

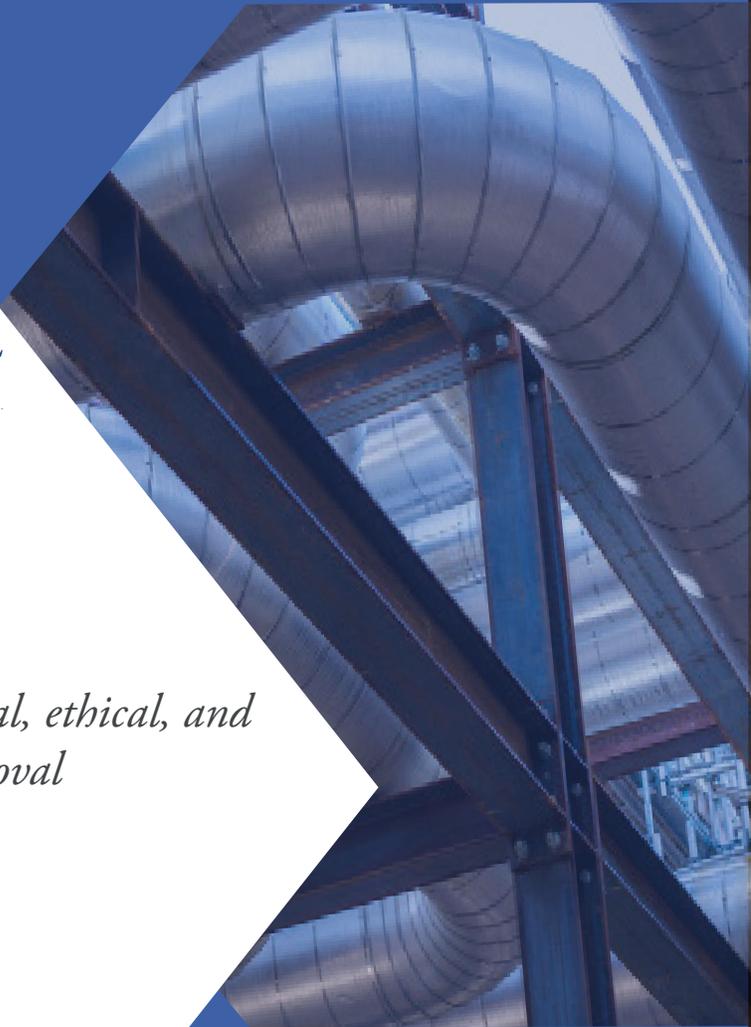
2018

YEAR-END REPORT



INSTITUTE *for* CARBON REMOVAL
LAW AND POLICY

Dedicated to assessing the social, legal, ethical, and political implications of carbon removal technologies and practices.



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and Policy, an initiative of the School of International
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I. Background:

The Institute for Carbon Removal Law and Policy (ICRLP or the Institute) is a scholarly initiative of the School of International Service at American University, Washington, D.C. dedicated to assessing the social, legal, ethical, and political implications of carbon removal technologies and practices. ICRLP was launched in the Fall of 2018, building out from the Forum for Climate Engineering Assessment. ICRLP has quickly staked out a position at the forefront of stakeholder and academic engagement in the assessment of carbon removal approaches.

What is Carbon Removal?

Carbon removal is the process of drawing carbon dioxide out of the atmosphere and locking it away in terrestrial, geological, or marine sinks for decades, centuries, or millennia. The methods for doing so fall into three main camps: biological, geological, and carbon-utilization. Carbon removal can also be referred to as carbon dioxide removal (CDR) or negative emissions technologies (NETs) or as one type of greenhouse gas removal (GGR).

Why does Carbon Removal Matter?

Carbon removal has the potential, in conjunction with mitigation and adaptation strategies, to slow, reduce, and reverse the impacts of climate change. Discussions of employing these technologies have emerged in mainstream international for and, on occasion, US domestic climate policy discussions.

However, there is still a host of uncertainties surrounding the technological feasibility and social implications of carbon removal technologies and practices. In order to make responsible decisions about the use of carbon removal, these uncertainties must be clarified and critically assessed.

II. ICRLP's Work in 2018:

ICRLP seeks to enter the landscape of carbon removal discussions by educating and engaging stakeholders to ensure informed, critical assessment of carbon removal's role in climate policy. Our work in 2018 has fallen into two main categories: 1) The development of educational resources to inform the policy and wider social conversation about carbon removal; and 2) Collaborative facilitation with and among stakeholder groups.

1. Educational Resources:

ICRLP has begun development of a comprehensive set of materials to help those interested in and engaged with the subject matter gain the perspectives needed to understand and assess carbon removal approaches. These resources are separated into the following buckets:

- **Carbon Removal Briefing Paper Series:** ICRLP is in the process of producing a report series on why and how to speak about carbon removal. We published the first of this series, *Why Talk About Carbon Removal?*, which explains the need for and the current landscape of such discussions.
- **Webinar Series:** ICRLP's webinar series is dedicated to keeping those on the forefront of the carbon removal conversation in communication with those seeking to actively influence carbon removal's development. We have done so this year by hosting webinars on the NAS's recent report on negative emissions technologies and on the potential role of carbon removal in the IPCC's 1.5 degree special report.
- **Fact Sheets:** ICRLP has crafted two-page fact sheets on several different carbon removal technologies to provide an overview of what the technology is, where it stands in its capacity for deployment, and its ethical and governance considerations.
- **Additional Resources:** ICRLP also provides additional resources on our website such as an extensive bibliography of relevant literature.
- **Public Talks and Convenings:** Members of ICRLP regularly speak at public, policy, and academic fora. We have also run a series of workshops on carbon removal across the United States, with more planned for the coming year.

2. Collaborative Facilitation:

ICRLP actively facilitates collaboration between key actors of the NGO community working on carbon removal. We have done so this year through two key engagements:

- **Wingspread Meeting:** In early September, we hosted a meeting with our partner RESOLVE at the Johnson Foundation's Wingspread Conference Center in Racine, WI. This was a three-day workshop that brought together mid- and high-level representatives from domestic and international environmental NGOs working on environmental, social justice, and development issues. The meeting brought participants more fully into the rapidly evolving conversation around carbon removal through interactive facilitation and expert presentations.
- **Carbon Removal Working Group:** The Carbon Removal Working Group (CRWG) was born out of the Wingspread Meeting. The CRWG is a space for information sharing, deliberation, and where appropriate, strategic coordination on carbon removal. Participants share, request, and work together to develop resources; communicate about activities they are engaged in; exchange perspectives; and communicate about upcoming events or milestones and potential responses to them. It is not expected that participants will have the same positions or shared advocacy goals, however, some may decide to form subgroups to advance work on specific issues.

- **CDR/NETS Workshops:**

University of California-Berkeley (2.8.17). The workshop was co-sponsored by the Center for Science, Technology and Medicine in Society at the University of California-Berkeley and Light works at Arizona State University. The workshop focused on the potential risks and benefits of carbon dioxide removal technologies, potential governance approaches, and pertinence to California climate policy. More than 200 members of the governmental, non-governmental, academic sectors attended the meeting.

George Washington University (10.30,17). Co-sponsored by the Environmental and Energy Management program at George Washington University. The workshop was an invitation-only event for environmental, human rights, environmental justice, and land-use non-governmental organizations. The objective was to provide an overview of emerging carbon dioxide removal technologies for NGOs engaged in climate policy-making at the national and international levels. It included a climate simulation session that discussed the potential role of carbon dioxide removal options as part of a mitigation portfolio led by Andrew Jones of Climate Analytics. More than twenty NGOs were represented at the workshop.

Illinois Institute of Technology (4.13.18). The workshop focused on both the role of carbon capture and sequestration (CCS) and carbon dioxide removal technologies in addressing climate change. Presentations were made by representatives of the IIT faculty, ICRLP, the US Department of Energy, Argonne National Labs, and companies in the private sector. The more than 150 attendees, included students from Chicago universities, faculty, and members of the governmental and non-governmental sectors.

In addition to ICRLP-sponsored workshops, we were also involved in co-organizers of two other CDR workshops, at the University of Wisconsin and Arizona State University.

III.Characterizing the Current Carbon Removal Conversation:

ICRLP has begun its work in the context of rapidly intensifying interest in carbon removal. This section surveys the publications that have pushed carbon removal into mainstream policy discussions, and offers an overview of the landscape of these conversations, as they stand at ICRLP’s inception.

The Current Landscape of CR Discussions:

Our report *Why Talk About Carbon Removal?* explores the state of the conversation about carbon removal in each of five different sectors.

- **Policy -- A growing but fragmented arena:** While it is difficult to ignore the speed at which carbon removal is entering into regular climate and environmental policy discussions, comprehensive discussions of research, scalability, and use of specific negative emissions technologies remains underdeveloped.
- **Academic Landscape -- An idea incubator:** There are few academic research centers dedicated to carbon removal; however, the literature assessing carbon removal’s myriad components is robust and plentiful in both the natural and social sciences. Academia is aptly positioned to inform and fill the gaps seen in the policy landscape.
- **Philanthropy -- A blip on a crowded radar:** Foundations play a significant role in strategically driving climate change mitigation. However, in the context of carbon removal, philanthropic work contributing to carbon removal assessment remains minimal.
- **Corporate Action -- A glimmer of interest:** There are two streams of work that define the interest of corporations in carbon removal: shaping the policy landscape and technological development. However, these two streams are still fairly niche and are not in conversation with one another.
- **Civil Society -- A diversifying conversation:** NGOs are familiar with addressing particular components of carbon removal such as accounting for carbon sinks and measuring blue carbon. However, conversations about how carbon removal fits into broader environmental, economic, and social agendas are progressing slowly. A handful of organizations have staked out positions either strongly supporting or opposing carbon removal, with an increasing number of organizations adopting more moderate positions as the conversation expands.

Major Publications that Shaped the Carbon Removal Conversation in 2018:

This year saw several high-profile reports that have advanced the conversation on carbon removal in important ways.

- ***Greenhouse Gas Removal (Royal Society, 2018)***: This report surveys proposed technologies for removing greenhouse gases from the air, explores cross-cutting issues in carbon removal, considers paths to net-zero emissions in the UK and meeting the goals of the Paris Agreement, and recommends pursuing a suite of carbon removal technologies. Greenhouse Gas Removal holds significance as it moved beyond the general recommendations for climate engineering research and integration into policy seen in the Royal Society's 2009 report on geoengineering to concrete considerations for serious employment of carbon removal technologies through existing policy structures.
- ***Special Report: Global Warming of 1.5°C (Intergovernmental Panel on Climate Change, 2018)***: While this report was an overall assessment of the impacts of and mitigation pathways for climate change, carbon removal was integral to all emissions pathways for reaching the 1.5°C target. As such, climate change mitigation would require removing billions of tons of carbon dioxide (CO₂) from the atmosphere by 2100. This report has more seriously placed CR technologies on the map for policymakers working within and beyond the United Nations Framework Convention on Climate Change.
- ***Three-Part Systematic Review of Negative Emissions Technologies in *Environmental Research Letters* (2018)***: A team based at Berlin's Mercator Research Institute on Global Commons and Climate Change synthesized the academic literature on carbon removal, publishing their results in three papers in the open-access scientific journal *Environmental Research Letters*. The review addresses a wide range of carbon removal methods and practices and discusses the challenge of upscaling carbon removal to climate-relevant scales. All three papers, along with supporting data and further information, can be found on the project's web site at <https://www.co2removal.org>.
- ***Negative Emissions Technologies and Reliable Sequestration: A Research Agenda (Washington, DC: The National Academies of Sciences, Engineering, and Medicine, 2018)***: The NAS acknowledges that carbon removal has gained significant traction in the international community as we continue to grapple with addressing climate change. However, the NAS astutely points out that these conversations are advancing much faster than the technological viability of negative emissions technologies. As such, this report is an assessment of the scalability, benefits, and drawbacks of carbon removal while also developing a pointed research agenda for carbon removal.
- ***Emissions Gap Report 2018 (United Nations Environment Programme, 2018)***: This report is aimed at exploring the options available for closing the gap between where our emissions are likely to be and where our emissions need to be in order to meet global climate targets. Carbon removal is explicitly evaluated in its ability to shrink the emissions gap in that recent climate assessments demonstrate a lower-maximum potential for carbon removal, meaning emissions will need to be cut more deeply in order to reach climate targets. Whereas the Emissions Gap Report 2017 emphasized the need for carbon removal, this year's report updates the discussion with recent studies of possible trajectories that limit dependence on negative emissions technologies. The report shows that carbon removal is an integral part of climate solutions but can not work in place of cutting emissions.

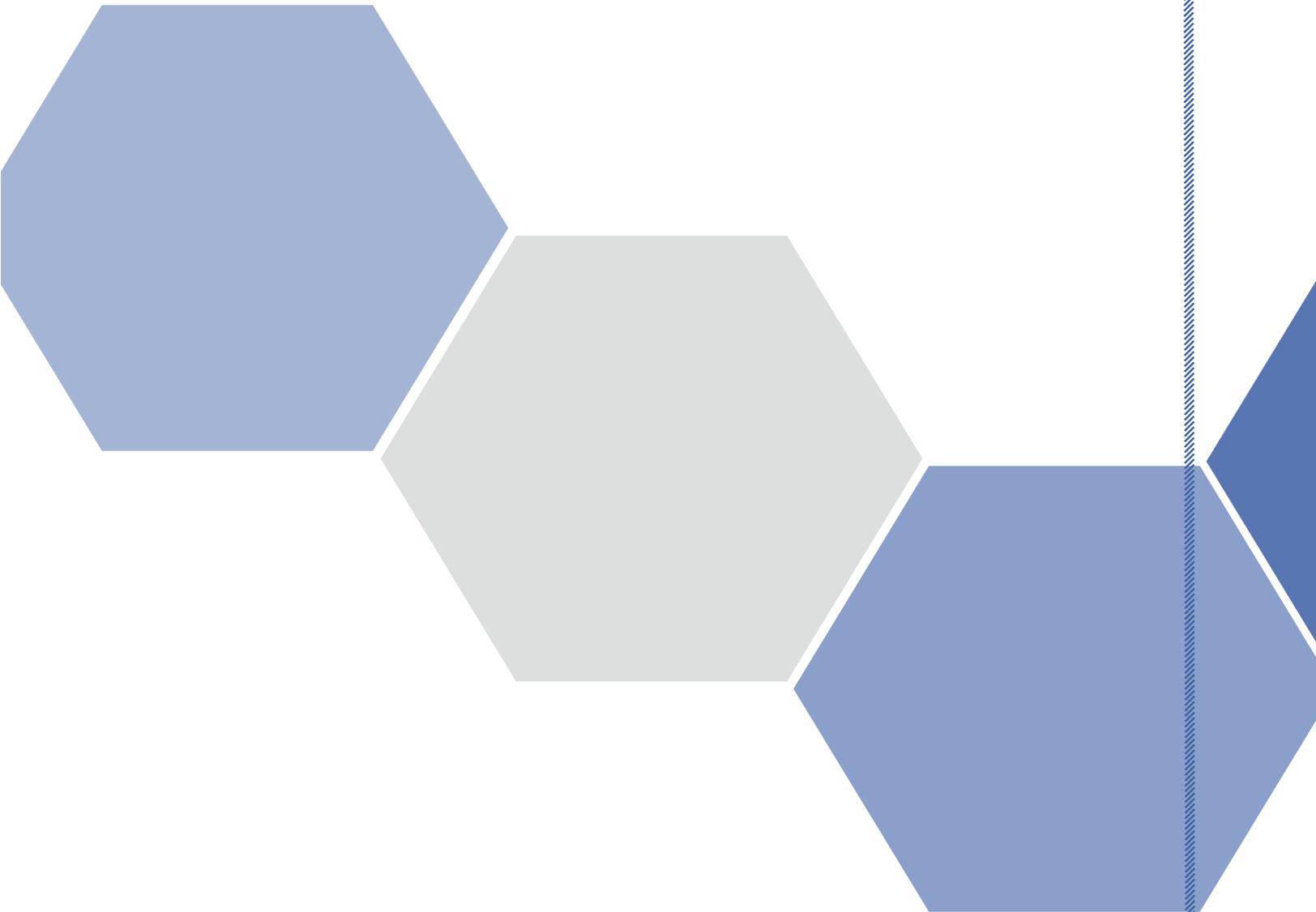
IV. Future Work:

ICRLP will move over the coming year beyond mapping the existing governance landscape of carbon removal into identifying or designing governance mechanisms that promote sustainable carbon removal developments at every level of operation, from individual projects through international policy portfolios. In our pursuit of this work, we define sustainable carbon removal as carbon removal that is *ecologically restorative, economically viable, and socially just*.

In order to ensure relevant actors are approaching carbon removal in a sustainable way, ICRLP is launching the following projects and activities in early 2019:

- **Explaining Carbon Removal:** In line with ICRLP's mission of being an educational source on carbon removal, we seek to produce a range of educational materials to communicate a balance message about the importance, potential, challenges, and risks of these technologies. To do so, we aim to continue our webinar series on recent developments in carbon removal and assessments of specific technologies by hosting nine public webinars in 2019. We also wish to create short explainer videos and written material to introduce carbon removal in general.
- **Law Conference:** In order to catalyze the production of legal research on carbon removal, ICRLP seeks to host an academic conference in conjunction with American University's Washington College of Law on how carbon removal fits into existing legal frameworks and the kinds of legal frameworks necessary to ensure carbon removal serves to advance human rights, especially those threatened by climate change.
- **Speakers Bureau:** At the beginning of the new year, ICRLP will be rolling out its Speakers Bureau. Organizations will be able to request our staff to speak at events or give lectures to provide interested parties in-depth and objective information about technology, law, ethics, and politics associated with potential deployment of negative emissions technologies.
- **Communicating Carbon Removal Effectively:** In the Spring of 2019, ICRLP will release a new report entitled *How to Talk About Carbon Removal*. This will be a comprehensive assessment for strategically communicating carbon removal concepts to various audiences. After the release of this report, ICRLP will hold a two-day convening of mid- to high-level stakeholders to facilitate evaluative conversations about the needs and potential advancements for speaking about carbon removal.

- **SESYNC:** Scenarios Pursuit -- In cooperation with ecologist Christopher Trisos, ICRLP will bring together experts on scenario generation, integrated assessment modeling, carbon removal, and solar geoengineering over a series of four week-long workshops at the National Socio-Economic Synthesis Center (SESYNC) in Annapolis, Maryland. The project's primary aim is to develop policy-relevant scenarios and modeling tools to enable researchers, policymakers, and civil society to think through long-term climate policies in ways that incorporate the social and environmental impacts of carbon removal, among other factors. The first workshop is scheduled for May 2019.



V. Staff:



Dr. Simon Nicholson: Co- Director

Simon Nicholson, PhD, is director of the Global Environmental Politics program at the School of International Service at American University. His work focuses on global environmental governance, global food politics, and the politics of emerging technologies. His work on carbon removal is informed by a deep sense of concern about the lack of effective response to climate change coming from mainstream political and social processes. At the same time, prior work on the politics of technology tells him that promising technological responses to complex social problems can too easily go awry, can fail to fulfill expectations, can be repurposed for ill-conceived or nefarious ends, or can entrench the very dynamics that drive the problems to which the technologies are attempting to respond. He brings cautious optimism to the carbon removal conversation, with emphasis on “cautious.” Among his publications, Nicholson is co-editor (with Sikina Jinnah) of *New Earth Politics* (MIT Press, 2016), and (with Paul Wapner) of *Global Environmental Politics: From Person to Planet* (Routledge, 2015).

Some Relevant Recent Speaking Engagements and Publications:

- “Toward Legitimate Governance of Geoengineering Research: A Role for Sub-State Actors” (2019) *Ethics, Policy and Environment* vol. 28, no. 3 (forthcoming) (with Sikina Jinnah and Jane Flegal).
- “Bioenergy and Carbon Capture with Storage (BECCS): The Prospects and Challenges of an Emerging Climate Policy Response,” *Journal of Environmental Studies and Sciences* (2017) vol. 7, no. 4, pp. 527-534 (with Wil Burns).
- “Carbon Removal as Part of Climate Response: the State of Play” RESOLVE Annual Meeting, Washington DC, October 24, 2018.



Dr. Wil Burns: Co-Director

Wil Burns, PhD, previously served as the Director of the Energy Policy and Climate program at Johns Hopkins University in Washington, DC. He is also the former president of the Association for Environmental Studies and Sciences, former co-chair of the International Environmental Law interest group, and chair of the International Wildlife Law Interest group at the American Society of International Law. He has published over 80 articles and chapters in law, science, and policy journals and books and has co-edited four books. He holds a PhD in International Environmental Law from the University of Wales-Cardiff School of Law. Prior to becoming an academic, he served as Assistant Secretary of State for Public Affairs for the State of Wisconsin and worked in the non-governmental sector for 20 years, including as executive director of the Pacific Center for International Studies, a think-tank that focused on implementation of international wildlife treaty regimes, including the Convention on Biological Diversity and International Convention for the Regulation of Whaling. His current areas of research focus are climate geoengineering; international climate change litigation; adaptation strategies to address climate change, with a focus on the potential role of micro-insurance; and the effectiveness of the European Union’s Emissions Trading System.

Some Relevant Recent Speaking Engagements and Publications:

- Brent, Kerryn, Wil Burns, and Jeffrey McGee. *Ocean Climate Engineering: An assessment of potential risks, benefits and governance* (Waterloo, Canada: Center for International Governance Innovation, 2019 [forthcoming]).
- “Issues in Law and Policy,” COMPAS Conference on Geoengineering, The Ohio State University, Columbus, OH, November 16, 2018
- “Into the Great Wide Open: The Promise and Perils of Climate Geoengineering,” George Perkins Marsh Institute, Clark University, Wooster, MA, October 24, 2018.



Dr. David Morrow: Director of Research

David Morrow, PhD, works on normative aspects of climate policy, especially climate justice and the ethics and governance of carbon removal and climate engineering. He was previously an assistant professor at the University of Alabama at Birmingham, where he taught in the philosophy and political economy program. He is the author or co-author of several philosophy textbooks, including, most recently, *Moral Reasoning: A Text and Reader on Ethics and Contemporary Moral Issues* (Oxford University Press, 2018) and is currently working on a book on values in climate policy.

Some Relevant Recent Speaking Engagements and Publications:

- “Carbon Removal and Climate Justice,” Warren Steinkraus Lecture, SUNY Oswego, Oswego, NY, October 25, 2018
- “A Case for Geoengineering?” COMPAS Conference on Geoengineering, The Ohio State University, Columbus, OH, November 16, 2018.



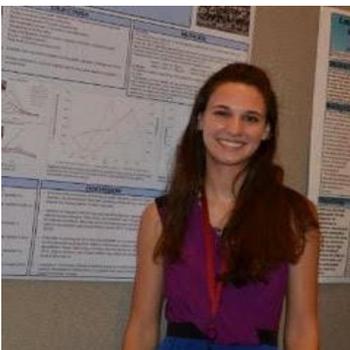
Carolyn Turkaly: Program Manager

Carolyn Turkaly oversees the Institute’s research, engagement programs, and daily operations. Carolyn is an MA candidate with the Global Environmental Politics Program in the School of International Service at American University.



Amanda Borth: Project Coordinator

Amanda Borth provides day-to-day support for the Institute’s projects and programmatic activities including finance, grant administration, media relations, and event outreach. Amanda graduated with her BA from American University’s School of International Service.



Emily Ronis: Research Assistant

Emily Ronis is a research assistant with the Institute for Carbon Removal Law and Policy. She supports staff research, communication, and administration needs. Emily is a current M.A. candidate in American University’s Global Environmental Policy Program. She has previously worked on wildlife policy issues with The Wildlife Society and conducted fieldwork with the U.S. Geological Survey and Michigan State University Mara Hyena Project.

To learn more about ICRLP's work and find the resources mentioned in this report, please visit the following links.

Website: <https://www.american.edu/sis/centers/carbon-removal/>

You Tube: <https://www.youtube.com/channel/UCZJg8B0lUf3QVju5EviQuoA>

Facebook: <https://www.facebook.com/Institute-for-Carbon-Removal-Law-and-Policy-336916007065063/>

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