poverty.[87] Computer modeling can also be used in damage valuation.[88]This will avoid misinformation and speculation, for example while withdrawing the United States from the Paris agreement, former President Donald Trump claimed that the agreement, would cost the United States $3 trillion in lost GDP and 6.5 million jobs saying the agreement would undermine the US economy, hamstring its workers while effectively decapitate the coal industry. These claims were subsequently termed by the scientific community as grossly inaccurate.[89] Developing countries have also claimed that $ 100 billion per year is inadequate and they require more than $ 1.3 trillion a year, computer models fed with initial conditions can give an accurate figure.

Further, Information Technology (IT) can greatly aid in dispute resolution. Harnessing the convenience and cost saving nature of features such as video conferencing, e-filing and email communication can go a long way in easing climate change dispute resolution.[90] Virtual sessions will decrease emissions that would have been caused by long distance travels. The Campaign for Greener Arbitrations is an initiative founded in 2019 by international arbitrator LuFcy Greenwood to reduce environmental impacts of international arbitration and carbon footprint. It encourages arbitral institutions to minimize the environmental footprint of arbitration. The tribunals should use environmentally friendly ink and toner while printing, use recycled or recyclable paper, eco-friendly printers, and minimize travel by utilizing information technology.[91]

[87] Nemet, G. F., Callaghan, M. W., Creutzig, F., Fuss, S., Hartmann, J., Hilaire, J., ... & Smith, P. (2018). Negative emissions—Part 3: Innovation and upscaling. Environmental Research Letters, 13(6), 063003.

[88] Farber, D. A. (2007). Modeling climate change and its impacts: law, policy, and science. Tex. L. Rev., 86, 1655.

[89] Factcheck Shows Trump's Climate Speech Was Full of Misleading Statements.(2017). Scientific American

[90] Meena, M. D., & Baplawat, A. (2022). Covid 19 And Judicial System–From A Pragmatic to Modern approach. Journal of Pharmaceutical Negative Results, 1079-1085.

[91] Laufer, H., & Stan, A. (2022). Environmental Sustainability Endeavours in International Arbitration: The Green Protocols. Rom. Arb. J., 16, 91.

AI also has applications in climate dispute resolution, once fed with the algorithms on dispute resolution together with past decisions on similar matters, it can predict outcomes of disputes saving the parties the costs incurred by a lengthy adversarial process.[92] However, the adoption of A.I should be with the caveat that the system can utilize defective algorithms and past biased decisions to make decisions with far reaching ramifications.[93]

9.0 Reforms

While the country and the world have made some strides in enhancing the use of technology in climate change dispute resolution, a lot more needs to be done. Firstly the laws on which climate change dispute resolution is anchored upon need to explicitly integrate the use of technology. Section 23 of the climate change act 2015, should be amended to include arbitration and ADR as the port of first call for dispute resolution and also resolution of disputes by harnessing technology. The amendment of the civil procedure rules to allow for electronic service was a step in the right direction. ADR training and regulatory institutions should also update their rules on electronic service. On a global scale, the state parties to the UNFCC should adopt the annexes to the Paris Agreement on dispute resolution.

10.0 Conclusion

International climate change disputes continue to be subjected to court processes which are plagued by lengthy and costly proceedings. However, notable national, regional and international ADR institutions have made strides by publishing handbooks, reports and guidelines on the use of ADR in climate change dispute resolution. As noted by the ICC report on resolving climate change related disputes, ADR mechanisms such as arbitration are uniquely positioned to accommodate and administer climate change related transition, adaptation and mitigation disputes. This is because these methods are already in use by different industries and businesses that are impacted by

[92] Sabo, I. C. (2022). A machine learning-based model for judgement results prediction and support in Brazilian Special Court? s conciliation hearings.

[93] Qadir, J., Islam, M. Q., & Al-Fuqaha, A. (2022). Toward accountable human-centered AI: rationale and promising directions. Journal of Information, Communication and Ethics in Society.

climate change. Thus, smart arbitration can play a substantial role in resolving climate change and sustainability-related disputes. Indeed, smart arbitration has the potential to become a key mechanism for the enforcement of environmental law and policy. They are also equally suited to address the cross-cutting nature of climate change disputes which involve aspects of human rights law, law of contract and insurance law. As long as ADR rises to the challenges ahead and incorporates technology, it will become the preferred method for resolving climate disputes.

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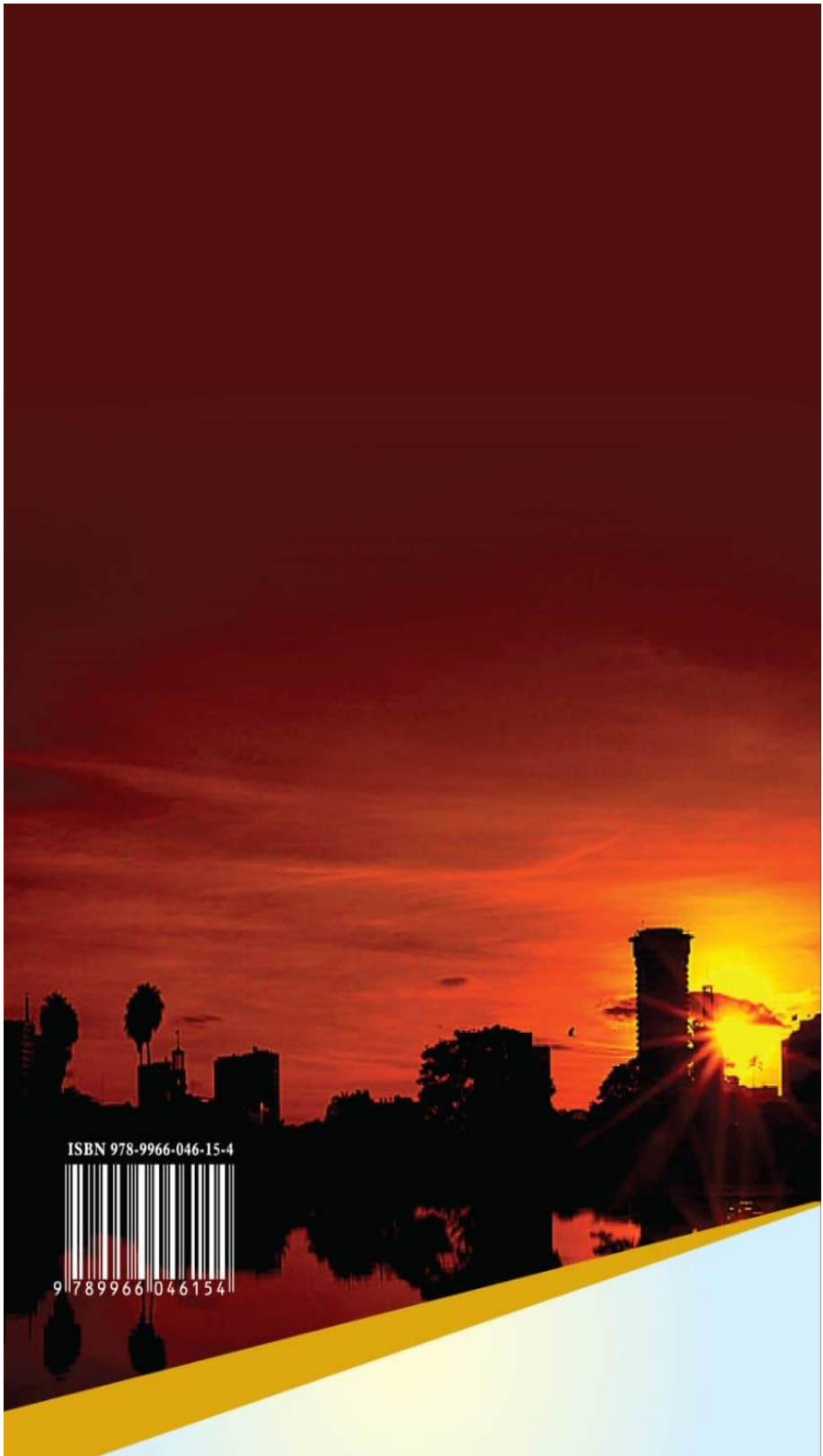

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