

Climate change discourse at the UNFCCC: Who drives the climate frames?*

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1 Introduction

This chapter examines how civil society organizations (CSOs) participate in and shape climate change discourse at COP21 and demonstrate the important role of small but specialized CSOs. By specialized or specialist CSOs, we refer to civil society organizations and groups who focus on specific issues and people groups, rather than generalists with multiple issue interests related to climate change. We draw on the theoretical framework of organizational ecology (developed in the last chapter) and demonstrate the formation and emergence of climate discourses online. In particular, we argue that specialized CSOs adopt their frames through two different mechanisms: self-representation and crossover-representation. Leveraging Twitter data from registered non-party observers at COP21, we identify distinctive climate frames around gender issues and indigenous rights. Furthermore, we show that these climate justice frames emerge in the online space under different mechanisms, propelled by different types of CSOs. Drawing on the example of the formation of a gender-focused climate frame, we argue that the women’s groups are the predominant contributor to this frame, effectively representing themselves. By contrast, the indigenous-climate frame emerges as a result of the co-construction from groups from various sectors such as forestry, conservation, and social justice. Such “crossover-representation” of indigenous interest distincts itself from the “self-representation” observed among the women’s groups.

Overall, we highlight the agency reflected in framing strategies by specialized CSOs. While the existing literature on transnational advocacy has disproportionately focused on larger and more powerful non-governmental organizations, smaller but specialized organizations are typically assumed as free-riders of the powerful. This chapter challenges this notion and suggests that the way they generate climate change discourse strongly indicates a sense of agency, authenticity, and urgency in a slow-moving crisis like climate change.

This chapter aims to achieve four things. First, we empirically illustrate the multi-dimensional nature of framing efforts. Existing research often reduces the diversity of frames in climate change discourse to the sectors that CSOs belong to (businesses, women’s groups, etc.) based on the UNFCCC’s Constituencies and thematic groups (Allan, 2020; Cabré, 2011). However, simply

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tallying the number of CSOs does not tell us how and why various CSOs adopt particular frames. By leveraging Twitter data and computational methods, we present the first systematic effort to capture variations in both the organizational attributes of CSOs *and* their framing efforts. In so doing, we locate the relative positions of CSOs in a discursive space at COP21.

Second, we examine the relationship between organizational attributes and different framing choices. To date, research on transnational actors, such as civil society groups and non-governmental organizations, has suggested that a handful of actors serve as “gatekeepers” for agenda-setting while smaller organizations jump onto the “bandwagon” of popular causes (Bob, 2005; Carpenter, 2007). We challenge this notion by adopting the framework of organizational ecology and explain how organizational characteristics may or may not affect different framing choices of NGOs.

Third, we contribute to the broader discussion of the nature of non-state actors in transnational advocacy. The early notion that many such actors are often principled, normative actors (Keck and Sikkink, 1998) has been challenged by the empirical findings that they are political actors seeking survival in a resource-scarce world (Bob, 2005; Cooley and Ron, 2002). Our study contributes to this long-standing debate by demonstrating the limits of resource-based explanations for frame adoption among actors like CSOs. We argue for small but specialized CSOs’ ability to occupy distinct discursive space through self- and crossover-representation and suggest that online space may further strengthen the power of these seemingly less powerful players.

Finally, we highlight the utility of leveraging online data as a study of transnational activism. While the UNFCCC has opened the door to non-party observers, most of them still do not impact directly the negotiation outcomes. After all, the UNFCCC is an intergovernmental venue where national delegates convene and dialogue. To be sure, a small portion of CSOs can join the national delegations to have their input during the diplomatic process (Betsill and Corell, 2008). However, the vast majority of them are kept outside of official decision-making bodies. Online space allows us to observe the work of CSOs without being dependent on gatekeepers’ decisions.

2 The Paris COP

2.1 Data collection and processing

We focused our data collection efforts on COP21, a milestone event for global climate change governance. We posit that CSOs were highly active in disseminating their messages during COP21, for which there were high expectations that the meeting would produce a new international agreement on climate change. In fact, the conference witnessed the highest number of non-party observers at the time, with a total of 1,109 participants. This record turnout of participants was only exceeded during COP26 in 2021.

To analyze how different CSOs used different frames for climate change, we assembled two types of data for *all* registered NGO participants for COP21. First, we collected all English-language tweets from the registered observers, including retweets, during the 14-day period of COP21 (November 30–December 12, 2015). Twitter is (or, was before Elon Musk’s acquisition of the company) a widely used social media for political communications. In 2015, the Pew Research Center found that roughly 60% of US adult respondents use Twitter as a way to learn real-time news events (Shearer et al., 2015). Research in the United States also suggests that active Twitter

users are politically engaging and can shape policy discourse (Hemphill and Roback, 2014). We used the hashtag #COP21 as a keyword to focus on NGOs’ intentional efforts to shape climate change discourse during COP21. Although some CSOs do not have Twitter accounts or do not actively engage in online discussions, such negative data (the dog that didn’t bark) are also valuable in evaluating CSOs’ representation in climate change discourse. We collected a total of 20,851 tweets.

We coded those tweets based on the climate change frames represented by each tweet. Since there has been a proliferation of frames in climate change discourse in recent years (Jinnah, 2011), each study uses a different number of frames in their analyses (Allan and Hadden, 2017; Hjerpe and Buhr, 2014; Hopke and Hestres, 2018). As we are interested in the different mechanisms under which *gender* and *indigenous* frames are established, these two categories are included in our coding categories. We also included well-established frames identified in the literature: *science*, *energy*, and *economy*. Finally, we added two categories specific to COP21: *invite* (event invitation) and *treaty*.

To code a large number of tweets, we adopted the semi-supervised machine-learning (ML) model called the seeded Latent Dirichlet allocation (LDA). The LDA is a method to classify documents, such as tweets and newspapers, into any number of categories based on the probability distribution of each word in the text (Bagozzi, 2015; Blei, Ng and Jordan, 2003). For example, if relatively unique words, such as “indigenous” and “native,” appear across documents, these documents will be clustered together.¹ In other words, words like “climate” will not be a useful identifier for clusters because a large majority of tweets include “climate.”

A major problem of unsupervised-ML (non-seeded LDA) is that the interpretation of the results is necessarily ad hoc. Researchers can specify the number of clusters, but they must ensure these clusters mean anything useful *after* the model outputs the results. The seeded LDA has an advantage over non-seeded LDA models in that it allows us to specify keywords—seed words—for document classification based on our prior knowledge. Here, the model uses the co-occurrence of seed and non-seed words for document classification (Ramesh et al., 2014; Watanabe and Zhou, 2022). The seeded LDA also offers an advantage over supervised ML models, which are heavily influenced by our selection and coding of “training” sets (Hastie et al., 2009; Yu, Kaufmann and Diermeier, 2008). In short, seeded LDA attempts to take a middle ground between supervised and unsupervised ML.

We chose three to four words as the seed words of each frame in our model.² The model then sorted each tweet into one of the eight categories based on the co-occurrences of the seed and non-seed words. Note that, in addition to the seven categories discussed above, the model added a residual category, *other*, to handle ambiguous cases. Table 1 shows the top ten words most strongly associated with each frame and a total number of tweets sorted in each frame category.

Second, we collected organization-level data from the CSOs, including mission statements, the geographic scope of operation, and headquarter locations, from each CSO’s official websites. If a CSO has no online presence and thus no information about the organization, we dropped them from the analysis. We collected organization-level data for a total of 834 CSOs. Based on the

¹To be sure, whether they are actually clustered together depends on the number of clusters we want to find in the text.

²science = target*, carbon, emission*, redd*; energy = fossil, fuel, oil, nuclear*; economy = economy, market*, business*; gender = woman, women, gender; indigenous = indigenous, native; invite = event, join, watch, follow; treaty = paris, deal, agreement, talk*

	Science	Energy	Economy	Gender	Indigenous	Invite	Treaty	Other
1	carbon	fossil	business	women	indigenous	event	paris	cities
2	emissions	nuclear	economy	gender	climatechange	join	agreement	action
3	target	nuclear4climate	businesses	world	change	watch	deal	world
4	redd	fuel	markets	people	rights	follow	talks	leaders
5	targets	oil	market	action	can	today	talk	statesandregions
6	emission	countries	marketsmatter	leaders	forests	live	talking	ban
7	finance	need	energy	now	birdstellus	us	text	lpaa
8	can	us	clean	future	need	day	new	local
9	adaptation	support	climatetv	climatejustice	health	now	draft	global
10	role	lo5c	renewable	justice	must	side	parisagreement	ki-moon
#	2,562	2,503	2,590	2,900	2,795	2,934	3,101	2,618

Table 1: Top ten words most strongly associated with each frame and a total number of tweets in each category. Seed words are indicated by gray shades.

mission statements, we identified the sectors to which each CSO belongs. We used Cabré’s (2011) CSO sectors at the UNFCCC, such as “Business & industry” and “Rights & justice,” as a starting point. We then added a few other categories for COP21 to update Cabré’s categorization based on COP15 (2009). The added sectors include “Conservation,” “Finance & market mechanism,” “Health,” and “Pollution & waste.”

In addition, to operationalize the concept of specialization in the context of environmental and climate CSOs, we took into account the scope of each CSO’s mission and categorized them into three groups. Each CSO was categorized into one of the groups. We treated organizations such as universities, businesses, and churches as separate categories. Table 2 summarizes the statistics of CSO categorization. A full list of CSO sectors and summary can be found in Appendix A.

1. **Multi-issue CSOs:** *Generalist* CSOs that cover a broad range of issues belong to the climate change and environmental sectors. For example, Greenpeace International is coded as a multi-issue CSO, as its mission statement encompasses a wide range of issues, including forest, ocean, air and water quality, and food security, among many others.
2. **Issue-specific CSOs:** *Specialist* CSOs with a specific environmental focus, such as food, agriculture, energy, forest, health, transport, water, and ocean, belong to this category. Kenya-based African Forest Forum is an example of issue-specific CSOs. In this case, the mission of the CSO focuses specifically on Africa’s forest and tree resources.
3. **People-specific CSOs:** *Specialist* CSOs with a focus on the welfare of a specific people group, such as women, youth, and indigenous peoples, belong to this category. For example, GenderCC, a women’s group in Germany, is coded as a people-specific CSO. Its endeavor is exclusively in gender equality and women’s rights in battling climate change.

	Number of CSOs	Percentage (%)	Sectors included
Multi-issue CSOs	142	17	Climate change, Environment
Issue-specific CSOs	223	26.7	Built environment, Conservation, Energy, Finance and market mechanism, Forest, Food and agriculture, Health, Legal practice, Pollution and waste, Rights and justice, Sustainable development, Transport, and Water and oceans
People-specific CSOs	70	8.4	Indigenous peoples, Women, Youth and children
University	140	16.8	University
Business and industry	67	8	Business and industry
Others	182	21.8	Education and capacity building, Development, Religious and spiritual, Science and engineering, Think tank, Others and unknown

Table 2: Categorization of CSOs generalists and specialists according to sectors.

Regarding geographic information of CSOs, we focused on two kinds of organizational data. First, the operating scope indicates the primary areas of operation for each CSO. The scope has three levels: whether its activities take place locally and nationally, regionally (such as within the European Union or in Southeast Asia), or globally. Second, we coded whether each CSO’s headquarter is located in the global North or South. Table 3 summarizes the geographic information of CSOs.

		Number of CSOs	Percentage (%)
Headquarter	North	689	82.6
	South	143	17.2
	Unknown	2	0.2
Operating scope	Global	481	57.7
	Regional	83	10
	National	223	26.7
	Unknown	47	5.6

Table 3: Headquarters and operation scopes of CSOs.

3 Analysis

3.1 Discursive map of CSOs

Our coding of tweets allows us to empirically observe frame choices of CSOs without reducing them to CSOs’ sector-based attributes. For example, Greenpeace International is a generalist, multi-issue CSO. We can measure what are bundled in this “multi-issue” package by analyzing the composition of its tweets: nine tweets with scientific frames, 54 with gender, 26 with indigenous, and so on. We posit that this variation indicates how Greenpeace International distributed its

advocacy efforts between different climate change frames during COP21. As CSOs tweeted with various frequencies during the COP, we standardized framing efforts with a total number of tweets for each CSO. In short, *framing variables* measure the ratio of tweets adopting each of the eight frames introduced above (Appendix B). In this analysis, we removed CSOs with 14 or fewer tweets (one tweet per day on average), so extreme values are generated by framing choices rather than the small number of total tweets.³ A total of 213 CSOs are analyzed.

As there are eight framing variables (corresponding to Table 1), the positions of CSOs can be represented by an 8-dimensional discursive space. In order to visualize their positions, we plotted each CSO on a two-dimensional space with multidimensional scaling (MDS) of the eight framing variables. MDS is a method to reduce dimensions while preserving similarity among units as much as possible (Kruskal and Wish, 1978). In Figure 1, CSOs close to each other share similar frame choices. To visualize the clusters of CSOs, we also conducted a k-means clustering analysis on the framing variables to identify groupings, in which CSOs share similar frame choices. The k-means cluster analysis fits the positions of a given number of cluster means (centers of the circles) to minimize the distance to CSOs represented by the framing variables. We chose five as the number of clusters since only five of our eight frame categories have substantive meaning (science, energy, economy, gender, indigenous). We find “average” CSOs at the center of this discursive map, such as Sierra Club, Practical Action, and the United Church of Canada, suggesting that they lean more toward pragmatic approaches than radical actions in their climate advocacy. By contrast, the further a CSO is from the center, the CSO is more “extreme” in terms of focusing on a particular framing strategy.

We find three major groupings in this discursive space. First, the orange circle (Cluster 5) consists of CSOs that focus mainly on gender frames. We find that specialist CSOs representing the interest of women, such as GenderCC, WEDO (Women’s Environment & Development Organization), 1 Million Women, are “pulling” this circle towards the upper right. As gender issues constitute a well-established niche populated with various CSOs, these women’s CSOs must distinguish themselves by spearheading their own narrative in the context of climate change. We also find a concentration of people-specific CSOs, suggesting that they may find easier ways to connect their group identities, such as youth and students, with women.

Second, the blue circle (Cluster 2) consists of CSOs tweeting mainly with indigenous frames. Unlike the gender cluster, indigenous peoples’ organizations, such as ICC Canada and IWGIA (International Work Group for Indigenous Affairs), are located in the center of the circle rather than on the fringe. CSOs at the bottom of this circle are specialist CSOs focusing on specific issues, such as forest and health—issues that are connected to indigenous peoples. This suggests that a different set of specialist CSOs, the issue-specific ones, rather than indigenous peoples’ organizations, are pushing the narrative of indigenous peoples. Moreover, this indigenous peoples’ cluster occupies a distinct area in this discursive space, suggesting that their framing profiles are unique and potentially making it difficult to collaborate with the rest of the NGO participants in COP21.

Finally, three clusters (Clusters 1, 3, and 4) overlap significantly on the left side of the quadrant, suggesting that CSOs in this discursive space share similar framing choices. These are a mix of CSOs that focus on traditional frames, such as science, energy, and economy. Towards the left,

³For example, if a CSO tweets five times during the COP, four of which were about science, this CSO would receive a high value, 80%, for scientific framing.

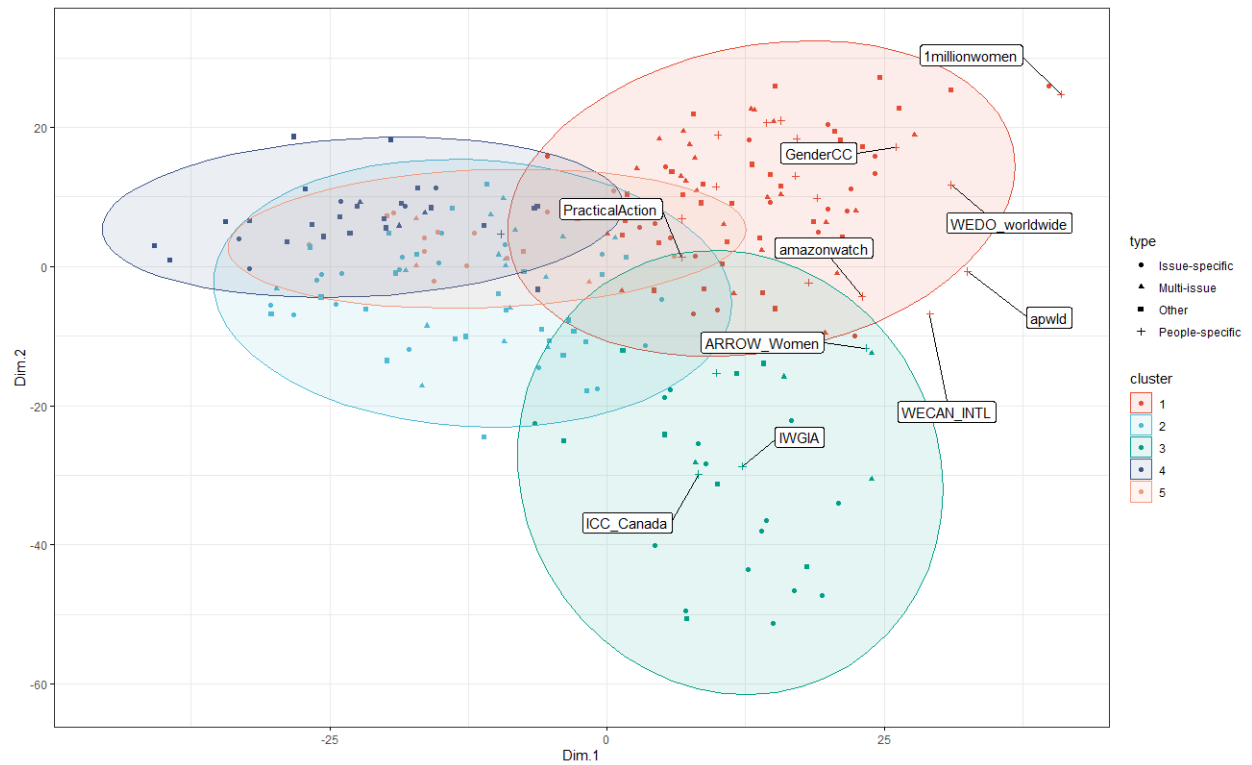


Figure 1: Discursive map of CSOs with five clusters indicated by color circles. Labels indicate CSOs (Twitter handles) that belong to women's and indigenous sectors. Node shapes represent generalist and specialist CSO categories.

we find research institutes, such as Edison Electric Institute and IGSD (Institute for Governance & Sustainable Development) that focus heavily on scientific frames.

We also computed the Euclidean distance of each CSO from the mainstream climate change discourse at COP21, represented by the average of each framing variable. We draw on the strategy of measuring ideological distances developed by Baldassarri and Bearman (2007). We interpret this distance as an extremity measure for the framing choices of a CSO relative to the rest of the participants at COP21. Formally, the distance (D) of each CSO i is computed as follows:

$$D_i = \sqrt{\sum_{n=1}^j (p_{i_j} - q_j)^2} \quad (1)$$

Where p is each CSO's frame adoption rate and q is the average adoption rate for climate change frame j .

We adopted an OLS regression model to estimate the framing extremity (D) of each CSO with organizational characteristics. We found that specialist CSOs focusing on particular issues were more likely to be extreme in their frame choices relative to generalist CSOs (Appendix C). The result suggests that generalist CSOs occupy the middle ground in climate change discourse at COP21, using largest-common-denominator strategies in frame adoption. Interestingly, specialist CSOs focusing on people groups are positively associated with the extremity measure but statistically insignificant ($p=0.08$). The result could mean two things. First, frames that people-specific CSOs adopt are considered mainstream discourse at UNFCCC. Given the strong presence of people-specific CSOs in the gender cluster (Figure 1), this could be another indication of the mainstreaming of gender discourse in global governance (Hafner-Burton and Pollack, 2002). Second, it is also possible that people-specific CSOs are taking more pragmatic approaches than issue-specific CSOs to advance their causes. The finding here highlights different ways in which specialist CSOs are represented in the discursive space of COP21 and shows how specialization alone cannot predict the fringeness of specialist NGOs.

3.2 Who contributes to climate change discourse?

Having established that frame choices are not necessarily reducible to organizational attributes, we now turn to the relationship between organizational attributes and frame adoption more closely. First, we examine what kind of CSOs were more likely to engage in online activism during COP21. We used the total number of tweets during COP21 for each CSO to measure online engagement. We used negative binomial models to fit our count dependent variable. We first constructed a baseline model, predicting the number of tweets with a categorical variable for the CSO niche (multi-issue, issue-specific, people-specific, or other CSOs), operating scope (national, regional, or global), and location of CSO headquarter (South or North) (Appendix F). We then have two specifications (Appendix G) where Model 1 replaces the CSO niche variable with a binary variable for each of the CSO types, and Model 2 includes specific sectors.

The baseline model shows that generalist CSOs that focus on multiple issues are the most active actors in tweeting about climate change. Using multi-issue CSOs as a reference category, all other categories of CSOs show a negative coefficient, indicating that they are less active in tweeting about COP21 than the generalists. To visualize the effect, Figure 2 below shows the difference in tweet numbers among the categories. Also, CSOs whose work covers an expansive geographic

region and those from the global North are more likely to be active tweeters. Model 1 is consistent with the baseline model, showing that multi-issue CSOs tweet most actively, and Northern CSOs are more likely than Southern CSOs to be active on social media. According to the baseline model (Figure 2) and the marginal effect analysis, (Figure 3, Panel a), a generalist CSO is likely to tweet more than other types of NGOs.

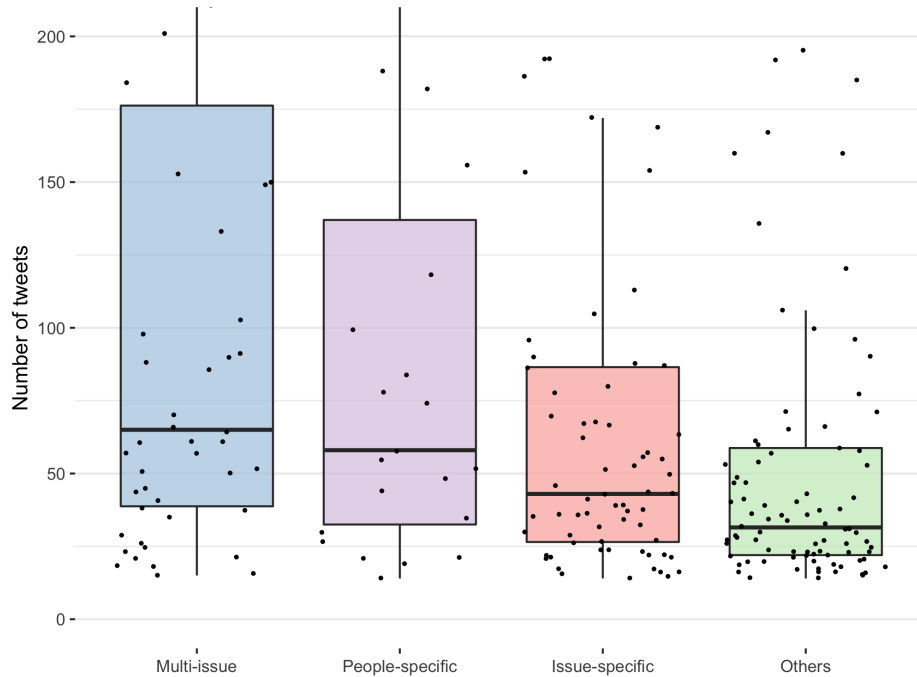


Figure 2: Tweets by CSOs from different generalist and specialist categories. The sample includes organizations with 14 or more tweets, with outliers excluded for visualization purposes.

The findings here offer two important insights. First, generalist CSOs have a greater capacity than specialist CSOs to appeal to a broader set of audiences, as they have fewer constraints on what they can frame as climate change issues. Among the top ten tweeters during COP21, seven are multi-issue generalist CSOs working in climate and environmental sectors, and all are based in either Europe or the US. Backed by relatively abundant resources, those generalist CSOs can create what can be seen as “mainstream” discourse.

Second, the findings also illustrate the lack of representation by Southern CSOs. UNFCCC COPs are known to be relatively more accessible than many other multilateral processes where non-state actors are excluded. While CSOs may find it relatively easy to register as attendees, not everyone contributes to the construction of climate change discourse. Generalist CSOs that are based in industrialized countries and work in a variety of geographic areas are far more likely to contribute to climate change discourse than their global Southern peers. The North-South asymmetry in global governance has been criticized by many (Barnett and Walker, 2015), but we also found this asymmetry in the social media space.

However, we know from the previous analysis (Figure 1) that climate change discourse is fragmented and is not dominated by large generalist CSOs. Specialist CSOs, especially those that engage with gender frames, have a strong presence in the overall discourse of climate change.

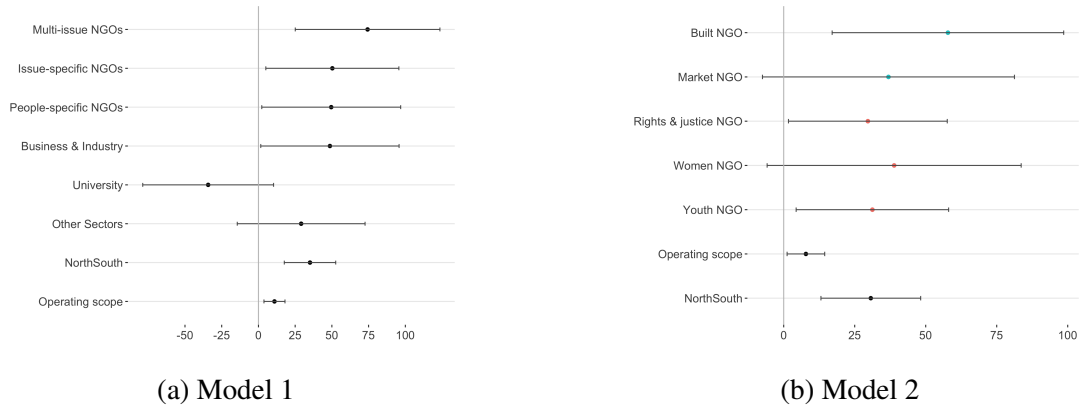


Figure 3: Average marginal effect on the number of tweets.

Although specialist CSOs tweet less frequently than generalist CSOs, that does not mean they are absent or even marginalized. Therefore, Model 2 unpacks the two specialist categories (issue-specific and people-specific CSOs) and uses CSO sector attributes as estimators.

Model 2 shows that five sectors of specialist CSOs are particularly active on Twitter during COP21: the built environment community, climate financing and market mechanisms, environmental rights and justice, women, and youth. The average marginal effect of each sector is plotted in Panel b of Figure 3. All CSOs working in the first two sectors—built environment such as urban management and planning and market mechanisms such as carbon trade—are from the global North. While these CSOs are specialists in certain issues within climate change, their sectors have so far been dominated by Northern expertise. Their activeness supports the previous finding that Northern groups enjoy higher online engagement.

However, the other three sectors—rights and justice, women, and youth groups—include Southern organizations and groups, and more importantly, represent the interest of disadvantaged social groups. These CSOs are specialized in social issues related to justice and equity, the frames that recently became popularized at UNFCCC. Their clear presence on Twitter signals the rise of NGOs that do not derive their expertise from scientific or technological knowledge, but from the ability to access and represent the people disproportionately affected by climate change. While large generalist CSOs do enjoy privileged positions, being smaller specialists is also a source of power in engaging with climate change discourse. Our analysis thus joins the recent effort to re-imagine a dichotomous portrait of the powerful gatekeepers versus their followers among CSOs (Shibaike, 2022), providing a nuanced picture of an ecological space of climate framing where different groups can thrive at the same time.

3.3 Stories we tell: Women's groups

The previous section established that specialist CSOs are important contributors to climate change discourse, but it does not tell us how they frame climate change. As women and gender advocacy continues to gain attention at UNFCCC, we investigated what kind of groups developed this particular frame during COP21. We used the gender framing variable (one of the framing variables in Appendix B), which is the ratio of gender frames each NGO adopted out of all tweets. In other words, this measures the extent to which a CSO focused on constructing gender discourse during

COP21. As the percentage data is bounded between 0 and 1, we used binomial generalized linear models to predict the outcomes (Appendix H).

As the frame is primarily around women and gender topics, intuitively, we first tested whether women’s groups are active in constructing this frame. Model 1 from Appendix H shows that women’s groups are highly active in tweeting with gender frames. Although only 18 CSOs belonged to the women’s sector based on an explicit commitment to the cause in their mission statements, almost all of them dedicated their COP21 tweets to advocating women’s rights and gender equality. Eight of the 18 women’s groups have at least one-third of their tweets focusing on women and gender issues. Those women’s groups together formed a community that is highly vocal about their activities and goals at COP21, representing the interest of women from both the global North and South. Although the North-South divide is a persistent problem among most sectors, we find little evidence of that among women’s groups.

We also explored whether CSOs from other sectors contribute to women and gender frames compared to women’s groups. Model 2 expanded Model 1 to include generalist and specialist categories; people-specific CSOs are not included, as women’s groups exclusively belong to this category. As the marginal effects in Figure 4 show, CSOs from no other types stand to be noteworthy co-contributors to the gender frame. In particular, although generalist CSOs could have taken on gender issues as a major part of their multiple-issue agenda, we found no evidence that they concentrated their advocacy resources on this frame. While the previous section demonstrated that generalists are active contributors to climate change discourse, in this segment of the Twitter space, generalists are taking a back seat, and the only prominent voice comes from women themselves.

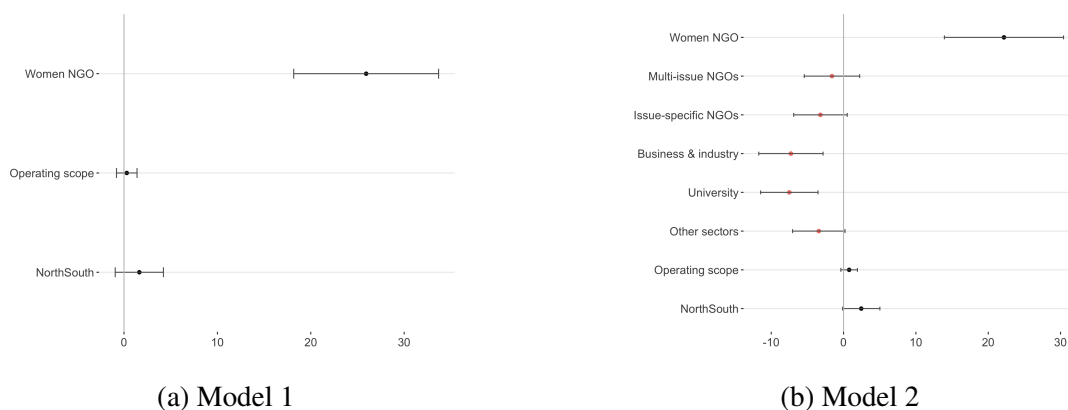


Figure 4: Average marginal effect on the number of gender tweets.

The findings have two implications. First, women’s groups not only work inside the UNFCCC venues to have themselves heard, but also use social media to amplify their voices. Huairou Commission, a grass-root women’s movement, had all their tweets tightly surrounding women and gender issues. 1 Million Women from Australia adopted a gender perspective for 75% of their tweets at COP 21. The tweets from these organizations and others did not shy away from their agenda. They demanded representation: “We need more women at the cop21 table.” They called for mainstreaming gender into the formal agreement: “Gender is cross-cutting; must be included in Purpose Section in the agreement” and “You cannot trade off half the population on women and gender issues disappearing at COP21.” They portrayed women as agents of change: “Women

bring solutions both at COP and on the ground.” A clear message insisting on gender balance and women’s rights is found in all their tweets.

Second, a clear division of labor is emerging between CSOs constructing and shaping women and gender frames and those adopting them as a part of, but not necessarily the center of, their advocacy agendas. Women’s groups are committed to shaping their own stories. They are the main drivers of the agenda. Other CSOs do not exhibit a consistent effort to adopt the gender perspective and be an advocate for women’s rights and gender equality in their narratives. This supports our idea about self-representation, in which a populated niche pushes specialist CSOs to develop genuine ownership of an issue—gender in this case.

3.4 Stories *they* tell: Indigenous communities

We investigated another people-specific CSOs, indigenous peoples’ groups, to understand their framing efforts. We used the indigenous framing variable (Appendix B) as the outcome variable to examine the types of CSOs contributing to the development of indigenous frames in climate change discourse. Results from statistical models are shown in Appendix I.

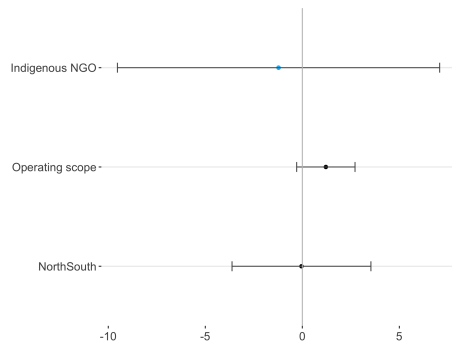
We constructed Model 1 to test whether indigenous peoples themselves are active contributors to indigenous frames. We find no evidence that indigenous peoples’ organizations spent significant portions of their tweets about their own stories. Moreover, the substantive effect of the indigenous sector on indigenous framing is negative. These results indicate that an indigenous peoples’ organization is no more likely to use indigenous frames than CSOs from other sectors. Forty CSOs have at least half of their COP21 tweets devoted to indigenous and climate issues. Only one indigenous peoples’ organization, Asia Indigenous Peoples Pact Foundation, is found among them.

An optimistic interpretation is a mainstreaming of indigenous discourse: many non-indigenous CSOs adopt indigenous discourse for their climate advocacy, so indigenous peoples’ organizations are not alone in talking about their climate concerns. However, there is also a possibility of tokenism in which indigenous causes are used to create emotional appeals by other groups.

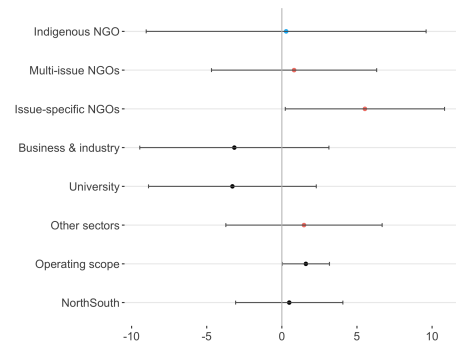
To look more closely at organizational attributes in relation to indigenous advocacy, we expanded our model to include CSO types (multi-issue, issue-specific, and other CSOs) in Model 2 and all sectors of the registered CSOs in Model 3. Model 2 shows that issue-specific CSOs, instead of indigenous peoples’ organizations, are helping to build an indigenous-climate narrative. Model 3 further corroborates the finding that some of the issue-specific specialist CSOs are dedicated to constructing indigenous discourse around climate change. Panel c of Figure 5 shows the sectors of CSOs actively using indigenous frames: conservation, forest, environmental health, and rights and justice.

Global Witness, the UK-based organization that seeks justice for environmental and climate defenders, is an example of such issue-specific CSOs. Its mission statement emphasizes people who are ill-treated or murdered by governments and corporations because of their efforts to protect the environment and fight against climate-wracking industries.⁴ Global Witness is committed to forest and biodiversity conservation and justice for those disproportionately affected by the climate crisis. During COP21, Global Witness mentioned indigenous people in almost half of their tweets. For example, it called for attention to the murder of indigenous people who are “guardians of our

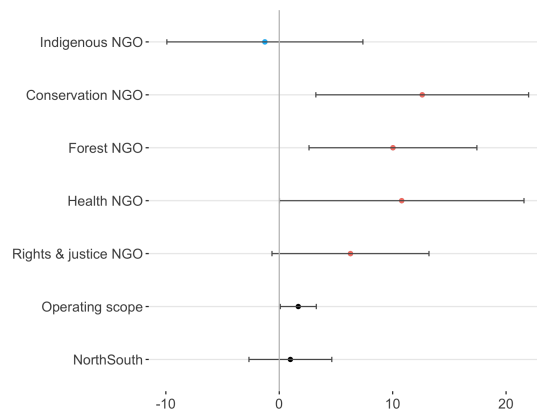
⁴<https://www.globalwitness.org/en/about-us/> (Accessed: June 12, 2022).



(a) Model 1



(b) Model 2



(c) Model 3

Figure 5: Average marginal effect on the number of indigenous tweets.

forests.”⁵

Several CSOs focusing on forest conservation established a close connection to indigenous peoples in their advocacy discourse. Among them are FERN from Belgium,⁶ Forest Peoples’ Programme from the UK,⁷ and California and Oregon-based NGO Pacific Forest Trust.⁸ The primary goals of these organizations are the protection and sustainability of forests, to benefit climate, water, wildlife, and people’s well-being. At COP21, more than half of their tweets were concerned with issues related to indigenous peoples. They highlighted the vulnerability of indigenous peoples around the world, from Cameroon to Indonesia to Brazil, advocating for a rights-based forest protection plan that includes indigenous traditional knowledge.

A final example is Ford Foundation, the US-based funding giant for rights and justice-related causes. Over 65% of its tweets during COP21 were centered on an indigenous cause. Although initially founded as a tax scheme for the Ford family, Ford Foundation shaped our understanding of human rights over many years through its funding programs (Wong, Levi and Deutsch, 2017). Many of the Ford Foundation’s tweets reflected firm support for indigenous rights in tackling climate change. For example, it tweeted, “If we protect indigenous rights, we fight climate change.” Several of its tweets underscored the threats posed by deforestation toward indigenous people.

Indigenous issues may be a relevant area for these issue-specific NGOs, but are not central to their missions. The findings suggest that the interest of indigenous peoples is reflected in crossover-representation, where indigenous peoples themselves may not be spearheading to fill in the niche emerging for their themselves. Instead, an indigenous discourse related to climate change is co-constructed by groups with a variety of issue interests.

We speculate two reasons why the indigenous sector is not saturated like the women’s sector. The first reason is substantive. The “crossover-representation” pattern we observe from online data could very well be a reflection of the marginalization of indigenous peoples’ participation in global climate change governance in general. A substantial literature suggests that indigenous participation *inside* the UNFCCC COPs has been unequal, insufficient, and tokenized, as indigenous peoples face various obstacles at the international stage (Rashidi and Lyons, 2021; Shawoo and Thornton, 2019; Zurba and Papadopoulos, 2021). Such obstacles include a lack of financial resources and the capability to navigate a western-dominated paradigm regarding the understanding of nature, to name a few. At the same time, the indigenous community is marked by heterogeneity, many groups living in the global South or financially under-served communities, which makes it difficult for them to organize internationally.

The second reason is methodological. Since indigenous frames are identified with co-occurrences of the seed words, such as “indigenous” and “native,” they may have included false positives that are not quite indigenous tweets. Even if that is the case, however, the co-occurrence of words like rights, forests, and health, reveals the nature of indigenous frames with which CSOs discuss their own issues through issue linkage.

⁵<https://twitter.com/fabioviquez/status/670777566966452224> (Accessed: June 12, 2022).

⁶<https://www.fern.org/> (Accessed: June 12, 2022).

⁷<https://www.forestpeoples.org/> (Accessed: June 12, 2022).

⁸<https://www.pacificforest.org/> (Accessed: June 12, 2022).

4 Conclusion

Using the idea of organizational ecology, we conceptualized CSOs into three types: multi-issue generalists, and specialists who either focus on specific issues or specific people groups. They correspond to different sets of resource base, or niches, for organizational survival. While existing research has already highlighted differences between generalist and specialist CSOs (Bush and Hadden, 2019; Eilstrup-Sangiovanni, 2019; Shibaike, 2022), we have documented further variations in specialist CSOs to represent and advocate for particular people groups. While self-representation allows CSOs to have ownership of a frame corresponding to their resource base, crossover-representation borrows the credibility and emotional appeals from others, in which the ownership of a frame is shared.

The study of CSOs has a long debate about whether CSO behaviors can be best explained by resource base or principled beliefs (Cooley and Ron, 2002; Keck and Sikkink, 1998). Using COP21 as an illustrative case, we have shown that CSOs' resource base motivates their advocacy tactics, especially the use of emotions, but it does not explain frame choices. We argue that the gatekeeping thesis, in which specialist CSOs take advantage of public goods provided by leading organizations, overstates the importance of resources to CSOs in general, while at the same time discounting the importance of small but specialized CSOs. Most CSOs are resource-poor, but this seeming disadvantage pushes them to develop their own discursive space by speaking for themselves or sharing concerns with other CSOs. Especially with the burgeoning online social media platforms that are readily available, our study opens up new research opportunities that can significantly enrich the understanding of CSOs' influence and agency.

With these findings from quantitative analysis, we then turn to qualitative evidence obtained from in-depth interviews with women's groups and indigenous peoples' organizations at COP23, 24, and 27. In the next chapter, we draw lessons from these conversations and show how these specialist CSOs construct and shape climate change frames in multilateral venues like the COPs and use emotional appeals to establish and reinforce their discourses.

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A Description of NGO sectors

Non-governmental Organizations (NGO) sectors	Description	Number of NGOs
Built environment	NGOs dealing with cities, urban systems and planning	17
Business / industry	Business and industry NGOs. Representation of businesses, business associations. Not included those specifically under another category, such as energy or forests	67
Climate change	NGOs whose raison d'être is addressing multiple issues in climate change	51
Conservation	NGOs dealing with biodiversity, conservation of natural resources and area	15
Development	NGOs whose main goal is development, hunger and poverty reduction, or human development.	34
Education / capacity building	NGOs other than universities whose primary goal is education or capacity building	23
Energy	NGOs dealing with energy issues	40
Environment	NGOs dealing with multiple environmental issues, broadly defined. Not including environmental NGOs engaging in single issues such as forest, agriculture, etc.	91
Finance / market mechanism	NGOs engaging in the design, management, and monitoring of carbon trade, carbon offset programs, and other market-oriented mechanism. Climate financing agencies	12
Food, soils, and agriculture	NGOs dealing with food production, agriculture and soil degradation	
Forest	NGOs dealing primarily with forests	28
Health	NGOs dedicated to health issues	11
Indigenous peoples	Organizations and groups dealing with indigenous peoples issues or whose constituency consists primarily of indigenous peoples	21
Legal practice	Lawyer, legal and law-related NGOs	6
Other / unknown	NGOs that do not at under any other category or whose mission could not be determined.	56
Pollution / waste	NGOs dealing with air pollution and solid wastes	3
Religious / spiritual	Faith-based NGOs.	25
Rights / justice	NGOs based on a rights and/or a social justice approach. NGOs with rights-category such as women or indigenous peoples not included.	34
Science / engineering	Scientific and engineering NGOs, excluding universities, not primarily involved in any of the other categories.	33
Sustainable development	NGOs whose stated main goal is sustainable development or both environment/sustainability and development	19
Think tank	Think tanks and NGOs focusing on policy and/or international relations	10
Transport	Transport related NGOs	7
University	Higher education institutions.	140
Water, oceans, and fisheries	NGOs addressing oceans, fresh water and fisheries issues	14
Women	NGOs primarily concerned with women's rights and issues	13
Youth / children	NGOs addressing youth and children issues, or with youth as their primary constituency.	36

Table 4: Full list of NGO sectors.

B Boxplot of frame adoption rate

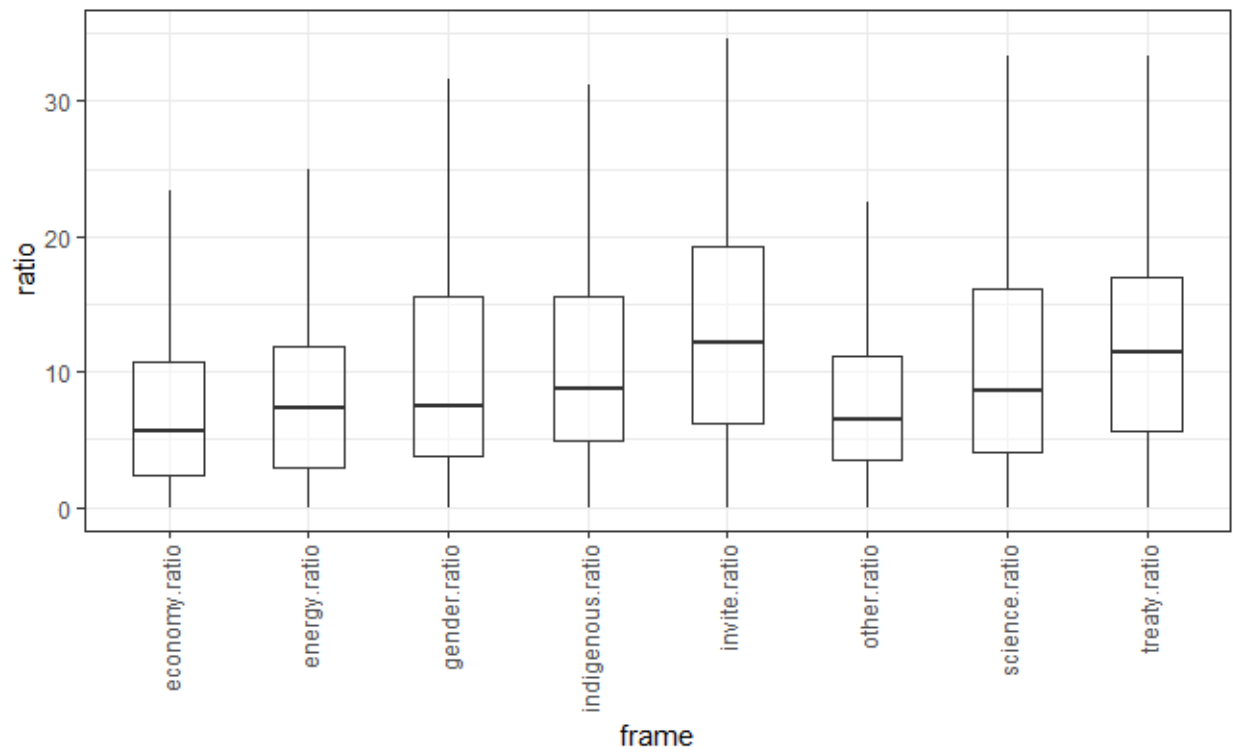


Figure 6: Boxplot of frame adoption rate across CSOs. Outliers are removed for visualization.

C OLS for frame adoption extremity

	<i>Dependent variable:</i>
	Frame choice extremity
Issue-specific CSOs	7.820*** (2.036)
People-specific CSOs	4.926 (2.806)
Other CSOs	4.213* (1.934)
National	−0.827 (1.892)
Regional	−2.480 (2.430)
South	3.088 (2.908)
Constant	27.797*** (1.644)
Observations	231
R ²	0.067
Adjusted R ²	0.042
Residual Std. Error	10.908 (df = 224)
F Statistic	2.697* (df = 6; 224)
<i>Note:</i>	*p<0.05; **p<0.01; ***p<0.001

Table 5: Result of OLS analysis for frame choice extremity.

D Disursive map of CSOs with anger scores

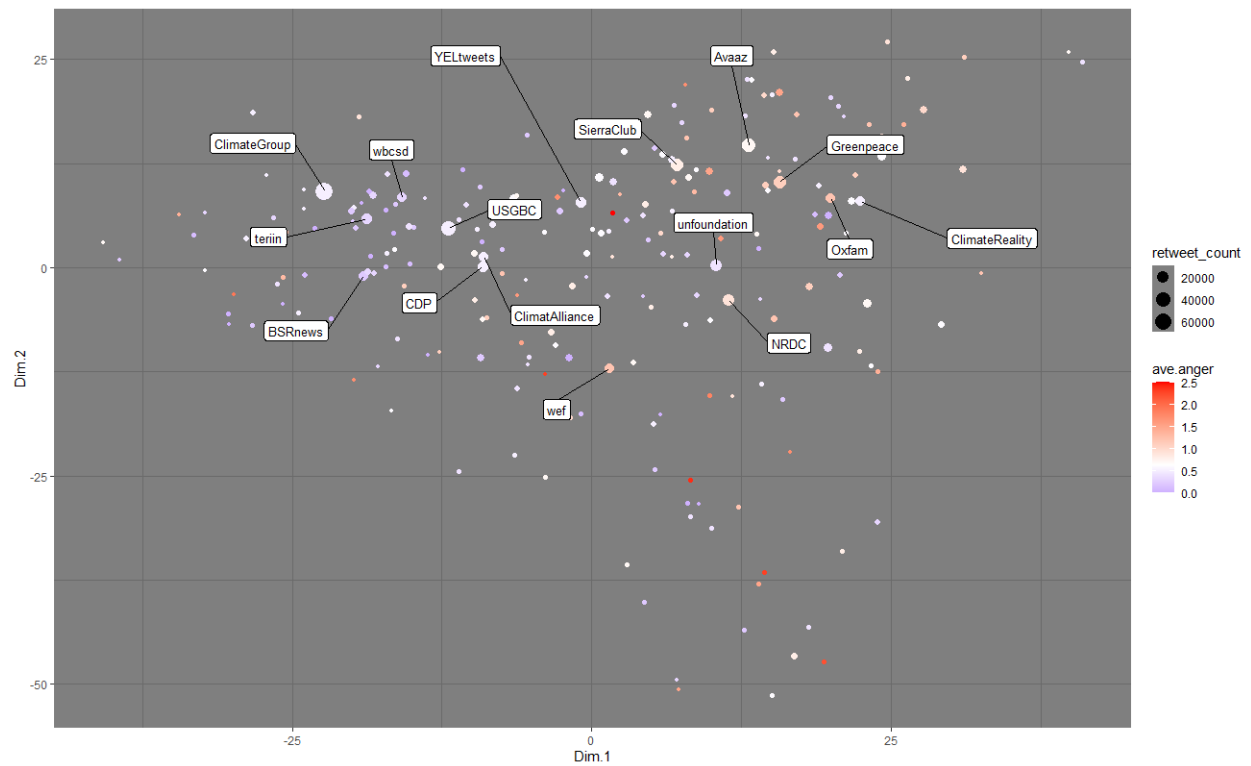


Figure 7: Discursive map of CSOs with anger scores. The average sentiment is white, and blue for fewer displays of anger, red for more displays of anger. Labels indicate CSOs with RT counts above 10,000. Node size is proportional to the number of times retweeted during COP21.

E OLS for NGO anger scores

	<i>Dependent variable:</i>
	NGO anger score
Cluster 2	−0.127 (0.085)
Cluster 3	0.124 (0.103)
Cluster 4	−0.236* (0.106)
Cluster 5	−0.227 (0.129)
Issue-specific	0.029 (0.093)
People-specific	0.282* (0.129)
Other	0.157 (0.089)
National	−0.080 (0.085)
Regional	0.070 (0.109)
South	−0.020 (0.131)
Constant	0.607*** (0.083)
Observations	231
R ²	0.101
Adjusted R ²	0.060
Residual Std. Error	0.488 (df = 220)
F Statistic	2.480** (df = 10; 220)
<i>Note:</i> *p<0.05; **p<0.01; ***p<0.001	

Table 6: Result of OLS analysis for CSOs' average anger scores.

F Baseline model for all tweets during COP21 (Multi-issue CSOs as reference category)

	<i>Dependent variable:</i>
	Tweets by NGO observers at COP21
Issue-specific NGOs	-0.834*** (0.284)
People-specific NGOs	-0.828** (0.374)
Other NGOs	-1.705*** (0.248)
Operating scope	0.222** (0.106)
Global North	1.099*** (0.253)
Constant	3.028*** (0.282)
Observations	786
Log Likelihood	-2,476.000
theta	0.167*** (0.009)
Akaike Inf. Crit.	4,964.000
<i>Note:</i>	* p<0.1; ** p<0.05; *** p<0.01

G Negative binomial regression output for all tweets during COP21

	<i>Dependent variable:</i>	
	Number of tweets by NGO observers at COP21	
	(1)	(2)
Multi-issue NGOs	2.502*** (0.745)	1.722*** (0.244)
Issue-specific NGOs	1.694** (0.738)	
People-specific NGOs	1.668** (0.776)	
Business/Industry	1.638** (0.774)	
University	-1.152 (0.749)	
Other sectors	0.979 (0.735)	
Built Environment		1.967*** (0.600)
Conservation		0.516 (0.638)
Finance/Market mechanism		1.254* (0.741)
Food/Agriculture		0.595 (0.620)
Forest		0.400 (0.493)
Health		0.626 (0.742)
Legal		0.873 (1.091)
Pollution/Waste		-1.652 (1.444)
Rights/Justice		1.008** (0.457)
Sustainable development		0.458 (0.588)
Transport		0.986 (0.924)
Indigenous Peoples		-0.099 (0.595)
Women		1.323* (0.744)
Youth/Children		1.062** (0.433)
Operation scope	0.368*** (0.107)	0.266** (0.106)
Global North(1) or South (0)	1.182*** (0.242)	1.043*** (0.258)
Constant	0.260 (0.746)	1.293*** (0.258)
Observations	786	786
Log Likelihood	-2,445.651	-2,468.733
theta	0.184*** (0.011)	0.171*** (0.010)
Akaike Inf. Crit.	4,909.301	4,973.466

Note: * p<0.1; ** p<0.05; *** p<0.01

H General linear regression output for gender tweets during COP21

	<i>Dependent variable:</i>		
	Ratio of gender tweets by NGO observers at COP21		
	(1)	(2)	(3)
Women	25.932*** (3.958)	22.172*** (4.202)	24.746*** (4.596)
Multi-issue NGOs		-1.605 (1.954)	
Issue-specific NGOs		-3.196* (1.888)	
Business/Industry		-7.279*** (2.267)	-4.712 (2.946)
University		-7.498*** (2.025)	-4.806* (2.719)
Other sectors		-3.424* (1.849)	-0.837 (2.629)
Operation scope	0.297 (0.560)	0.770 (0.585)	0.662 (0.589)
Global North(1) or South (0)	1.639 (1.316)	2.444* (1.315)	2.218 (1.357)
Climate change			1.798 (3.109)
Environmental			0.500 (2.838)
Built Environment			-2.099 (3.981)
Conservation			0.641 (4.129)
Finance/Market mechanism			-3.449 (4.591)
Food/Agriculture			-4.440 (4.049)
Forest			5.592 (3.526)
Health			-1.867 (4.591)
Legal			-0.982 (6.245)
Rights/Justice			0.768 (3.392)
Sustainable development			-2.667 (3.909)
Transport			-2.733 (5.441)
Indigenous Peoples			-3.310 (3.912)
Youth/Children			5.248 (3.310)
Constant	3.884*** (1.173)	6.400*** (1.841)	4.137 (2.747)
Observations	786	786	786
Log Likelihood	-3,129.913	-3,117.807	-3,110.719
Akaike Inf. Crit.	6,267.825	6,253.615	6,263.438

Note: * p<0.1; ** p<0.05; *** p<0.01

I General linear regression output for indigenous tweets during COP21

	<i>Dependent variable:</i>		
	Ratio of indigenous tweets by NGO observers at COP21		
	(1)	(2)	(3)
Indigenous NGO	-1.225 (4.236)	0.286 (4.753)	-1.852 (5.328)
Multi-issue NGOs		0.815 (2.805)	
Issue-specific NGOs		5.528** (2.704)	
Business/Industry		-3.162 (3.212)	-5.534 (4.012)
University		-3.291 (2.848)	-5.712 (3.702)
Other sectors		1.474 (2.654)	-0.890 (3.580)
Operation scope	1.213 (0.767)	1.598** (0.800)	1.618** (0.802)
Global North(1) or South (0)	-0.043 (1.826)	0.492 (1.821)	0.892 (1.848)
Climate change			-1.625 (4.234)
Environmental			-1.439 (3.866)
Built Environment			-1.281 (5.422)
Conservation			12.134** (5.623)
Finance/Market mechanism			-4.408 (6.253)
Food/Agriculture			6.264 (5.515)
Forest			9.522** (4.803)
Health			10.320* (6.253)
Legal			-5.588 (8.506)
Rights/Justice			5.750 (4.620)
Sustainable development			-5.256 (5.323)
Transport			-6.885 (7.411)
Women			-2.187 (6.259)
Youth/Children			-4.073 (4.507)
Constant	7.094*** (1.659)	5.191* (2.786)	7.192* (3.741)
Observations	786	786	786
Log Likelihood	-3,376.861	-3,365.414	-3,353.524
Akaike Inf. Crit.	6,761.722	6,748.827	6,749.049
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01			