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Climate-Energy Sinks and Sources: Paris Agreement and Dynamic Federalism

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CLIMATE-ENERGY SINKS AND SOURCES: PARIS AGREEMENT & DYNAMIC FEDERALISM

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INTRODUCTION

Broad and rapid ratification of the Paris Agreement under the United Nations Framework Convention on Climate Change provides a path by which regions within nations can advance energy innovation and climate resilience. Federalism is underway in the form of dynamic governance within and among states.[1] This Article analyzes the multi-dimensional energy-climate governance approach that the global community seeks to carry out.

It is no small task to balance greenhouse gas sinks and sources by the middle of the century. Cities account for 70 percent of global greenhouse gas emissions.[2] The Compact of Mayors has inspired over 360 cities to commit to cutting their emissions 17 percent by 2030.[3] In addition to ramping up the capacity of communities large and small to

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1. *See*, *e.g.*, John H. Knox, *The United States, Environmental Agreements, And The Political Question Doctrine,* 40 N.C. J. INT'L L. & COM. REG. 933 (2015).

2. Gayathri Vaidyanathan, *How to Measure the Results of Paris Talks? It's a Work in Progress*, CLIMATEWIRE (Dec. 14, 2015), http://www.eenews.net/climatewire/2015/12/14/stories/1060029449 [http://perma.cc. 86MX-GYVR].

3. Laura Lee Dooley, *400 Cities Join Compact of Mayors Pledge to Cut Emissions*, WORLD RESOURCES INST. (Dec. 8, 2015), http://www.wri.org/content/400-cities-join-compact-mayors-pledge-cut-emissions [http://perma.cc/Y8QC-Z5V3].

reduce the sources of greenhouse gases, indigenous communities are core to initiatives that can sustain forests as sinks. This Article analyzes the Paris Agreement. It will consider the role that regions within nation state boundaries have played in launching climate leadership in the face of a substantial collective action challenge. Low lying cities and front line indigenous communities have begun rallying available resources towards energy innovation and climate adaptation. This Article concludes that cooperative federalism has expanded in the climate context, providing transboundary climate leadership and ongoing means of energy innovation and climate resilience engagement.

PARIS AGREEMENT: SUSTAINED ENGAGEMENT AND CLIMATE IMPLEMENTATION

The 2015 Paris Agreement provides tools to collectively ratchet up climate ambition and implementation. The Paris Agreement[4] and accompanying COP 21 Decision[5] together map collective climate engagement on such thorny elements as:

> **Mitigation** - reducing emissions fast enough to achieve the temperature goal
> **A transparency system and global stock-take** - accounting for climate action
> **Adaptation** - strengthening ability of countries to deal with climate impacts
> **Loss and damage** - strengthening ability to recover from climate impacts

4. Conference of the Parties' Twenty-first Session, U.N. Framework Convention on Climate Change, *Paris Agreement*, U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015) [hereinafter *Paris Agreement*]. The *Paris Agreement* went into effect on Nov. 4, 2016. *Id*.

5. Conference of the Parties' Twenty-first Session, U.N. Framework Convention on Climate Change, Adoption of the *Paris Agreement* in Decision 1 of the COP 21 Decisions, U.N. Doc. FCCC/CP/2015/10/Add.1 (Dec. 12, 2015) [hereinafter *COP 21 Decision*].

> **Support** - including finance, for nations to build clean, resilient futures.[6]

Key elements of the Paris Agreement include: submitting and implementing increasingly ambitious nationally determined contributions in five-year cycles.[7] The requisite funding and the facilitative nature of five-year review/stock taking cycles remain broad brush rather than clearly defined, yet a transparency framework is expected to help ratchet up implementation.[8] Parties have set a long-term trajectory through national climate action plans and are coordinating peaking emissions as soon as possible.[9] The Paris Agreement sets forth the principle that future national plans will be no less ambitious than existing ones. The 188 climate action plans submitted to date serve as a foundation for higher ambition.[10] At the core of the Agreement, parties will submit their updated plans, called Nationally Determined Contributions (NDCs), every five years in a process that seeks to ratchet up climate ambition.[11]

Increasing ambition is to occur through a two-stage process, recognizing that the current provisions do not add up to the agreed upon 2°C temperature goal let alone 1.5°C.[12] The global average temperature has already risen roughly 1°C (1.75°F) from pre-industrial levels. Vulnerable nations seeking to set 1.5°C (2.7°F) as a legally binding long term mitigation target did not succeed in requiring the global community to meet this scientific threshold but did manage to

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6. *Id*.; Press Release, UNFCCC, *Historic Paris Agreement on Climate Change: 195 Nations Set Path to Keep Temperature Rise Well Below 2 Degrees Celsius* (Dec. 12, 2015) (on file with author).

7. *See Paris Agreement*, Art. 14, *supra* note 4.

8. Meinhard Doelle, *The Paris Climate Agreement: Historic Breakthrough in Spite of Shortcomings*, DALEHOUSIE U. (Dec. 13, 2015), https://blogs.dal.ca/melaw/2015/12/13/the-paris-climate-agreement-historic-breakthrough-in-spite-of-shortcomings/.

9. *See* CAIT CLIMATE DATA EXPLORER, http://cait.wri.org/indc/ (last visited 2016). The World Resources Institute tracks Intended Nationally Determined Contributions (INDCs) of countries to better determine whether the world will achieve the long-term goals of the Paris Agreement.

10. *See* Press Release, UNFCCC, *supra* note 6.

11. *See id*.

12. *See id*.

gain broad consensus for its inclusion as a strongly stated aspirational goal.[13]

Until the Paris Agreement enters into force, an interim 2018 facilitative dialogue will take stock of collective country action.[14] This will occur under the accompanying COP 21 Decision to the Paris Agreement and should inform the nature and caliber of future commitments.[15] The global community must now set to work iteratively implementing and strengthening climate action.

SUSTAINABILITY PREAMBLE

The Paris Agreement Preamble embraces climate coordination in the broader global sustainability endeavor.[16] It does so by referencing the sustainable development goals and by specifically

> Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well

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13. *See* Camila Domonoske, *2 Degrees, $100 Billion: The World Climate Agreement, By the Numbers*, NAT'L PUB. RADIO (Dec. 12, 2015, 5:33 PM), http://www.npr.org/sections/thetwo-way/2015/12/12/459502597/2-degrees-100-billion-the-world-climate-agreement-by-the-numbers?utm_medium=RSS&utm_campaign=environment [http://perma.cc/HDN8-TTQE].

14. *See*, *e.g.*, GNelson, *CAN Position on the Facilitative Dialogue 2018*, CLIMATE ACTION NETWORK INT'L (Apr. 19, 2017, 7:27 AM), http://www.climatenetwork.org/publication/can-position-facilitative-dialogue-2018-april-2017 [http://perma.cc./VM7G-ECGN].

15. *See id.*

16. *See Paris Agreement, supra* note 4, at 1. The text of the Paris Agreement Preamble reads as follows:

> Welcoming the adoption of United Nations General Assembly resolution A/RES/70/1, 'Transforming our world: the 2030 Agenda for Sustainable Development,' in particular its goal 13, and the adoption of the Addis Ababa Action Agenda of the third International Conference on Financing for Development and the adoption of the Sendai Framework for Disaster Risk Reduction.

Id.

> as gender equality, empowerment of women and intergenerational equity.[17]

The preamble emphasizes the significant gap between the aggregate effect of parties' mitigation pledges and actually holding the increase in the global average temperature to well below 2°C let alone 1.5°C.

TAKING STOCK OF PARIS DIPLOMACY AND SUSTAINABILITY ENGAGEMENT

Significant elements that did not find landing zones in Paris include: compensation for loss and damages, reference to indigenous rights in operative areas of the agreement, and a call for curbing fossil-fuel extraction.[18] Finance and technology commitments may be more diffuse than those set forth in the UN Framework Convention on Climate Change (UNFCCC).[19] Strict prohibitions and substantive affirmative duties have been put aside in favor of engaging the global community in iterative reviews that can collectively meet long term reductions in global temperatures and facilitate climate adaptation/resilience.

Parties are legally bound to a transparency framework to track progress. They must communicate their increasingly ambitious nationally determined contributions. At the core of the Paris Agreement are five-year cycle reviews of each nationally determined contribution. While legally bound to communicate nationally determined contributions, parties are not legally bound to exact nationally determined contribution targets. Global stocktaking offers steppingstones for coordinated mitigation, adaptation, technology

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17. *Id*.

18. Personal observation of author who has been an IUCN Delegate to the climate talks and who can highlight the debates that do not garner sufficient consensus to be included in COP outcome documents.

19. *See Paris Agreement - Status of Ratification*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/paris_agreement/items/9485.php [*hereinafter* UNFCCC, *Status Agreement Tracker*]; *see also* United Nations General Assembly, *Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the Work of the Second Part of its Fifth Session*, U.N. Doc. A/AC.237/18 (Part II)/Add.1 (May 15, 1992). One hundred sixty-five countries ratified the UNFCCC. The convention entered into force March 21, 1994. *See id.*

sharing and support. By holding ongoing, five-year stocktakes[20] midway through the nationally determined contribution cycle, an upwardly ratcheting climate response must do the heavy lifting of keeping global warming well below 2°C let alone 1.5°C above pre-industrial levels.[21]

Atmospheric greenhouse gas concentrations may react more unpredictably to global temperature increases than negotiators anticipate. How climate feedbacks drive future climate change is not a highly granular mapping exercise yet. Generally speaking, in addition to small island nations, low lying main lands are increasingly front line, vulnerable communities – "Manhattan needs 1.5°C. So does Miami and so does Shanghai."[22] While broadening understanding of the gap between political will and requisite curbing of greenhouse gasses is translating into greater coordination. The gap remains vast. Parties have agreed to keep meeting to try to agree on how to mitigate, adapt, share environmentally and socially sound tech, integrate sustained support, etc. . . . Every five years, global stocktakes will review progress towards the long-term goal of keeping global temperature rise well below 2°C (3.6°F) and limiting warming to 1.5°C.[23] To this end, the international community is trying to mobilize $100 billion a year in climate finance for developing countries and has just agreed to link the Green Climate Fund (GCF) with the Technology Mechanism to ramp up environmentally and socially sound climate responses going forward.[24]

Tracking (1) the ways in which greenhouse gas reductions occur, (2) the quantity of reduction and (3) target dates by which reductions occur, combined with (4) sharing evolving best practices – together

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20. *See Paris Agreement,* Art. 14, *supra* note 4, at 18-19.

21. *See* Earth Negotiations Bulletin, *Summary of the Paris Climate Change Conference: 29 November – 13 December 2015*, 12 INT'L INST. FOR SUSTAINABLE DEV. 1 (2015) http://www.iisd.ca/download/pdf/enb12663e.pdf.

22. Suzanne Goldenberg, *Climate Change: Will '1.5 to Stay Alive' Deal be Enough to Save Seychelles?* THE GUARDIAN (Dec. 12, 2015), http://www.theguardian.com/environment/2015/dec/12/climate-change-seychelles-cop21-economy-collapse [http://perma.cc/Y37Y-PG8E].

23. *See Paris Agreement*, Art. 4, *supra* note 4, at 23.

24. *See*, *e.g.*, SZYMON MIKOLAJCZYK ET AL., LINKING THE CLEAN DEVELOPMENT MECHANISM WITH THE GREEN CLIMATE FUND: MODELS FOR SCALING UP MITIGATION ACTION 1 (Climate Focus et al. eds., 2016)

can achieve climate mitigation. It can also guide adaptation and resilience through facilitative sharing of best practices and support.

HIGH AMBITION RATCHETING 'AS SOON AS POSSIBLE' = INCREASING POLITICAL WILL

The inclusion of the 1.5°C mitigation goal resulted in part from efforts of the 43-country coalition - Climate Vulnerable Forum well as the crucial addition of Brazil, Canada, the EU and the US to the newly gathered High Ambition Coalition.[25] Clear long-term mitigation goals of 2°C and 1.5°C are to be reached through a binding but flexible hybrid approach that seeks to engage climate coordination. All parties contribute plans, report on progress towards meeting their plans in iterative international reviews, and strengthen their contributions in five-year cycles. The 12-page Paris Agreement sets forth goals, obligations, and general guidelines, while the 19-page COP 21 Decision details practical elements and reference modalities that need to be fleshed out in forthcoming climate talks through the new Ad Hoc Working Group on the Paris Agreement (APA).[26] The APA is developing recommendations for modalities, procedures, and guidelines.[27]

The hope that the Paris Agreement has infused into global dynamics is powerful. From a legal frame, the tools suited to reduce dangerous anthropogenic climate change are still being created. The Paris Agreement will be formally legally binding when it has been ratified by at least 55 countries representing 55 percent of global greenhouse gas emissions and enters into force.[28] Even if the Paris Agreement comes into effect by 2020, general terms are still far more prevalent than sharp, clearly focused details such as specific rights and obligations. Under the UNFCCC the parties have drafted a new

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25. *See* Matt McGrath, *COP21: US Joins 'High Ambition Coalition' for Climate Deal*, BBC NEWS (Dec. 10, 2015) http://www.bbc.com/news/science-environment-35057282 [http://perma.cc/A8Q2-N9VL].

26. *See Paris Agreement*, *supra* note 4; *see also COP 21 Decision, supra* note 5, at 1.

27. *See, e.g.*, *Bonn Climate Change Conference - May 2017*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/meetings/bonn_may_2017/meeting/10076.php.

28. *See Paris Agreement*, Art. 21, *supra* note 4, at 31.

framework agreement in need of a range of future substantive decisions to operationalize climate implementation.[29] To peak greenhouse gas emissions as soon as possible and balance sources and sinks in the second half of this century, long lasting broad participation needs to begin immediately.

FOREST SINKS + ECOSYSTEM-BASED MITIGATION & ADAPTATION (ARTICLE 5)

Nationally Determined Contributions can draw on the latest available UNFCCC and Intergovernmental Panel on Climate Change (IPCC) guidelines and methodologies and engage in ecosystem and biodiversity wise mitigation and adaptation decision-making that results in environmental and human integrity. Afforestation on degraded lands and wetlands can help balance greenhouse gas emissions and sinks. Facilitating environmentally and socially sound land use, forestry, agriculture best practices can contribute to rapidly decarbonizing the global economy by the middle of century.[30] In particular, land-use sectors including agriculture and forests generally account for 25 percent of global greenhouse gas emissions.[31] Deforestation of tropical forests, core carbon-sequestering natural systems, can curb up to a third of global greenhouse gas emissions.[32] The International Union for Conservation of Nature (IUCN) notes that comprehensive coverage of greenhouse gas sources and sinks from all major economic sectors prevents double counting of emission reductions. Further, it recognizes and supports the "current role and

29. *Preliminary Legal Assessment of the Paris Agreement*, LEGAL RESPONSE INITIATIVE (Dec. 14, 2015), http://legalresponseinitiative.org/preliminary-legal-assessment-of-the-paris-agreement/ [http://perma.cc/2Z74-FX8K].

30. *See* Goldenberg, *supra* note 22.

31. Brittany Patterson, *Trees Grow Taller in Climate Deal, but Financial Possibilities Shrink*, CLIMATEWIRE (Dec. 14, 2015), http://www.eenews.net/climatewire/2015/12/14/stories/1060029450 [http://perma.cc/RN2U-QRPU] (noting that further finance is needed for "Reducing Emissions from Deforestation and Forest Degradation, or REDD+, the U.N. program that can be used to reduce deforestation and land degradation").

32. *See id*.

future potential of the land sector and all terrestrial, marine and coastal ecosystems as effective natural sinks and reservoirs."[33]

The Paris Agreement did not retain earlier draft language on "reaching greenhouse gas emissions neutrality in the second half of the century," as a result of oil producer resistance – as a concession to OPEC states, final language leaves open some fossil fuels burning, as long overall emissions are absorbed by new forests and other sinks.[34] The final Article 5 states,

> In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.[35]

This signals that there is political will to facilitate offsetting emissions through forests sinks and other greenhouse gas reservoirs. Countries are encouraged to establish and strengthen policies to save remaining intact forests and to engage in state and non-state mobilization of support to help stop deforestation and support synergistic social integrity and nature based solutions. In one of the strongest recognitions of the importance of forests to date, reducing emissions from deforestation and forest degradation signals that sustainable forest stewardship can be a valuable investment. Conservation of existing and enhancement of new forests – as carbon

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33. ICUN POSITION ON UNFCCC NEGOTIATIONS IN 2015, INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE (2015), http://cmsdata.iucn.org/downloads/eng_iucn_2015_position_paper_for_unfccc___final.pdf.

34. Sewell Chan, *Key Points of the Paris Climate Pact*, N.Y. TIMES (Dec. 12, 2015), http://www.nytimes.com/interactive/projects/cp/climate/2015-paris-climate-talks/key-points-of-the-final-paris-climate-draft [http://perma.cc/4UTV-TKDW].

35. *Paris Agreement*, Art. 4, *supra* note 4, at 22.

stocks and forest communities – opens the door to joint mitigation and adaptation.[36]

SHORT TERM - NEXT STEPS

A pre-2020 ambition mechanism rests upon substantial support materializing for effective greenhouse gas mitigation and climate adaptation. Additional action before 2020 is essential to keeping temperature rise well below 2°C.[37] Participants at COP 21 lamented this mitigation gap and its corresponding adaptation gap. Interim action is included in the COP 21 Decision. Leading up to the Paris Agreement's entry into force, parties are called upon to implement past United Nations Framework Convention on Climate Change (UNFCCC) decisions and cancel emissions units issued therein.[38] Importantly, parties are called upon to ensure environmental integrity and transparently report internationally transferred mitigation outcomes, without seeking to double count any emission reductions.[39] The global community continues to call for an all hands on deck approach from developed countries and anyone else with the capacity to offer scaled up climate finance to support interim mitigation and adaptation.[40]

The new linkage between support and environmentally sound technology sharing mechanisms can go a long way to actualizing climate mitigation and adaptation implementation.

The universal nature of the Paris Agreement differs substantially from the 1997 Kyoto Protocol to the UNFCCC that required emissions reductions by developed countries listed in one annex while requesting

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36. *See Paris Agreement*, Art. 5, *supra* note 4, at 23.

37. *See*, *e.g.*, FIFTH ASSESSMENT REPORT (AR5), INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (Apr. 9, 2008), https://www.ipcc.ch/report/ar5/ [http://perma.cc/4RTP-6AEH].

38. *See COP 21 Decision*, *supra* note 5, at 15.

39. *See id.*

40. International Centre for Trade and Sustainable Development (ICTSD), BioRes Paris Update #3 *'The End of a Journey, the Start of Another' as Paris Agreement Adopted*, BIORES (Dec. 13, 2015), http://www.ictsd.org/bridges-news/biores/news/biores-paris-update-3-"the-end-of-a-journey-the-start-of-another"-as-paris [http://perma.cc/Z7UW-7R8R].

voluntary efforts by developing countries listed in a second annex.[41] In contrast to Kyoto, the Paris Agreement relies on the political will of respective parties to collectively offer ambitious climate action plans.[42] This bottom up process that emerged in Copenhagen (2009)[43] was formalized in Cancun (2010)[44] and has seen the submission of a range of voluntary targets by countries.[45] Both the type and levels of discretion have been left to Parties, in contrast to the Kyoto Protocol ("top down") approach. The Kyoto Protocol involved greater rigor but has seen a shrinking participation rate.[46] As Intended Nationally Determined Contributions (INDCs) are announced, the open question remains whether they will add up to the scientifically required climate response necessary to avert catastrophic levels of climate change.

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41. *See Kyoto Protocol to the United Nations Framework Convention on Climate Change*, U.N. Doc. FCCC/CP1997/L.7/Add.1 (Dec. 10, 1997), reprinted in 37 I.L.M. 22 (1998); *see also* Elizabeth Burleson*, Making Sand Castles as the Tide Comes In: Legal Aspects of Climate Justice*, 2 GEO. WASH. J. OF ENERGY & ENVTL. L. 42 (2011) (in partnership with the Environmental Law Institute) [hereinafter Burleson, *Legal Aspects of Climate Justice*]; *see also* Elizabeth Burleson, *Energy Revolution and Disaster Response in the Face of Climate Change*, 22 VILL. ENVTL. L. J. 169 (2011) [hereinafter Burleson, *Energy Revolution*]; *see also* Elizabeth Burleson, *Climate Change Consensus: Emerging International Law,* 34 WM. & MARY ENVTL. L. & POL'Y REV. 543 (2010) [hereinafter Burleson, *Climate Change Consensus*]; *see also* Elizabeth Burleson, *A Climate of Extremes: Transboundary Conflict Resolution*, 32 VT. L. REV. 477 (2008) [hereinafter Burleson, *A Climate of Extremes*]; *see also* Elizabeth Burleson, *Multilateral Climate Change Mitigation*, 41 U. OF S.F. L. REV. 373 (2007).

42. *See Kyoto Protocol*, *supra* note 41.

43. *See* UNFCCC, *Conference of the Parties, 15th Sess., Report of the conference: Copenhagen Accord, Copenhagen, Den., Dec. 7-19, 2009*, U.N. DOC. FCCC/CP/2009/L.7 (Mar. 30, 2010).

44. *See* UNFCCC, *Draft Resolution, Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention, Cancun, Mex. Nov. 29-Dec.10, 2010*, U.N. DOC. FCCC/AWGLGA/2010/6.7 (Dec. 10, 2010).

45. *See NDC Registry,* UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/focus/ndc_registry/items/9433.php.

46. *Paris Agreement*, *supra* note 4, at 2. The Paris Agreement Preamble highlights the continued importance of UNFCCC and Kyoto Protocol leading up to Paris Agreement Implementation "[s]tressing the urgency of accelerating the implementation of the Convention and its Kyoto Protocol in order to enhance pre-2020 ambition." *Id*.

Currently, climate plans representing 95 percent of global greenhouse gas emissions have achieved broad participation.[47] It remains to be seen whether this broad participation has come at the expense of capping global emissions at a safe threshold. Collective efforts will still result in an approximately 3°C temperature increase.[48] Currently insufficient ambition leaves a substantial post-2020 gap in meeting the temperature targets of 2°C let alone 1.5°C. Initial commitments are still further out than requisite for curbing dangerous climate change. Short-term support can bring down this climate curve and ease the long-term burden. Heavy lifting early on can be effective if parties take seriously that plans should involve at least a base unconditional commitment and optimize all available best practices as well as coordinating ramping up new best practices in a range of climate responses. Instead, whole sectors are still left off the table.[49] Short-term climate forcers as well as aviation and shipping remain areas where substantial ambition could be ratcheted up.

NON-SECTORIAL APPROACH

While 195 countries agreed to commit nearly all of the world's countries to cut greenhouse gas emissions, substantial work remains to be carried out. For instance, sectorial emissions from shipping and aviation represent 5 percent of humanity's greenhouse gas emissions but it remains an open question whether emissions should be tied to registration countries or the countries in which emissions actually

47. *See NDC Registry*, *supra* note 45, at 1.

48. Fiona Harvey, *World on Track for 3C of Warming Under Current Global Climate Pledges, Warns UN*, THE GUARDIAN (Nov. 3, 2016), https://www.theguardian.com/environment/2016/nov/03/world-on-track-for-3c-of-warming-under-current-global-climate-pledges-warns-un [http://perma.cc/D5TW-VDS4] (noting that "Current climate commitments are insufficient to reduce emissions by the amounts needed to avoid dangerous levels of global warming, says Unep report").

49. *See, e.g., Reducing Emissions from Aviation*, EUROPEAN COMMISSION, http://ec.europa.eu/clima/policies/transport/aviation/index_en.htm [http://perma.cc/LNR2-NBZM]; *see also The EU Emissions Trading System (EU ETS)*, EUROPEAN COMMISSION, https://ec.europa.eu/clima/policies/ets/index_en.htm [http://perma.cc/929D-9CXA].

occur.[50] The Marshall Islands is one of the top three ship registries in the world, but is generally not the location where more than a minute fraction of greenhouse gases occurs.[51] Regulating international trade and business transactions raises challenging questions such as where to account for rapidly increasing aviation and shipping emissions. Tough questions still need to be sorted out in future climate coordinating efforts. What is said and what is left unsaid remains important in differentiating responsibilities and following through with an effective climate response.

MARKET MECHANISMS (COOPERATIVE MECHANISM) (ARTICLE 6)

The ambitious goals of the Agreement, five-year review cycles, and transparency framework were heralded as significant signals to markets to encourage investments to be redirected to low greenhouse gas and climate-resilient sustainable development.[52]

The Paris Agreement signals that markets are a viable implementation approach for countries to carry out climate plans. The Agreement introduces the new term, "internationally transferred mitigation outcomes" (ITMOs),[53] to describe carbon currency and clearly states that a mechanism for ITMOs should be designed to mitigate rather than merely offset emissions. The Paris Agreement avoids reference to terminology of market-based approaches as a concession to countries against them. It also details that some of the reasons why market mechanisms are not favored need to be clearly avoided. Countries can transfer units of mitigation outcome to implement their Nationally Determined Contributions in a manner that ensures the avoidance of double counting. The caliber of emissions trading will depend on how robust the accounting guidelines for

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50. *See* Benjamin Hulac, *Rules for Ship, Airplane Emissions Left out of Paris Deal*, CLIMATEWIRE (Dec. 14, 2015), http://www.eenews.net/climatewire/2015/12/14/stories/1060029447 [http://perma.cc/7YPP-UCXK].

51. S*ee*, *e.g.*, *Marshall Islands*, OFFICIAL GUIDE TO SHIP & YACHT REGISTRIES, https://www.guidetoshipregistries.com/shipregistries-country/marshall-islands [http://perma.cc/M9QU-CZQW].

52. *See* Larry Light, *Why U.S. Businesses Said "Stay in the Paris Accord*," CBS NEWS MONEYWATCH (June 2, 2017, 5:30 AM) http://www.cbsnews.com/news/paris-climate-agreement-us-corporate-support/ [http://perma.cc/XDB8-TABE].

53. *See Paris Agreement*, Art. 6.3, *supra* note 4, at 24.

Nationally Determined Contributions that are being developed prove to be in their implementation. The Paris Agreement establishes a new mechanism to succeed the Kyoto Protocol's Clean Development Mechanism with rules to be adopted at the first meeting of parties after the Paris Agreement enters into force.[54] The Clean Development Mechanism and other market mechanisms have been strongly criticized for not addressing environmental integrity and governance.[55] Importantly, the Conference of the Parties to the UNFCCC serving as the meeting of the Parties to the Paris Agreement will be tasked with designing and implementing robust safeguards and learning from the design successes and problems of emissions trading to date. The Paris Agreement does not establish a cap-and-trade program given the lack of a legally binding emission reduction cap and the voluntary nature of Nationally Determined Contributions design. The Paris Agreement welcomes carbon market use to implement national climate plans without mandating participation or an overall emission cap.[56]

United Nations Secretary General Ban Ki-moon notes that, parties:

> [H]ave agreed to binding, robust, transparent rules of the road to ensure that all countries do what they have agreed across a range of issues. . . . With these elements in place, markets now have the clear signal they need to unleash the full force of human ingenuity and scale up investments that will generate low-emissions, resilient growth . . . .[57]

It remains an open question how implementation will remain sustainable and seriously avoid hot spots.[58]

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54. *See id.*

55. *See* ICSTD, *supra* note 40.

56. *See Paris Agreement*, Art. 6.3, *supra* note 4.

57. *UN Chief Hails 'Monumental' COP21 Climate Deal,* CLIMATE ACTION (Dec. 14, 2015), http://www.climateactionprogramme.org/news/un_chief_hails_new_cop21_climate_deal?utm_source=Feeds&utm_campaign=News&utm_medium=rss [http://perma.cc/L4YD-JAX6].

58. *See Paris Agreement*, Art. 6.4(d), *supra* note 4, at 24.

ADAPTATION (ARTICLE 7)

The Paris Agreement recognizes the need for adaptation efforts to be gender sensitive[59] in establishing the adaptation goal of "enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change" that binds countries to engage with one another on adaptation planning as each party submits/updates cycles of accelerated adaptation implementation communications through five year stocktaking reviews.[60] The global community still needs to flesh out how support will flow to developing countries for adaptation action in a clear and predictable manner.

LOSS AND DAMAGE (ARTICLE 8)[61]

Some of the most difficult sticking points in the Paris climate talks revolved around the reality that the poorest countries that have contributed the least to cause climate change face the most likely worst challenges as front line climate communities.[62] In recognition of this, for the first time, developed countries in Paris agreed to include the following Paris Agreement freestanding Article 8 test stating, "[p]arties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage."[63] Recognizing loss and damage due to climate change acknowledges that some climate impacts are difficult or impossible to adapt to such as vanishing small island nation states losing all of their land. The free-standing Article 8 extends the Warsaw International Mechanism for Loss and Damage that established an interim body at COP 19 to start helping vulnerable countries establish

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59. *See* Doelle, *supra* note 8.

60. *See Paris Agreement*, Art. 2, *supra* note 4, at 22.

61. *See Paris Agreement,* Art. 8, *supra* note 4, at 26.

62. *See*, *e.g.*, Claire Doole, *Climate Change Challenge,* RED CROSS, http://www.redcross.int/EN/mag/magazine2007_1/4-9.html [http://perma.cc/HA38-6X6E].

63. *See Paris Agreement* Art. 8, *supra* note 4, at 26.

early warning systems, risk insurance, and other means of coping with climate change.[64]

The Agreement's Article 8 on Loss and Damage was core to acutely vulnerable countries, yet the core thorny issue is clarified in the accompanying Paris COP 21 Decision where Parties agree that loss and damage "does not involve or provide a basis for any liability of compensation."[65] It is the first time the term loss and damage has been included in an international agreement. It is a clear recognition of the impact of climate on the most vulnerable countries. High emitting countries stopped short of agreeing to liability/compensation for damage from rising global temperatures.[66] At present, the existing language does not limit the Conference of the parties to the UNFCCC from extending its competencies under the Convention. It appears that parties have accepted that the rules on state responsibility for transboundary pollution are relevant to climate change.

FINANCE (ARTICLE 9) – INFORMAL INFORMALS AND INDABA CONSENSUS BUILDING

The Paris Agreement's purpose is phrased as aspirational. UNFCCC's common but differentiated responsibilities and respective capabilities still exists but now leans towards national self-differentiation rather than developed and developing country annexes. Parties do reference "in light of different national circumstances" in reinterpreting existing UNFCCC and Kyoto commitments for instance in mobilizing finance and technology transfer.[67]

As at past climate talks, finance was a tough substantive element to resolve in Paris. Less well-resourced developing countries calling for robust support to be scaled up met with developed country calls for

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64. *Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, http://unfccc.int/adaptation/workstreams/loss_and_damage/items/8134.php [http://perma.cc/TS9S-QPGF].

65. *COP 21 Decision*, *supra* note 5, at ¶ 51 ("Agrees that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation").

66. C. Davenport et al., *Inside the Paris Climate Deal*, N.Y. TIMES (Dec. 12, 2015), http://www.nytimes.com/interactive/2015/12/12/world/paris-climate-change-deal-explainer.html?module=ConversationPieces&region=Body&action=click&pgtype=article&_r=0 [http://perma.cc/OGJ8-W9AB].

67. Legal Response Initiative, *supra* note 29.

large emerging developing countries to make contributions in addition to developed countries. A give and take occurred in Paris with the Paris Agreement calling for developed countries to help finance mitigation and adaptation in developing countries under the existing UNFCCC. The United States sought the latter to avoid new binding financial obligations needing congressional approval. At the same time, the Paris Agreement encourages other parties to provide support voluntarily.[68]

Discussions circled around how to ramp up finance beyond $100 billion a year and over what timeframe parties could plausibly mobilize and review support.[69] The COP 21 Decision pushes the timeframe for mobilizing the $100 billion-a-year goal out through 2025.[70] Beyond 2025, it remains an open question what support looks like for meeting the myriad of climate challenges. Parties have simply agreed that by 2025 the COP will set a new collective quantified goal from a floor of $100 billion a year.[71] Every two years, developed countries commit to submit quantitative and qualitative information on future support, while other countries are encouraged to do so voluntarily.[72]

Developing countries have referenced developed country party duties to provide support under UNFCCC Article 4.[73] Technology transfer and monetary support have not materialized on the scale envisioned by the drafters of the UNFCCC. The Paris Agreement references charitable giving from a wide variety of sources and even the USD $100 billion target is only referenced in the COP 21 Decision rather than the Paris Agreement.[74] The Meeting of Parties to the Paris Agreement will set a new goal on finance that is above the base level of USD $100 billion.[75] This is to occur prior to 2025.[76]

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68. *See* NDC Registry, *supra* note 45.

69. *See generally*, Janet E. Milne, *Storms Ahead: Climate Change Adaptation Calls for Resilient Funding*, 39 VT. L. REV. 819 (2015).

70. *See COP 21 Decision*, *supra* note 5, at 8.

71. *See Paris Agreement*, *supra* note 4, at 26.

72. *See id*.

73. *See* UNFCCC Art. 4, *supra* note 19.

74. *See COP 21 Decision*, *supra* note 5, at 54.

75. *See id.*

76. *See id.*

It remains an open question the degree to which public and private funding pledges announced at the launch of the Paris COP 21 climate talks can keep climate finance on track to reach the $100 billion goal by 2020. Similarly, pledges to the Least Developed Countries Fund are growing and raising the profile of adaptation finance and need to provide public finance for both mitigation and adaptation. Serious shortcomings remain regarding when and how to shift investments away from high-emission activities. Global stocktake participants are tasked with engaging the global community in actually increasing support that is adequate to the challenge of transitioning global energy production away from high emission and toward environmentally and socially sound climate solutions.[77]

The facilitative dialogue to take stock in 2018 is tasked with the heavy lifting of nationally determined contributions matching required reductions in global temperatures.

The construct that there are fixed developed and developing countries continue to evolve into dynamic country consensus building gatherings. The recently congregated High Ambition Coalition brought together small island nation states with some of the largest developed country emitting parties to point out to large developing countries. COP 21 participants from vulnerable small islands pointed out to large emitting countries that "[y]our right to pull people out of poverty doesn't negate my right to survival."[78] India, in particular gained mixed reactions as the international community recognized its solar target and leadership but challenged its coal plans.[79] Fiona Harvey notes,

> Whatever climate agreement emerges from the international negotiations in Paris may stem from the most casual of talks

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77. *See Paris Agreement*, *supra* note 4, at 26.

78. Lisa Friedman, *India's Position Becomes a Challenge as Substantive Climate Talks on Finances Begin*, CLIMATEWIRE (Dec. 2, 2015), http://www.eenews.net/climatewire/2015/12/02/stories/1060028805 [http://perma.cc/J5T4-C94T].

79. Arthur Neslen, *India Unveils Global Solar Alliance of 120 countries at Paris Climate Summit*, THE GUARDIAN (Nov. 30, 2015), http://www.theguardian.com/environment/2015/nov/30/india-set-to-unveil-global-solar-alliance-of-120-countries-at-paris-climate-summit [http://perma.cc/HD9L-K536] ("Narendra Modi announces a new alliance of nations and industry on large-scale expansion of solar energy use in the tropics and beyond").

> between nations. So-called 'informal informals'—when delegates huddle on the floor in hallways, crowd around phones at cafe tables or hunker down however they can—can help resolve differences more quickly than formal talks, officials say. At these talks, negotiators can work out wording and forge consensus in small groups that they can then work into formal negotiations.[80]

The High Ambition Coalition reminder "1.5 to stay alive" gained acceptance from being nearly taboo in serious discussion leading up to Paris to gaining broad credence among African, Caribbean and Pacific nations. Then United States joined the High Ambition Coalition, followed by Canada, Australia and Brazil. These developed oil producing nations entering the plenary hall with the Marshall Islands shook up the dynamics of the developing nation negotiating bloc.[81] Interestingly, several strategic advisors for small island nations come from developed countries, further driving climate consensus building in dynamic directions.

By the end of the Paris climate talks, parties broadly agreed to five-year global stocktake cycles to facilitate iterative monitoring of implementation and provide tailored recommendations for enhancing each countries approach. This process can begin immediately. Each party can submit updated plans when they submit the instrument of ratification of the Paris Agreement. Parties can enhance ambition levels at any time.

Beyond agreeing to review every five years starting in 2018 before the Paris Agreement enters into force, parties have yet to hammer out the detailed modalities of such reviews. They will do so through a non-punitive, facilitative implementation committee.[82] This means that no sanctions will be applied if a country does not fulfill its contribution. Countries with more constrained capacities are to receive broad global support to implement their national contributions.[83]

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80. Fiona Harvey, *'Informal informals' May Hold Key to Paris Deal*, CLIMATEWIRE (Dec. 2, 2015), http://www.eenews.net/greenwire/2015/12/02/stories/1060028822 [http://perma.cc/RYV9-WFQL].

81. Author's personal observation while attending the Paris Climate Conference.

82. *See Paris Agreement*, Art. 15, *supra* note 4, at 29.

83. *See id.*

The recent first round of submitting Nationally Determined Contributions demonstrated the level of assistance that many countries still need in determining their current and future emission and to specify what ratio of ecosystem, efficiency, and other environmentally sound technology solutions could facilitate the highest level of ambition for each country.[84] Environmentally and socially sound tech and nature-based solutions abound and are becoming increasingly wide spread.[85] They are economically viable ways to reduce emissions and raise resilience. With the fleshing out of accounting guidelines by the Conference of the Parties, global stocktake reviews can clarify the dynamics of flows of support as countries report finance biannually using soon to be established accounting guidelines.

Country submissions relating to finance and technology will be reviewed by technical experts with an eye for ways of improving clarity and offering an opportunity to share best practices among climate plan approaches. The transparency and accounting blueprint that the Paris Agreement sketches can help parties implement robust yet flexible climate responses mindful of the dynamic range of capabilities and geographies relevant to climate strategies.[86]

TECHNOLOGY MECHANISM (ARTICLE 10)

The COP 21 Decision strengthens the Technology Mechanism (TM) and establishes a new technology framework to provide overarching guidance. Ongoing efforts continue among state and non-state actors to enhance enabling environments and reduce barriers to development and transfer of socially and environmentally sound technologies.[87]

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84. *See* Burleson*, Legal Aspects Of Climate Justice*, *supra* note 41; *see also* Burleson, *Energy Revolution, supra* note 41; *see also* Burleson *Climate Change Consensus*, *supra* note 41; *see also* Burleson, *A Climate of Extremes*, *supra* note 41; *see also* Burleson, *Multilateral Climate Change Mitigation*, *supra* note 41.

85. *See*, *e.g.*, CLIMATE TECHNOLOGY CENTRE & NETWORK, https://www.ctc-n.org (last visited May 23, 2016).

86. *See*, *e.g.*, TT: CLEAR, THE UNFCCC TECHNOLOGY CLEARING HOUSE, http://unfccc.int/ttclear/ (last visited May 23, 2016).

87. *E.g.*, BURLESON INSTITUTE, www.BurlesonInstitute.org (last visited May 23, 2016) (providing one portal into Climate Technology Networking on the part of members of this global alliance to share best practices as environmentally sound technology evolves).

Linking the Technology Mechanism and UNFCCC financial bodies – combined with iterative reviews detailing effectiveness and scale of support to the Technology Mechanism – may be able to help raise the funds needed with which to broadly ramp up renewables and other innovations.[88]

The Cancun Agreements established the Technology Mechanism that became operational in 2012.[89] This dynamic public-private innovation hub and network advises developing countries upon request.[90] This author has been among the advisors facilitating joint research and development, and environmentally sound diffusion efforts. This work has been done through the Climate Technology Centre and Network (CTCN) work implementing Technology Mechanism by responding to requests from developing country parties on matters related to development and tech sharing. The corresponding Technology Executive Committee (TEC) provides overarching policy coordination for the technology framework – supporting developing countries to specify and share technology needs and evolving best practices.

UNFCCC Executive Secretary Christiana Figueres explains that the global community has most of the technology that we need to address climate change as well as the capital:

> We're moving on the policy. We just need to focus and understand the urgency of this. And yes, I do think that we, as humanity, will be able to address this challenge . . .

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88. *See* ICTSD *supra* note 40.

89. *See Support*, TT: CLEAR, THE UNFCCC TECHNOLOGY CLEARING HOUSE, http://unfccc.int/ttclear/support/technology-mechanism.html (noting that The CTCN is the implementation body of the Technology Mechanism). CTCN "facilitates the transfer of technologies through three core services: (1) Providing technical assistance at the request of developing countries to accelerate the transfer of climate technologies; (2) Creating access to information and knowledge on climate technologies, particularly through its knowledge management system; and (3) Fostering collaboration among climate technology stakeholders via its network of regional and sectoral experts." *Id.*

90. *Support, Nationally Designated Entities by country*, TT: CLEAR, THE UNFCCC TECHNOLOGY CLEARING HOUSE, http://unfccc.int/ttclear/support/national-designated-entity.html [http://perma.cc/] (noting that requests can be made through Nationally Designated Entities via secretariat@unfccc.int and ttclear@unfccc.int).

> [parties] can see that this actually gives them much better air quality. It gives them better transportation. It gives them better food security, water security because they are understanding that we can no longer continue down the path of increasing the risk of non-action.[91]

Transfer and development of environmentally and socially sound technology can be enhanced through sharing existing expertise as well as engaging in collaborative breakout endeavors to advance beyond existing energy, resilience, and related climate strategies.

Strengthened technical examination process (TEP) on mitigation can enhance developing country expert involvement, enhancing state/non-state actor engagement through formalized technology and financial mechanisms of the UNFCCC.

Furthermore, the new technical examination process TEP on adaptation, allows network linking to build on the dialogue to achieve solutions spaces, innovation hubs, and broad dissemination of environmentally friendly technologies and practices that meaningfully address the broad swath of climate change ramifications.

CAPACITY BUILDING (ARTICLE 11)

The COP 21 Decision creates a new capacity-building initiative for transparency, to facilitate developing country transparency follow through. Parties agreed that all parties other than least developed countries (LDCs) and small island developing states (SIDS) should share information on adaptation, loss and damage, finance, and technology. These submissions should occur every other year.[92]

Throughout the climate talks, differentiation of country responsibilities remains a thorny issue as developed countries urge everyone to take on a single transparency system while India, China, and a range of other developing countries urge clear differentiation that

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91. *U.N. Chief: Paris Convention Represents 'Turning Point' In Climate Policy*, NPR (Nov. 23, 2015, 4:25 PM), http://www.npr.org/2015/11/23/457139688/u-n-chief-paris-convention-represents-turning-point-in-climate-policy?utm_medium=RSS&utm_campaign=environment [https://perma.cc/ZX7J-EAH4].

92. *See COP 21 Decision*, Art. 11, *supra* note 5.

would require robust transparency and compliance for developed countries and self-assessment for developing countries.

Paris consensus settled on a single overarching transparency framework with subtle differentiation that offers flexibility and support to developing countries. Once detailed guidance has been fleshed out, it will be easier to speak to the capacity of the transparency framework to effectively and equitably address climate change at the requisite pace to avert catastrophic climate impacts.

PROCEDURAL RIGHTS TO PARTICIPATION + (ARTICLE 12)

A world record 150 country leaders launched landmark climate talks in Paris.[93] As they left and the hard give and take of removing brackets from draft text proceeded, chipper folk gave away apples and chocolate to participants hunkering down at the Le Bourget Airport, just outside Paris.[94] Drippy moss panels offered a bit of greenery as youth with 1.5°C painted on their faces silently held devastatingly simple messages explaining the cavernous disconnect between business as usual and requisite climate coordination. Round the clock negotiations culminated in an outcome far more vague then necessary but far more detailed than anticipated. Closing the mitigation, adaptation, support, and technology sharing gap(s) is now left to the global community with a few more tools with which to start doing the heavy lifting.

The Paris climate talks infused the process with "political will and a spirit of unity."[95] The Paris Agreement set clear, long-term and short-term signals that the global community will gather regularly to increase ambition. The Agreement marks consensus on transparency and verification that parties will implement their commitments.

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93. *See* UNFCC, *Status Agreement Tracker*, *supra* note 19; *see also ENB Coverage of Climate and Atmosphere Meetings*, IISD REPORTING SERVICES, http://enb.iisd.org/process/climate_atm.htm. [http://perma.cc/PJ4B-V34S].

94. *See*, *e.g.*, SUMMARY OF THE PARIS CLIMATE CHANGE CONFERENCE: 29 NOVEMBER-13 DECEMBER 2015, EARTH NEGOTIATIONS BULLETIN 1(International Institute for Sustainable Development ed., 2015) http://enb.iisd.org/download/pdf/enb12663e.pdf.

95. Fiona Harvey, *World Bank President Celebrates 'Game Changer' Paris Talks*, THE GUARDIAN (Dec. 13, 2015), http://www.theguardian.com/business/2015/dec/13/world-bank-president-celebrates-game-changer-paris-talks [http://perma.cc/AC2L-J62L].

Mobilizing support for the poorest, most vulnerable countries to adapt is underway, albeit slowly. Gathering in climate forums provides state and non-state actor engagement with which to share best practices, build capacity, peer pressure collective action on mitigation and adaptation, and understand ways to effectively and equitably address micro/macro climate challenges.[96]

NGO participation has been integral to climate consensus building.[97] The core agreement reaffirms the commitment of parties to public participation, access to information, education, and climate awareness under UNFCCC Article 6 and the new Paris Agreement Article 12.

Paris transparency measures should help verify that countries actually curb greenhouse gas emissions. Implementation remains an open question. If Nationally Determined Contributions are neither legally binding nor collectively ambitious then it is a misnomer to say that climate mitigation implementation is effective. If the goal setting dialogue itself can increase the ambition of Paris Agreement Parties then step by step climate action can build momentum, which is a far cry from kicking any action down the road for a subsequent conference of the parties gathering in some new venue each year.

The Paris Agreement references efforts to limit global average temperature rise to 1.5°C with a peaking of emissions as soon as possible. This is becoming increasingly within the political willpower of parties because a substantial exchange of information and best practices has increased understanding that anthropogenic emissions and removals by sinks can reach net-zero emissions.[98] Once state and non-state actors engaged to the point of believing this achievable, it became politically feasible to state such a shared vision within the Paris Agreement. This is being heralded as far more ambitious than many expected the Agreement to reference. The reasons for this appear to range from climate catastrophes coming fast and furiously globally, finance increasingly being mobilized to respond, and responses increasingly being ramped up to cost effective, economy wide

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96. *See*, *e.g.*, Daniel Bodanskya1, *The Paris Climate Change Agreement: A New Hope?* 110 AM. J. INT'L L. 288 (2016).

97. *See*, *e.g.*, CLIMATE NETWORK, http://www.climatenetwork.org (last visited May 23, 2016). The collective efforts of many non-governmental organizations and the dedicated individuals that help sustain civil society public participation at an unprecedented scale and scope. *Id.*

98. *See* IPCC, *Fifth Assessment Report (AR5)*, *supra* note 37.

solutions. Where there is a way, a path, a shared vision that multilateral engagement can implement at all levels – then political momentum will follow. If the people lead, the leaders will follow. If the leaders lead, the people will engage. It is a recipe of vibrant synergistic state and non-state actor engagement that goes well beyond conference semantics and political rhetoric.

Five-year reviews create a means by which to shine a spotlight on developed countries to increase meaningful support to developing country mitigation and adaptation implementation. Global state and non-state actor stocktakes can also highlight where countries with conditions placed on their plans could remove these question marks and actually reduce emissions, enhance sinks, and support adaptation/resilience.

TRANSPARENCY *(*PEER REVIEW)

Yet, the lack of uniformity among pledge types makes comparison difficult, and estimating the aggregate effect of greenhouse gas emission reductions a moving target. Two nongovernmental organizations have stepped into this space and are providing substantial clarity. Climate Tracker and the World Resources Institute are calculating collective climate governance projections and those seeking to contribute minimally are more easily spotted as public and private climate response ambitions are ratcheted up globally.[99]

By the end of the Paris climate talks, 186 submitted plans detailed how parties committed to lowering greenhouse gas emissions through 2025 or 2030.[100] Collectively these plans represent over 95 percent of global emissions.[101] The Paris Agreement now requires all countries to submit updates to these plans that would ratchet up the stringency of emissions by 2020 and every five years thereafter, a time frame that the United States and the European Union urged.[102] India had initially sought a 10-year review cycle.[103]

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99. *See* CAIT CLIMATE DATA EXPLORER, *supra* note 9; *see also* CLIMATE ACTION TRACKER, http://climateactiontracker.org/indcs.html (last visited May 23, 2016).

100. *See* NDC Registry, *supra* note 45.

101. *See id.*

102. *See* Chan, *supra* note 34.

103. *See* Chan, *supra* note 34.

The trifurcated transparency framework legally-binds all parties to reporting requirements, acknowledging that developing countries' need support and that small island nation states and least developed countries need additional capacity building assistance.[104] Support bifurcated between developed countries that shall provide financial resources, and other countries that are encouraged to provide such support voluntarily.[105]

Furthermore, Parties are prohibited from making individual reservations to the Paris Agreement.[106]

NEXT STEPS: NOW THE HARD PART

> *The Paris Agreement sends a powerful signal to the many thousands of cities, regions, businesses and citizens across the world already committed to climate action that their vision of a low-carbon, resilient future is now the chosen course for humanity this century. —UNFCCC Chair Figueres.*[107]

Through the Paris Agreement, parties seek to provide a global support structure for commitments to become stronger over time.

The path from Paris is to be facilitative rather than punitive. At the same time, nature itself does not negotiate and may not be as flexible as governance participants. Irrespective of stick, carrot, or [insert one's own most effective approach], it is incumbent upon the international community generally, and those global citizens seeking a stable climate going forward to coordinate rapid and substantial greenhouse gas reductions. Negative emissions such as forest sinks need to balance population growth and any energy intensification that increases greenhouse gas concentrations in the atmosphere.

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104. PUTTING THE 'ENHANCED TRANSPARENCY FRAMEWORK' INTO ACTION: PRIORITIES FOR A KEY PILLAR OF THE PARIS AGREEMENT, STOCKHOLM ENV'T INST. 2-3 (2016), https://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-PB-2016-Transparency-under-Paris-Agreement.pdf.

105. *See* IISD, *supra* note 95.

106. *See Paris Agreement*, Art. 27, *supra* note 4.

107. UNFCC Press Release, *supra* note 6.

Recap: the Paris Agreement, negotiated within the dynamic climate gatherings of the UNFCCC, sets forth the purpose to hold the increase in the global average temperature to "well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels."[108] Furthermore, it aims to facilitate as much greenhouse gas leaving the atmosphere as entering it in the second half of the twenty-first century. Means of implementation include integrating sustained finance, environmentally and socially sound tech sharing and capacity building engagement.

Christiana Figueres voiced what many participants have believed – "the Paris [A]greement is 10 years too late."[109] At the same time, she also voiced the optimism with which the international community sees the balancing of sinks and sources as achievable. She highlighted that switching to renewables has become increasingly viable as solar has become 80 percent and wind 40 percent less expensive since 2008.[110]

Participants in the Paris climate talks spent much of the conference engaged in the several decades long complex process of sifting through dense texts with layer upon layer of noncommittal bracketed text. The Washington Post reported mid conference "Upon this, it seems, does the fate of the planet depend."[111]

Why do people cooperate? One reason people cooperate is as a result of shared norms.

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108. *Paris Agreement*, Art. 2, *supra* note 4.

109. Laurie Goering, *U.N. Climate Chief Predicts Paris Deal Will Take Effect Early,* REUTERS (Apr. 12, 2016), http://www.reuters.com/article/us-global-climatechange-politics-idUSKCN0X925E [http:// perma.cc/8F3M-RVJS].

> Delays in negotiating the pact - which sets a goal of keeping global average temperature rise to 'well below' 2 degrees Celsius - have put 'an incredible amount of pressure' on efforts to revamp the world's systems . . . Global emissions of climate-changing gases now need to peak in four years and then rapidly decline, even as the world's population and energy demand grow.

Id. (citation omitted).

110. *See id*.

111. Chris Mooney, *The Thing That Really Doesn't Make Sense About the Climate Debate in Paris*, THE WASH. POST. (Dec. 4, 2015), https://www.washingtonpost.com/news/energy-environment/wp/2015/12/04/scientist-this-is-what-doesnt-make-sense-about-the-paris-climate-debate/?postshare=4951449257648898&tid=ss_tw [http://perma.cc/YR66-S9SF].

Much of the past decade has been spent seeking a shared vision with which to build a legally binding climate agreement. Cooperating around shared norms can occur as a result of meme evolution.[112] It can also result from ancient understandings of reciprocity and sustainability.[113] New technologies offer the global community an opportunity to evolve norms regarding use of a given technology. Energy siting discussions merge innovation and resilience arguments.[114] Regarding ancient collective wisdom, indigenous peoples meaningful involvement in climate decision-making can contribute to dynamic network governance that shares best practices.[115]

The climate talks under the United Nations Framework Convention on Climate Change have involved unprecedented engagement among national, subnational, supranational, tribal, scientific, private sector, and public interest civil society participants. This author has discussed these developments at length in earlier works.[116] This Article will

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112. *See*, *e.g.*, Kevin N. Laland & John Odling-Smee, *The evolution of the meme*, in FRONT MATTER (Oxford University Press ed., 2012) OXFORD SCHOLARSHIP ONLINE, http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780192632449.001.0001/acprof-9780192632449-chapter-6.

113. *See*, *e.g.*, Nicholas A. Robinson et al., *Preface*, in COMPARATIVE ENVIRONMENTAL LAW & REGULATION (2017).

114. *See*, *e.g.*, William H. Rodgers & Elizabeth Burleson, *Dakota Access to Justice, Pipeline Politics, Tribal Consultation, Environmental Justice and Rules of Engagement*, in ENVIRONMENTAL LAW TREATISE (Thomson Reuters West ed., 2nd ed. 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2954308.

115. *See id*.

116. *See e.g.*, Elizabeth Burleson, *Civil Society Contributions to Inclusive Climate Cooperation*, 37 FORDHAM INT'L L.J. 1329 (2015) [hereinafter Burleson, *Civil Society Contributions*]*;* Elizabeth Burleson, *Dynamic Governance Innovation*, 24 GEO. INT'L ENVTL. L. REV 477 (2013); Elizabeth Burleson, *Innovation Cooperation: Energy Biosciences and Law*, 2011 U. ILL. L. REV. 651 (2011); Elizabeth Burleson, *From Coase to Collaborative Property Decision-making: Green Economy Innovation*, 14 TUL. J. TECH. & INTELL. PROP. 79 (2011); Burleson, *Legal Aspects Of Climate Justice*, *supra* note 41; Burleson, *Energy Revolution*, *supra* note 41; Burleson, *Climate Change Consensus*, *supra* note 41; Elizabeth Burleson, *Collaborative Community-based Natural Resource Management*, 21 FORDHAM ENVTL. L. REV. 201 (2010); Burleson, *A Climate of Extremes*, *supra* note 41; Elizabeth Burleson, *Climate Change and the Bali Roadmap*, 12 AM. SOC'Y OF INT'L LAW INSIGHT 4 (2008).

sketch tribal climate dynamics that have engaged global climate-energy-water decision-making.

Capacity building is core to addressing the climate challenge.[117] States engage with non-state actors in large part because neither have the capacity outright to provide governance without coordinating among jurisdictions and areas of competency.

Climate change impacts due process, equal protection, and civil rights to lives and property. [118] Environmental and human rights interests are at odds in forestry contexts leaving climate negotiations stymied to equitably protect carbon sinks such as rain forests without disregarding indigenous land rights.[119] REDD+ negotiations have pitted articulate environmental NGOS against eloquent tribal leaders. In the past several years this debate catapulted from obscure to of central interest to much of civil society participants at conference of the party proceedings.[120]

Those engaging with nation states at the climate talks need to be as transparent, representative, and equitable as the nation states representatives. A human right does not become less humane or less of a right because there is a new energy interest involved. Tribal communities are at the crossroads of traditional and renewable energy decisions and need to be engaged with in a manner that is mindful of sovereign resource legal rights and centuries of environmental experience.

Subsistence natural resource use overlaps with climate sink/source balancing endeavors. Blue Carbon for instance is the umbrella term that has come to be recognized as encompassing a range of ways in which coastal and ocean sequestration of greenhouse gases can offset continued use of fossil fuels.[121] Yet, coastal communities generally,

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117. *See Capacity-building Portal*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE, http://unfccc.int/cooperation_and_support/capacity_building/items/7204.php.

118. *See* Burleson, *A Climate of Extremes*, *supra* note 41.

119. *See*, *e.g.*, IUCN, *REDD+ from Negotiations to Action*, 46 ARBORVITAE: THE IUCN FOREST CONSERVATION MAG. 1 (2015), at 1, http://cmsdata.iucn.org/downloads/av46_english_web_1.pdf.

120. *See id.*

121. *See, e.g.*, *Coastal Blue Carbon*, NOAA: HABITAT CONSERVATION http://www.habitat.noaa.gov/coastalbluecarbon.html.

and tribal communities in particular rely heavily upon these forests.[122] Coastal mangroves can provide mitigation and adaptation measures. Mangroves also sustain communities many of whom do not want their ways of life to be sacrificed for well off individuals and groups to benefit from continued greenhouse gas emissions at the expense of communities being able to use areas that they have come to rely upon and may have land tenure to but that also have the capacity to provide climate sinks.

Isle de Jean Charles exemplifies a tribal relocation endeavor in the face of sea level rise along the Gulf Coast of Louisiana.[123] It remains an open question to what degree indigenous communities will be required to continue to accommodate other groups of people, both near and far, in climate mitigation and adaptation.

Climate migration has its dynamic elements. It remains unclear to what degree communities that are not faced with front line sea level rise but are in prime locations for carbon market trading of sink and source "projects" will need to relocate or reduce their use of local natural resources to make way for climate endeavors.

Transcending glacial politics to achieve innovation and climate-energy equity is a multifaceted diplomacy challenge. Migration may be advantageous to communities whose land will disappear outright but not for communities that have traditionally utilized green and blue carbon sinks as subsistence inhabitants of forests and coastal mangroves. Representatives from many of these locations have come to the climate talks as non-state actor observers to the nation-state decision-making process to share perspectives and seek that indigenous rights remain within final outcome texts.

Esau Sinnok came to the Paris climate talks as an 18-year-old tribal representative from Shishmaref in Alaska. He shared his perspective with the media and world leaders, explaining that his community's island is soon to be swallowed up by the sea and ice forms later in the winter impacting subsistence food security. Sinnok and other members

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122. *See id*.

123. Dylan Brown, *La. Tribe's Relocation Hailed as Model for Coastal Indigenous Groups,* CLIMATEWIRE (Apr. 21, 2015), http://www.eenews.net/greenwire/2015/04/21/stories/1060017151 [http://perma.cc/53ML-S726].

of front line communities offer a heightened level of urgency to coordinate climate responses.[124]

Over the past several decades, the climate talks have involved inclusive treaty body decision-making.[125] This has not occurred within a scientifically viable timeframe with which to avert critical climate change. Yet, it has advanced global governance engagement and involved unprecedented interactions among state and non-state actors. Tribal, academic, youth, gender, and other groups have networked – sharing research and analysis.[126] These and their state counterparts have compared and contrasted climate options in a myriad of forums.[127]

Treaty language sets boundaries and textual anchors while treaty negotiating records can provide evidence of intent. The Paris Agreement acceptance linking emissions mitigation mechanism (EMM) widens the dialogue as to how to implement broad and effective climate mitigation and adaptation endeavors in an equitable manner.[128]

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124. Rachel Waldholz, *For Alaskans in Paris, Climate Talks Hit Home,* ALASKA PUB. MEDIA (Dec. 11, 2015) http://www.alaskapublic.org/2015/12/11/for-alaskans-in-paris-climate-talks-hit-home/ [http://perma.cc/]; *see also*, Camila Bustos, *Why Should We Care About Public Participation in Responses to Climate Change?*, NIVELA (Dec. 8, 2014), http://www.nivela.org/updates/why-should-we-care-about-public-participation-in-responses-to-climate-change/en [http://perma.cc/HWM5-U3FD] (noting that: "In anticipation to the COP20 negotiations, a group of 23 countries including: Argentina, Chile, Colombia, Costa Rica, El Salvador, Mexico, Panama, Peru and Uruguay, submitted a proposal asking for operative language related to public participation, access to information and informed citizenship to be included in the 2015 climate agreement.").

125. *See* Burleson, *Civil Society Contributions*, *supra* note 117.

126. *See*, *e.g.*, *CAN Member Organization*, CLIMATE ACTION NETWORK INTERNATIONAL, http://www.climatenetwork.org/about/members (last visited May 23, 2017).

127. *See, e.g.*, *Side Events & Exhibits*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, https://seors.unfccc.int/seors/reports/archive.html. Anyone interested in becoming involved can register a side event or exhibit through the UNFCCC Side Events and Exhibits Online Registration System (SEORS) https://seors.unfccc.int. *Id*.

128. Jean Chemnick, *IETA Unveils Vision for Linking Trading Mechanisms*, CLIMATEWIRE (May 11, 2016), *https://www.eenews.net/special_reports/global_climate_debate/stories/1060037021* [http://perma.cc/9NNZ-NXS9].

Climate taxes and markets can reduce greenhouse gases as can strictly enforced regulation. Entities such as the United States Environmental Protection Agency ("EPA") are in a strong position to enforce rules on flaring and leakage from hydraulic fracturing for instance. Each of these incentive approaches remains salient and has its equity pros and cons. Taxes clarify the cost of reducing a unit of greenhouse gas but do not mandate a given quantity of reduction. This leads to the problem of actors simply internalizing the cost of the tax into the cost of operation rather than being forced to actually reduce emissions if they can afford not to. Markets can set strict caps on emissions but the cost of a given unit of emissions reduction rises and falls with supply and demand for emitting. Bans can also reduce emissions by a set amount but do not generate a revenue stream with which to carry out reductions. Environmental economics has developed with regard to sulfur dioxide, fishing, and carbon permits. Concentrations of emission and rights have been an equity concern in each context. Hot spots of concentrated pollution may not impact global warming in regional ways but do impact individuals with individual human rights in disparate ways. Indigenous communities live close to the land more so than many other peoples. Their lives and livelihoods are at stake in global decisions to use forests and other sinks to balance greenhouse gas emissions.

Without nation state status, tribes, cities and other jurisdictions within the borders of nation states participated in climate talks with NGO badges. While this is a contradiction in terms, they came as nongovernmental organizations for the purposes of the conference of the parties' climate negotiations. Each registered and received a badge permitting the entity to access events with observer status. That said many provided substantial contributions by holding side events that compared and contrasted evolving best practices underway around the world.[129]

Those with aligned interests gathered to form groups that had the capacity to strengthen their outreach initiatives among the larger body of climate talks participants. Even hallways regularly became brief

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129. *See*, *e.g.*, *Side Event During the Bonn Climate Change* Conference, INDIGENOUS PEOPLES' CLIMATE CHANGE PORTAL (May 10, 2017), http://www.indigenousclimate.org/index.php?option=com_content&view=article&id=252%3Aside-event-during-the-bonn-climate-change-conference&catid=3%3Anews&lang=en [http://perma.cc/5QX7-4NHC].

reception areas for participants of all badge stripes to exchange perspectives and engage with government delegates and journalists.

To date, the EU has set among the most ambitious targets leading up to 2020 with reductions of 20 percent from 1990 levels and has already achieved a 19 percent reduction in greenhouse gases from those levels.[130] Clearly the EU has had more resources with which to make these commitments than least developed countries. Where lessons have been learned they can be shared and Paris Agreement processes of engagement can build upon evolving best practices across the range of climate matrix elements.

The 2015 Paris consensus recognizes the importance of providing broadly agreed upon diplomatic tools to mitigate, adapt, and support increased ambition. As blue printing goes, the Paris Agreement has provided a rough sketch of the requisite climate action yet to be accomplished. With the established binding commitments by all parties to submit and implement Nationally Determined Contributions countries will be able to regularly compare mitigation, adaptation, and support in a process of global review.[131] Ratcheting up ambition every five years still requires support, yet the finance goal of mobilizing $100 billion by 2020 has now stretched to 2025 and any loss and damage recognition does not provide a basis for liability or compensation. Funding can flow through cap and trade that does not double count emissions reductions internationally. In the tradition of the Clean Development Mechanism, a new mechanism will facilitate international emission trading to reduce greenhouse gases.

As UN Secretary General Ban Ki-moon notes, "the work starts now."[132] Paris climate consensus building has approached problem solving as a facilitative rather than punitive process of sustained engagement.[133] Parties have gathered national commitments into an

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130. *See 2020 Climate & Energy Package*, CLIMATE ACTION, https://ec.europa.eu/clima/policies/strategies/2020_en [perma.cc/EA9Y-MD22].

131. *See*, *e.g.*, CARBON TRACKER INITIATIVE, http://www.carbontracker.org/ (last visited May 23, 2017).

132. Graham Readfearn, *Paris Agreement a Victory for Climate Science and Ultimate Defeat for Fossil Fuels*, THE GUARDIAN (Dec. 12, 2015), http://www.theguardian.com/environment/planet-oz/2015/dec/12/paris-agreement-a-victory-for-climate-science-and-ultimate-defeat-for-fossil-fuels [http://perma.cc/QV69-G8DL].

133. *See Paris Agreement*, Art. 15, *supra* note 4, at 29.

international instrument with legal effect and placed some strategic stepping-stones, if not a robust foundation, for policy coordination.[134] Yet, efforts to have gender equity, human rights, intergenerational equity, etc. in the operative language fell short, as did liability and compensation for loss and damage. Landing zones were also never agreed upon for establishing a top down element to the 5-year stock taking cycles and inclusion of international shipping and aviation also failed to occur in Paris, as did efforts to state a peak year and point at which emissions and sinks would balance each other let alone a point by which 1.5°C or even 2°C temperature goals would be met. These are serious omissions. Yet given the trajectory of climate talks, the Paris Agreement marks a diplomatic breakthrough to agree upon legally binding processes. This was a breakthrough that was a long time in coming and for which much diplomatic engagement occurred to find consensus.

Paris Climate Conference participants facilitated global agreement on important core elements of a climate regime, including cycles of nationally determined contributions reporting, review, and ratcheting up stocktaking updates. Detailed reporting and review rules remain an open question for future climate talks. Climate cooperation "by all Parties and non-Party stakeholders, including civil society, the private sector, financial institutions, cities and other subnational authorities, local communities and indigenous peoples," are helping ratchet up ambition and implementation of mitigation, adaptation, support, technology sharing, and the myriad other elements of the evolving global climate response. Next steps for climate action include: (1) five year reviews to increase commitments to reduce greenhouse gas emissions and collectively adapt to climate changes; (2) rigorous transparency/ accountability for governments to stay on track with their commitments; and (3) support to poor nations to adapt and adopt environmentally and socially sound energy and resilience technologies. Universal agreement and broad country climate plan implementation signals robust innovation, investments, and sustainable development opportunities globally.

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134. *See Those Who Slam the Paris Climate Talks are Missing the Point,* NEW SCIENTIST (Nov. 11, 2015), https://www.newscientist.com/article/mg22830473-200-those-who-slam-the-paris-climate-talks-are-missing-the-point/ [http://perma.cc/6YHX-28Z6].

The Paris climate summit sends a SOS signal for broad, effective climate action. Regions within nation-state borders are well positioned to respond to this SOS call with rapid and effective climate implementation.[135] The International Indigenous People's Forum on Climate Change has offered amendment language to the negotiating text calling for recognition of indigenous cultural knowledge and the use of a bottom-up engagement that meaningfully involves the advance consent of affected communities.[136] Dynamic depth of field is within the capacity of not only nation states but also within the capacity of sub and supra groupings that have made contributions to coordinating complex climate change challenges. We have all been participant observers of the climate crisis. We can all participate in multidimensional problem solving to balance sinks and sources.

While international law is a young enterprise as human endeavors go, it is not robust enough to regulate strict climate-energy adherence to a detailed legal regime. The current approach is a facilitative rather than punitive one, relying on the sharing of best practices. For this approach to effectively and equitably respond to climate change, greater dynamic governance engagement is called for. Arguably, that engagement can build upon the traditional wisdom, resilience, and innovation of the world's indigenous communities. That is not to say that they should hold the weight of the world on their shoulders any more than anyone else, albeit they are in some of the most vulnerable front line climate communities. Rather, indigenous engagement in

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135. *See* Elizabeth Burleson, *Tribes as Essential Partners in Achieving Sustainable Governance*: *Legal Strategies for Greening Local Government*, LONDON SCH. OF ECON. AND POL. SCI. (2011); *see also* Rodgers & Burleson, *supra* note 115; TIMO KOIVUROVA & WALIUL HASANAT, CURRENT DEVELOPMENTS IN ARCTIC LAW (Timo Koivurova & Waliul Hasanat eds., 2013); Timo Koivurova and Waliul Hasanat ed., U. ARCTIC (2013), http://www.uarctic.org/media/1318885/current-developments-in-arctic-law-2013.pdf; Burleson, *Civil Society Contributions*, *supra* note 117; Elizabeth Burleson, *Tribal, State, and Federal Cooperation to Achieve Good Governance*, 40 AKRON LAW REVIEW 207 (2007).

136. Anna Spain, *Who's Going to Copenhagen?: The Rise of Civil Society in International Treaty-Making*, 13 AM. SOC'Y OF INT'L L. 1 (2009), https://www.asil.org/sites/default/files/insight091211pdf.pdf.

climate-energy-water governance can substantially advance climate coordination.[137]

Climate coordination involves energy security that is mindful of environmental integrity and human rights. Tribes have shown climate leadership.[138] As front line communities many have come together to play a catalytic role in global recognition of the 1.5°C challenge. Tribal communities are at the crossroads of traditional and renewable energy decisions and need to be engaged with respect and in a manner that is mindful of sovereign resource legal rights and centuries of environmental experience.

Latin American natural resource use has increasingly impacted indigenous lives and livelihoods. Greater global understanding and broad willingness to defending human rights defenders is long overdue. The climate talks may be a slow, deliberative process but the means are important in their own right. Stalling climate mitigation measures because money can be made in fossil fuel extraction is not a justification for lengthy deliberations. Genuinely understanding a broad range of climate-energy-water perspectives in an economic-social-environmental sustainability governance matrix is worth deliberative Indabas and other exchanges.[139]

Indigenous lives and livelihoods need not be the casualties of climate coordination globally. It should not take brave indigenous women losing their lives for governments to investigate corporate illegal behavior. Death threats by corporate employees against indigenous community members need to be addressed by authorities consistently and not merely when national aid packages are at stake as

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137. S*ee*, *e.g., Tenth Anniversary of the United Nations Declaration on the Rights of Indigenous Peoples: Measures Taken to Implement the Declaration*, Division for Social Policy and Development Indigenous Peoples (May 5, 2017), NY, https://www.un.org/development/desa/indigenouspeoples/unpfii-sessions-2/sixteenth-session.html [http://perma.cc/6VV2-2JUC].

138. *See*, *e.g.*, *Inter-Tribal Youth Climate Leadership Congress*, CLIMATE.GOV, https://www.climate.gov/teaching/climate-youth-engagement/case-studies/inter-tribal-youth-climate-leadership-congress (last visited May 23, 2017).

139. *See e.g.*, MARA SILINA, IS EVERYTHING RIGHT WITH PUBLIC PARTICIPATION IN CLIMATE RELATED DECISIONS? (European Envtl. Bureau (EEB*)* & European ECO Forum ed., Geneva, 2015), http://www.unece.org/fileadmin/DAM/env/pp/ppdm/5th_PPDM/Presentations/MSilina.pdf.

occurred in the recent Central American murder of Berta Cáceres.[140] Honduras authorities have recently arrested four men in connection with the murder of indigenous environmental and human rights defender Berta Cáceres.[141] Two of the men are connected to the company building the Zarca Dam that Cáceres opposed. The company Desarrollos Energéticos SA (DESA) seeks to dam the Gualcarque River – considered sacred to the Lenca indigenous community. Sergio Ramón Rodriguez, the dam's engineer, and Douglas Geovanny Bustillo, the former head of DESA's security, had threatened to kill Cáceres.[142]

This is not an isolated incident and should not be a one off effort at pursuing justice. Climate change impacts due process, equal protection, and civil rights to lives and property. Environmental and human rights interests are at odds in forestry and water contexts, leaving climate negotiators the careful challenge to equitably protect carbon sinks such as rain forests without disregarding indigenous land rights.

REDD+ negotiations have pitted articulate environmental NGOS against eloquent tribal leaders. In the past several years this debate catapulted from obscure to of central interest to much of civil society participants at conference of the party proceedings.

The social license to operate is related to the social cost of carbon and each become more well recognized with climate outreach that continuously and clearly articulates the opportunity costs of engaging in a given activity – be it natural resource extraction or subsistence livelihoods.

No one is called upon to live in terror. Terrorism and civil unrest arise out of desperation. Paris stood strong in the face of terrorism at the brink of global climate coordination in 2015. Understanding that energy and human security are not mutually exclusive is long overdue. Recognizing that global climate coordination can overcome collective inaction is the first step in making what has broadly been called impossible increasingly inevitable.

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140. *See* Jonathan Blitzer, *The Death of Berta Cáceres*, NEW YORKER (Mar. 11, 2016), https://www.newyorker.com/news/news-desk/the-death-of-berta-caceres [http://perma.cc/RB3L-JLSX].

141. *See id*.

142. *See id*.

What is security? – this has been an evolving shared norm as peoples become ever more enmeshed globally. During the Paris negotiations, the Washington Post published the widespread experience of most climate talks participants for decades – we continue to pour over "confusing texts full of noncommittal brackets. Upon this, it seems, does the fate of the planet depend. We don't know yet which brackets will come off."[143] We do know the stakes are high, that it is not hard to blow up urban infrastructure to make a point, and that common ground can be elusive.

The Paris that this author recalled as a school child commuting by public bus has evolved as well. Paris deserves substantial congratulation not only for hosting historic multilateral diplomacy success but also for its own endeavors to address climate change. While pollution remains an issue, public transport is extensive and effective. Since the traditional parade was called off due to the terrorists attacks that preceded the Paris climate talks, this author was able to reach Fontainebleau Forrest within an hour and a half by public transport for under $30 USD. This ancient array of rocks tumbling in and out of mossy thickets of trees grounded the climate talks 2015 for this author in a manner that was both micro and macro. Micro in that it was among the first forays into forest habitat, searching for edible chestnuts and such as a child, and macro because forests are global greenhouse gas equilibrators extraordinaire. Not all vegetation exchanges carbon in the same way and forests can vary in their capacities to be effective carbon sinks. That said, forests are biologically diverse and not easily restored in timeframes pertinent to the climate challenge. It is critical to sustain forests and forest livelihoods in a manner that neither leaves forests lacking critters nor creatures lacking forests. Humans have not mastered geoengineering on the micro or macro scale. Existing sinks are effective carbon sequestrators irrespective of our ingenuity with which to design our way into a downward curve of greenhouse gas emissions. Aforestation and wetland restoration can substantially enhance existing nature based carbon sinks. Helping forest and coastal communities sustain existing ecosystems is a highly effective means by which to lower carbon levels.

143. Mooney, *supra* note 112.

Climate solutions are not one-size-fits all. Yet communities in mountainous or arid land can find shared best practices. Similarly, cities can find solutions that can benefit other urban locals. One means by which to share such endeavors is through the new Capacity-building Portal hosted by the secretariat of the UNFCCC.[144] Another way to broaden know-how is for cities to facilitate climate monitoring. At present, NASA's Orbiting Carbon Observatory-2 is the only U.S. satellite capable of measuring carbon dioxide emissions. Satellite, airplane-based instrumentation, and ground-based networks globally are at early stages of accurately monitoring greenhouse gas emissions.[145] Contributing to this mapping endeavor can play a substantial role in helping jurisdictions, large and small, to engage in collectively implementing and strengthening Paris commitments.

Game theory suggests that indeterminate future interactions can lead to cooperation. In other words, if an interaction is a one-off it is less likely to produce win-win dynamics. Coordinating engagement that keeps entities invested in each other's progress can produce win-win dynamics. Compacts do just this. Be they water compacts, carbon market compacts, or epistemic community compacts, e.g. Compact of Mayors, there is value in coordinating climate responses.[146] Entities other than nation states have shown substantial leadership in this regard.

Post Paris, it is high time to recognize the heavy lifting that the city of Paris engaged in to bring about the degree of climate consensus that occurred in 2015. While it is by no means time to celebrate broad climate successes, the Paris Agreement and its related COP 21 Decision represent high diplomacy on the part of Paris and all the entities with which Paris coordinated. Keeping this coordination momentum ramping up is the challenge going forward.

Indigenous communities and front line cities may share little at first glance. Each has networks with which to advance climate friendly decision-making as a core endeavor of governance. By doing so each can also model evolving best practices through green design and

144. *See* UNFCCC, *Capacity-building Portal*, *supra* note 118.

145. *See* Vaidyanathan, *supra* note 2.

146. COMPACT OF MAYORS, http://www.compactofmayors.org (last visited May 23, 2017).

sensible building codes as well as effective and eloquent international diplomacy.

Political will increases with the degree to which the stakes are high and immediate. Front line indigenous diplomats have been and continue to be among the change agents that have brought about climate coordination to date. We are the song-line that weaves evolving humanity. Governance innovation and innovation governance can together engage dynamic participatory decision-making to address energy-water-climate challenges equitably and effectively.