Environmental Mobilizations Through Online Networks:
An Analysis of Environmental Activism on Turkey's Twittersphere

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This study explores and elucidates the nature and dynamics of environmental activism mediated via Twitter in Turkey. Drawing on the Twitter data, we show that two different forms of environmentalism are being pursued on this platform. There is, on the one hand, mainstream environmentalism of relatively established actors, and, on the other, confrontational/critical environmentalism of new actors. Unlike the former, the latter politicizes environmental issues to its full extent. While the actors pursuing mainstream environmentalism tend to act individually and use Twitter rather as a broadcast platform, the actors of confrontational/critical environmentalism form connections, interact, and engage in concerted action to voice environmental concerns, thereby incubating an environmental movement on Twitter within the increasingly authoritarian Turkish context. Our findings suggest that Twitter performs highly different functions within the same context depending on the discourses, identities, and interests of environmental actors.

Keywords: environmental activism, network analysis, Twitter, Turkey

With the rapid growth of environmental degradation and injustices in Turkey, countless protests have been staged, particularly in the past decade at different locales. Specifically, goldmines in the Aegean, Marmara, and Black Sea regions (Doğu, 2019a; Özen & Doğu, 2020; Özen & Özen, 2017, 2018; Yaşın, 2019), hydropower plants in the Black Sea, Aegean, and Eastern Anatolian regions (Aksu, Erensü, & Evren, 2016), thermal power plants in Marmara, Black Sea, and Aegean regions (Akbulut, 2014; Taşdemir, Bodur Ün, & Balkan Şahin, 2021), and big infrastructural projects in Istanbul (Pelivan, 2020; Uysal, 2012) stirred protests. Various social groups from major cities, towns, and villages with diverse spatial, class, ethnic, and gender identities, as well as with different ideological commitments, participated in these protests to express their discontent with the exploitation of the natural environment and accompanying environmental destruction and dispossessions. In addition to both sporadic and more sustained protests, which often faced outright repression, several environmental actors, including

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nongovernmental organizations (NGOs), movement organizations, platforms, and news outlets, became more vocal in opposing environmental degradation (Paker, Adaman, Kadirbeyoğlu, & Özkaynak, 2013). One significant outlet through which this activism increasingly manifests itself is social media platforms, particularly Twitter (Doğu, 2019b).

Twitter provides an infrastructure for the interconnections among the environmental actors, which can be observed, unlike in any other domain, thanks to its self-evident configuration (Doğu, 2020). Having the peculiar qualities of a microblogging platform, Twitter may serve as a broadcast medium with its capacity deriving from its design affordances, which allow environmental movements to bypass the conventional gatekeepers, helping environmental actors put pressure on policymakers via directly bringing issues on the agenda that are often ignored by the political figures and the mainstream news media. Twitter gained extensive popularity in Turkey, especially during the Gezi protests in 2013 (Barbera, Metzger, & Tucker, 2013), and since then has been a pivotal, as well as symbolic, platform for the online activities of environmental actors. Almost a decade after the Gezi protests, Twitter is still politically significant because its impact is persistent, and it retains a potential function for the mobilization of future protests (Ozduzen & McGarry, 2020) with its 16.1 million users in the country (Kemp, 2022).

This study aims to understand whether the environmental activism on Twitter indicates the constitution of a sustained environmental movement. To this end, we explore and elucidate the nature and the dynamics of the environmental activism mediated via Twitter. We examine the data collected from Twitter by drawing on the insights from the literature on social movement activism through social media, as well as the literature on environmental politics. Specifically, our study addresses three sets of questions. The first one is related to the "actors": who are the main constituents of this digital environmental activism? Are they proliferated? The second set of questions is about the "issues" of environmental activism on Twitter: what are the main issues voiced through Twitter? In what ways have these issues been framed? And is there a common agenda uniting and unifying different environmental actors? The third set is on the "connections" established on Twitter: To what extent are the environmental actors on Twitter connected based on the issues they cover? Is there a single network linking the main actors or multiple networks formed between different environmental actors? We employed network analysis to answer these questions by mapping the connections among the environmental actors' Twitter accounts based on the issues they covered and revealed their linkages deriving from the use of interactive features.

We show that two different forms of environmentalism are pursued on Twitter in parallel. One is mainstream environmentalism of the various NGOs and international nongovernment organizations (INGOs) that address issues largely in a depoliticized way; and the other is confrontational/critical environmentalism of various collectives/platforms and local movement organizations, which present a much more politicized perspective. We also show that the confrontational/critical environmentalism tends to form a collective by connecting geographically dispersed environmental actors with similar concerns, values, and identifications, while the actors of mainstream environmentalism largely act individually and separately. As it is detailed in the following section, many scholarly works on the use of social media underline how it facilitates collective action and the formation of protest movements, while some others argue that it may also pose certain limitations to the generation and sustenance of protests. Our analysis of the two different forms of environmentalism on Twitter contributes to this literature by implying that Twitter may perform different

functions within the same context depending on the ways it is used by different actors. As our study reveals, it may serve only as a broadcast platform or help the incubation of a protest movement depending on the discourses, identities, and interests of tweeting actors.

Digital Activism

The impact of social media on different forms of collective action and activism has begun to attract scholarly interest, particularly since the eruption of a series of the so-called "movements of squares" in the early 2010s, which revealed that the use of social media has transformed the political environment. Accordingly, the various aspects of the relation between social media and social movements have been investigated from different angles. It has been widely underlined that social media facilitates protest and collective action by providing an outlet for social grievances, frustrations, and demands, thus empowering the powerless. By connecting individuals to various others with similar grievances and demands (Bimber, Flanagin, & Stohl, 2012; Kavada, 2018), it becomes easier and less costly to organize protests from the bottom up (Chadwick, 2013; Earl, Hunt, Garrett, & Dal, 2015; della Porta & Mosca, 2005). Through the use of social media, protesters can draw the attention of the public to the issues deliberately ignored by traditional media (David & Baden, 2020). Even local protests may create an effect beyond their locality (Dahlberg-Grundberg & Örestig, 2017). Moreover, by facilitating communication, collaboration, and coordination, social media may accelerate the diffusion of protests (Bennett & Segerberg, 2012; Juris, 2004; Lynch, 2011). In line with the logic of connective action, recognition of digital media as organizing agents may also unite heterogeneous individuals and groups through online meetings and coordination of offline activities, and help calibration of relationships by establishing levels of transparency, privacy, security, and interpersonal trust (Bennett & Segerberg, 2012). All these benefits are even more valid for the authoritarian contexts, which impose multiple restrictions on grassroots oppositional mobilizations. Within such contexts, social media may emerge as a platform for mobilization by providing channels for disseminating information and for establishing contacts out of sight of, and beyond the control of the authorities (Earl et al., 2015; Micó & Casero-Ripollés, 2014). Moreover, digital activism may increase for authoritarian regimes the cost of repression, as more international attention is focused on protests (Shadmehr & Boleslavsky, 2021).

From another perspective, the role of social media on collective action should not be overestimated. Social media may have a capacity in expanding the scope of information sharing from the local to the global, influencing multidirectional flows of news and information, entering into the framing of news stories, and playing a role in the coordination of people, yet this capacity varies in different regions and contexts (Hutchins, 2016, p. 28). Moreover, these specific settings, alongside certain characteristics of social media, may privilege some forms of content over others and afford opportunities for certain actions, making others less likely to occur (Haider, 2016, p. 479). If, for instance, there is a failure to produce shared meanings and identities necessary for the formation and sustenance of social movements (McAdam, Tarrow, & Tilly, 2001; Melucci, 1996), the protests spontaneously generated on social media may not be transformed into sustained movements. As such, the engagement in protests via social media may take an ephemeral form (Earl et al., 2015). This form of activism, as noted by Dean (2012), may pose significant constraints on organizing a "coherent opposition" against intensifying inequalities, by displacing and dispersing critical energy (p. 126). It is also important to

consider that restriction on social media use may be imposed by authoritarian regimes in an attempt to contain and control grassroots oppositional mobilizations (Lynch, 2011).

At this point, one should also address the content of communication propagated through social networks. The channels provided by social media are significant, but this significance depends on how these channels are used. Are they used for supporting the hegemonic discourses and related structures? Or are they used to challenge and subvert these discourses and structures? To address these questions, it is necessary to focus on the content of the messages conveyed through these channels (Gerbaudo & Treré, 2015). Only by doing so, we can come to grips with the character of activism in digital platforms. Concerning specifically environmental issues, it is necessary to differentiate mainstream environmentalism from the more critical and radical version, as we do in this study, to understand the effect of the use of social media. Mainstream environmentalism adopts a managerial problem-solving approach by focusing on the "realization of concrete goals and indicators" (Hammond, 2021, p. 285) such as sustainable development goals and national greenhouse gas emission reductions. Critical environmentalism, on the other hand, questions broader structures and unmasks power relations, which lead to and legitimize the exploitation of the natural environment, underlining the necessity of a deep socioecological change to overcome the existing environmental injustices. Along similar lines, distinguishing between "governance environmental groups" and "emancipatory environmental groups," Doherty and Doyle (2006) state that the former reproduce environmental injustices by participating in existing structures of governance, whereas the latter challenge the dominant language or social and political values concerning the use of natural resources and environment (p. 705).

Data and Methods

In this study, we employed a relational approach, based on a network analysis of environmental actors on Twitter, aiming to reveal their concerns and connections, using data from a selected sample of environmental actors' accounts on Twitter. We employed purposive sampling based on our assessment of the environmental actors and their presence on the platform. In doing this, we aimed to show various actors comprising the environmental activism in Turkey. This was followed by snowballing, to increase the number of accounts. We retrieved data covering a two-year period from 2018 to 2020 from each account through a combination of REST and Streaming APIs, then merged these data on our coding sheet. We determined the issues following deductive classification and selected specific time frames for our analysis after a pilot study to test the coding process, which was manually executed by the two of the authors, who are trained coders. In this pilot study, we also fixated the issues and sorted them based on their frequency in the tweets. The following coding process was again done manually, not by an automated algorithm. As for intercoder reliability, we obtained a significant result on a random collection of tweets using Scott's pi (0.896). Nevertheless, the two coders regularly consulted each other in dealing with any ambiguity in the coding process. In the coding sheet, we provided input for all the issues associated with each Twitter account, the number of times these issues were mentioned, as well as their geographical distribution. While preserving the metadata, we listed the hashtags, mentioned, and retweeted accounts in the tweets, and also recorded their communicative functions, such as information sharing, community building, and action requests. For the duration of the research, of 43

selected accounts, 26 were eligible for coding, and the others were either suspended or provided insufficient data for the selected periods.

Following the data collection and coding processes, two levels of analysis formed the framework of this study. The first level consisted of mapping the common issues highlighted by the environmental actors in their Twitter streams. We divided these issues into nine main categories—conservation, resource depletion, energy production, climate change, pollution, sustainability, food system, resilience, and environmental law—illustrating a network of their mutual concerns. We have demonstrated these issues in two bipartite network maps, the first presenting the focal issues, and the second, concentrating on the main issue categories. In these maps, color-coded by issues, we also considered the weight of issues—in other words, the number of times an issue was brought to the agenda by a specific account. In the second level of the analysis, we revealed the connections between the accounts in our sample by recording the five most mentioned and retweeted accounts. We generated another network from these connections, this time a unilateral one, showing the incoming and outgoing linkages from the environmental actors directed to other accounts, yet again taking the weight factor into account. These linkages also included connections to accounts not included in our sample, such as those of news media and individual activists. Thus, we aimed to understand whether the accounts with similar environmental interests were better connected.

Our findings are compartmented in line with our research questions. We first introduce the current state of main environmental actors on Twitter, then point out the main environmental issues brought to public attention through Twitter; and finally, we show the extent to which connections were established among these actors.

Actors: The Environmental Twittersphere in Turkey

The history of Turkish environmental activism goes back to the 1970s, but it was not until the 1990s that local, regional, and national environmental organizations, as well as different social groups, proliferated and gained momentum as the effects of the neoliberal reforms on natural and urban environments became apparent. As social media gained popularity in the 2000s, environmental actors started to engage in digital activism. They have joined social media platforms, firstly Facebook and Twitter and, more recently, Instagram, making environmental issues visible to social media users. However, considering the number of followers and the level of activity/interaction characterized by the accounts, as well as the user profiles and the political nature of the platforms, it was particularly Twitter that has become a stage for the expression of environmental concerns and demands in Turkey (Erkmen, Arslan, Gümüş, & Doğu Öztürk, 2019). Many environmental actors across the country had joined Twitter by the beginning of the 2010s, but the real increase in popularity occurred during and after the Gezi protests in 2013. Since then, many different actors have used Twitter to voice environmental grievances and demands, turning it into the most prominent online venue for establishing new linkages, sharing information, showing solidarity, and calling into action (Jenzen, Erhart, Eslen-Ziya, Korkut, & McGarry, 2021).

In the context of this study, we have observed four different groups of environmental actors on Twitter, as demonstrated in Table 1. First, there are NGOs and INGOs, founded either in the 1990s or

in the early 2000s, except for one established in 2013. This group operates mainly in Istanbul and works on environmental issues and policies at the national level. The second group includes local and national environmental collectives and platforms founded in the second decade of the 2000s. The third group consists of local EMOs established in the 1990s and in the early 2000s. The final group consists of one Internet news platform established in 2008, a magazine established in 2014, and a professional organization established in the 1990s.

Table 1. The Environmental Actors on Twitter.

NGOs and INGOs	TEMA Foundation (TEMA Vakfı, @temavakfi)
	ÇEVKO Foundation (ÇEVKO Vakfı, @CevkoVakfi)
	ÇEKÜL Foundation (ÇEKÜL Vakfı, @cekulvakfi)
	Wheat Association for Supporting Ecological Living (Buğday Ekolojik Yaşamı Destekleme Derneği, @BugdayDernegi)
	Doga (Doğa Derneği, @DogaDernegi)
	Nature School (Doğa Okulu, @doganınaskına)
	Green Thought Association (Yeşil Düşünce Derneği, @yesildusun)
	Ecology Collective Association (Ekoloji Kolektifi Derneği, @ekolojikolektif)
	Earth Association (Yeryüzü Derneği, @YeryuzuDernegi)
	Greenpeace Türkiye (@Greenpeace_Med)
	WWF Turkey (Doğal Hayatı Koruma Vakfı, @WWF_TURKIYE)
Collectives/Platforms	Environmental Activities (Çevreci Etkinlikler, @ÇevreciEtkinlik)
	Northern Forests Defense (Kuzey Ormanları Savunması, @kuzeyormanlari)
	Validebağ Defense (Validebağ Savunması, @ValidebagSvnms)
	Validebağ Volunteers (Validebağ Gönüllüleri, @ValidebagKorusu)
	Green Habitants (Yeşil Alan Sakinleri, @Guney178)
	Arhavi Nature Protection Platform (Arhavi Doğa Koruma Platformu, @adokop08)
	Ecology Union (@ekolojibirligi),
	Green Resistance (Yeşil Direniş, @yesil_direnis)
	Green Movement (Yeşil Hareket, @ekolojikhareket)
EMOs	Green Artvin Association (Yeşil Artvin Derneği, @yesilartvinder)
	Black Sea is in Rebellion (Karadeniz İsyandadır, @karadenizisyan)
	Kazdağı Association for the Preservation of Natural and Cultural Resources (Kazdağı Doğal ve Kültürel Varlıkları Koruma Derneği, @kazdagikoruma)
News Outlets/Journals/Professional Organizations	Green Newspaper (Yeşil Gazete, @yesilgazete)
	Magma Magazine (Magma Dergisi, @MagmaDergisi)
	Chamber of Enviromental Engineers (Çevre Mühendisleri Odası, @CevreMuhOdasi)

As the above classification reveals, NGOs and INGOs form an important part of the environmental activism on Twitter. The aims of this group include combating erosion and engaging in afforestation (TEMA), promoting the recycling of packaging waste and sustainability (ÇEVKO), protecting Turkey's natural, historical, and cultural assets (ÇEKÜL), providing the natural world (WWF) with clean energy (Greenpeace), raising awareness of ecology and offering solutions to the problems of deterioration of ecological balance (Wheat Association), protecting nature and learning from it (Doga, Nature School), promoting green thinking and relevant policies (Green Thought Association), and improving the food system, water law, and urban transformation (Ecology Collective Association). The second-biggest group consists of the collectives and platforms that flourished after the Gezi protests. The aims of this group range from sustainability (Environmental Activities) and protecting forested areas of Istanbul (Northern Forests Defense), to creating local (Validebağ Defense) and national (Ecology Union and Green Movement) solidarity platforms. The EMOs in the third group aim to block gold-mining activities in Artvin (Green Artvin Association) and in the Mount Ida (Kazdağı Association), and hydroelectric power plants in the Black Sea region (the Black Sea is in Rebellion). The last group of our classification involves those actors who aim to report on ecological issues (Green Newspaper, *Magma* Magazine) and contribute to the protection of the urban and natural environment while protecting cultural and biological diversity (Chamber of Environmental Engineers).

The number of followers illuminates the extent of environmental actors' influence on Twitter, and it is seen that among all accounts in our sample, the most-followed organisations are TEMA, Greenpeace Turkey, *Magma* Magazine, WWF Turkey, and Northern Forests Defense (see Table 2). Given their reputation and long history, this is not surprising for TEMA, Greenpeace Turkey, and WWF Turkey. What is noteworthy here is that despite a shorter life span and a more locally focused agenda, Northern Forests Defense is in this group along with the well-established environmental actors. It is also worth noting that local EMOs, such as Green Artvin Association and the Black Sea Is in Rebellion, are higher up the list. Moreover, the recently established platforms focusing on the protection of a specific locale like Validebağ Defense, Validebağ Volunteers, and Arhavi Nature Protection Platform have more followers than some of those established in the 1990s and that focus on environmental issues at the national level. This achievement of the recently established platforms is an indicator of how they managed to adapt and use their experience/skills from the Gezi protests and drew on the mobilization potential residing in Twitter users/movement participants. These platforms also present flexible organizational formations, thus better adapting to Twitter's go-with-the-flow stream, and consequently appealing to more people.

Table 2. Accounts Sorted by the Number of Followers (November 22, 2021).

Organization	Twitter handle	Followers	Following
TEMA Foundation	temavakfi	484.9K	67
Greenpeace Turkey	Greenpeace_Med	480.6K	1030
Magma Magazine	MagmaDergisi	329.4K	354
WWF Turkey	WWF_TURKIYE	277K	408
Northern Forests Defense	kuzeyormanlari	106.9K	1848
Doga	DogaDernegi	103.5K	1019
Wheat Association for Supporting Ecological Living	BugdayDernegi	89.6K	639
Green Newspaper	yesilgazete	46.3K	48
Black Sea is in Rebellion	karadenizisyan	43.6K	1087
Green Movement	ekolojikhareket	41.9K	16.9K
Earth Association	YeryuzuDernegi	27.7K	1786
Green Artvin Association	yesilartvinder	24K	298
Ecology Union	ekolojibirligi	18.7K	576
Ecology Collective Association	ekolojikolektif	18K	568
Environmental Activities	CevreciEtkinlik	15.5K	811
Validebağ Defense	ValidebagSvnms	15.4K	658
Validebağ Volunteers	ValidebagKorusu	13.3K	1531
Arhavi Nature Protection Platform	adokop08	12.2K	1410
Nature School	Doganinaskina	12.2K	174
Chamber of Enviromental Engineers	CevreMuhOdasi	12.1K	131
Kazdağı Association for the Preservation of Natural and Cultural Resources	kazdagikoruma	10.9K	1354
Green Habitants	Guney178	10.2K	1178
ÇEKÜL Foundation	cekulvakfi	9432	1126
ÇEVKO Foundation	CevkoVakfi	7204	426
Green Thought Association	yesildusun_	Numbers were reset after the accounts reopened.	
Green Resistance	yesil_direnis		

In terms of the number of tweets, a clear indication of how active the environmental actors are on Twitter, Northern Forests Defense, one of the youngest actors of the environmental activism is in the first place (see Table 3). The situation is similar for the Green Habitants. Table 3 additionally shows that the news outlets, as well as EMOs in our sample, are also highly active on Twitter, and the NGOs, except for Doga, are relatively less so. As to the "likes" that the tweets receive, the dominant actors are the recently established platforms, namely Northern Forests Defense, Validebağ Volunteers, Green Habitants, and Validebağ Defense, along with the Kazdağı Association, an EMO. These accounts tweet more, thus become more visible on the Twitter timeline. They go in line with the environmental agenda, tweeting about several issues and cases without distinction, consequently getting involved in various subnetworks present at a particular moment of time on Twitter.

Table 3. Accounts Sorted by the Number of Tweets (November 22, 2021).

Organization	Twitter handle	Tweets	Likes
Northern Forests Defense	kuzeyormanlari	56.1K	35.8K
Green Newspaper	yesilgazete	43.5K	812
Doga	DogaDernegi	18.4K	2685
Green Habitants	Guney178	17.8K	7111
Magma Magazine	MagmaDergisi	16.8K	4411
Black Sea is in Rebellion	karadenizisyan	14.9K	3440
Kazdağı Association for the Preservation of Natural and Cultural Resources	kazdagikoruma	12.8K	9491
Greenpeace Turkey	Greenpeace_Med	12.5K	1589
Ecology Union	ekolojibirligi	10.9K	4294
Validebağ Defense	ValidebagSvnms	10.9K	5107
WWF Turkey	WWF_TURKIYE	10.3K	2871
TEMA Foundation	temavakfi	9819	1093
Validebağ Volunteers	ValidebagKorusu	9764	12.3K
Green Movement	ekolojikhareket	8238	774
Chamber of Enviromental Engineers	CevreMuhOdasi	7789	561
Wheat Association for Supporting Ecological Living	BugdayDernegi	7338	3736
Green Artvin Association	yesilartvinder	5211	562
Arhavi Nature Protection Platform	adokop08	5055	3926
Earth Association	YeryuzuDernegi	4952	1841
Ecology Collective Association	ekolojikolektif	4166	559
Environmental Activities	CevreciEtkinlik	3325	1377
ÇEKÜL Foundation	cekulvakfi	2899	1817
ÇEVKO Foundation	CevkoVakfi	2145	705
Doğa Okulu	Doganinaskina	1947	372
Green Thought Association	yesildusun_	Numbers were reset after the accounts reopened.	
Green Resistance	yesil_direnis		

Issues: The Environmental Agenda

In line with the diversity of the actors, various environmental issues/themes were raised on Twitter. We grouped these issues into nine categories, each with several components, as shown in Table 4. The focal issues belonging to the first category, conservation, aim to create a general awareness of the significance of the various components of the natural world, underlining the necessity of conserving these. The pollution category involves issues such as the pollution of air, water, and soil through the release of different contaminants into the natural environment by different actors. The food system category focuses on the way food is grown, processed, and manufactured, covering food safety, genetic engineering, organic food, and seed swap. Issues coded under the sustainability category include renewability, recycling, DIY culture, planting, agriculture, and environmental management. Climate

change is a general category of issues relating to global warming, ozone depletion, and overpopulation. Resilience, in our case, refers to the ecosystem's ability to recover from disturbances, mainly because of natural events, such as earthquakes, but also human influences. The energy-production category refers to environmental degradation associated with energy generation. The resource-depletion category involves the issues related to the exploitation and the exhaustion of natural resources, including deforestation, extractive activities such as mining and quarrying, overfishing, and more. Finally, the environmental law category consists of those issues related to legislation processes and implementation of regulations, such as those for forests, environmental impact assessments, and the law for protecting the olive trees. It is important to stress that the focal issues in each category in Table 4 are not exhaustive, and the categories are not mutually exclusive, meaning a particular tweet could refer to several issues.

Table 4. Environmental Issues and Categories.

Conservation [forests], [wildlife], [stray animals], [biodiversity], [water], [ocean], [natural heritage], [cultural heritage]

Pollution [air], [water], [ocean], [soil], [noise], [waste disposal]

Food system [genetic engineering], [food safety], [organic food], [seed swap]

Sustainability [renewable energy], [recycling], [DIY], [planting], [agriculture], [environmental management]

Climate change [global warming], [ozone], [overpopulation]

Resilience [earthquake], [flooding], [wildfire]

Energy production [hydroelectric], [wind power], [thermal], [geothermal], [nuclear]

Resource depletion [deforestation], [mining], [quarrying], [overfishing], [water scarcity], [overconsumption of food]

Environmental law [olive law], [2B land], [environmental impact assessment-EIA]

The focal issues are not evenly distributed within each category; some are voiced and emphasized more than the others (see Figure 1). To be more concrete, natural heritage (weighted degree: 427), wildlife (370), cultural heritage (348), and forests (217) appear as the most significant issues in terms of conservation and mining (428) and deforestation (414) in the resource-depletion category. In the energy-production category, thermal (540) is the most frequently voiced issue, yet hydroelectric (196) and nuclear (99) also need to be mentioned. Global warming (350) is the main issue about the climate change category, whereas waste disposal (231) and air pollution (116) make up the greater part of the pollution category. Within the category of sustainability, renewable energy (79), environmental management (59), and agriculture (58) are the most frequently mentioned, and within the category of the food system, organic food (103) and food safety (100) come forth. And in the last two categories, resilience and environmental law, natural disasters (220), environmental impact assessment (189) are the predominant issues, respectively. As for the frequency of mention of the focal issues during the period examined, thermal within the category of resource depletion stands out with 540 tweets, followed by mining (414), natural heritage (427), deforestation (414), wildlife (370), and global warming.
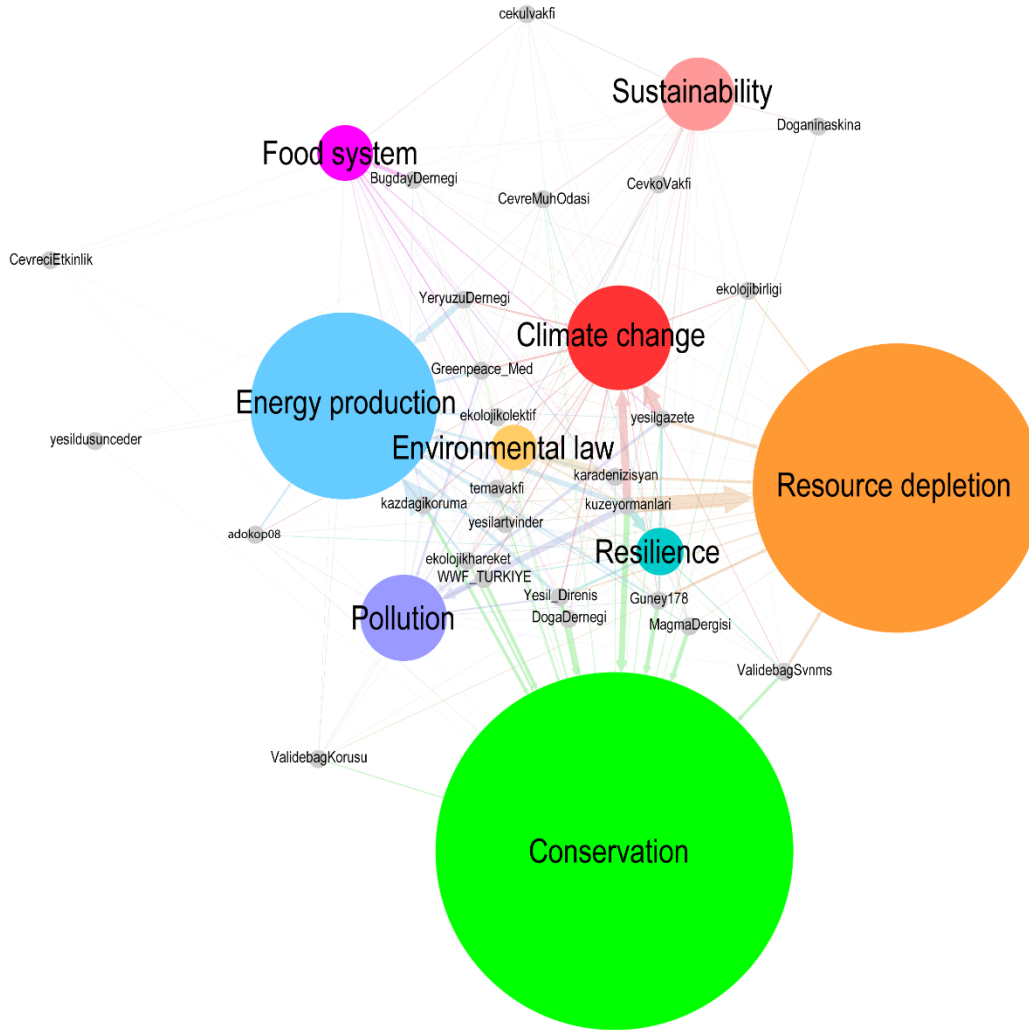
Figure 1. Issue network illustrating the focal issues. Colored nodes represent the issues, while grays are the organizations, and edges indicate the connections between issues and organizations. Node size is proportional to the weighted degree. Codings, which fall under general categories, are indicated with "(o)" in the label.

A more compact view can be obtained from Figure 2, in which the issues are defragmented under larger issue categories. In this context, conservation (1795), resource depletion (1447), and energy production (927) are the most prominent categories in the network, followed by climate change (510) and pollution (417). Although less frequently voiced than these categories, climate change is very central to the network as a common issue, attracting attention from all parties. Nevertheless, this issue owes its position to relatively few accounts. The categories of sustainability (351), food system (262), and resilience (220), which are high at stake in many of the developed countries, remain less significant compared with the above-mentioned categories. Environmental law (210), on the other hand, forms the least tweeted category, perhaps for not being an effective apparatus in resolving environmental controversies. About many cases in Turkey, negative environmental effects are observed even while the legislation processes continue, such as a mining company starting its operations before the environmental assessment report is admitted.

Figure 2. Issue categories. Each category is color-coded with reference to the palette in Figure 1. Node size is proportional to weighted degree.

Before further delving deeper into the categories, it is necessary to note that the nine categories differ not only in terms of the focal issues involved but also about the extent they are politicized. Among the nine categories, resource depletion is highly politicized as an issue directly linked to the neoliberal and crony politics of the AKP government. Specifically, the issues of deforestation, mining, and quarrying are usually framed as pillaging and plundering of natural resources to transfer wealth to either AKP cronies or multinational corporations. The category of energy production comes next in politicizing the environmental

issues, as it involves a similar link between (energy-related) environmental problems and governmental policies and practices (see Kuzey Ormanları Savunması, 2018).

What is also striking in this respect is that both categories underline the socioeconomic inequalities and environmental injustices created by the exploitation of the natural and urban environment. In comparison, the category of conservation is less politicized. More precisely, when it is directed to the protection of a specific place, Validebağ, for instance, the issue is politicised by connecting it to wider policies of the AKP government, but when concerned with the protection of forests or biodiversity in general, it uses a much more apolitical language, mostly referring to the necessity of conserving nature for future generations, remaining silent on the root causes of the problem (see Greenpeace Türkiye, 2018).

The other two categories of politicizing environmental issues are resilience and environmental law. Though the former blames the disruptive consequences of natural disasters on related state authorities, the latter ties environmental degradation or risks and threats to the lack of the rule of law in the Turkish context. The remaining categories, namely pollution, food system, sustainability, and climate change, are less pertinent to politics. Although they emphasize the environmental risks and threats, they do not connect these to governmental politics or capitalist operations. For instance, the tweets in the sustainability category mainly referred to the best practices for sustainable development at the global scale and did not include any criticism of the policies and practices that hamper such a development.

Concerning the distribution of issues among the four categories of environmental actors, NGOs and INGOs focused more on issues such as conservation, sustainability, pollution, and, to a lesser extent, on climate change, energy, and food system. Collectives and platforms were largely preoccupied with resource depletion along with conservation, followed by pollution, energy production, climate change, and resilience. EMOs largely focused on conservation, energy production, and resource depletion, while news outlets and professional organizations generally addressed climate change and conservation.

Connections: Interactions on Twitter

The connections between any number of accounts on Twitter are established through retweets and mentions, along with hashtags. These features usually trigger interaction and provide the base for a sophisticated network. In our study, we see great variations in the use of interactive functions by the environmental actors. Some accounts are quite active in this sense, while others show no interactive activities at all. As revealed in Figure 3, which shows the connections between environmental actors, there is one large cluster, and a few relatively narrower clusters involving connections between different environmental actors. The larger one revolves around Northern Forests Defense, which has the highest share of interactive functions (608) among all environmental actors and, as such, appears as the largest node in the network. This cluster also includes Kazdağı Association (115), Earth Association (114), Black Sea Is in Rebellion (99), Green Habitants (92), Green Artvin Association (81), Validebağ Defense (79), Arhavi Nature Protection Platform (57), Ecology Union (33), and Validebağ Volunteers (22). These accounts have mutual ties and are positioned relatively at the center of the network. *Magma* Magazine (143) and Doga (88) both have a significant number of retweets and mentions from their cluster. Each of the following

accounts also forms a cluster at the peripheries of the network: Green Movement (115), Ecology Collective Association (113), ÇEKÜL (105), and Chamber of Environmental Engineers (89).
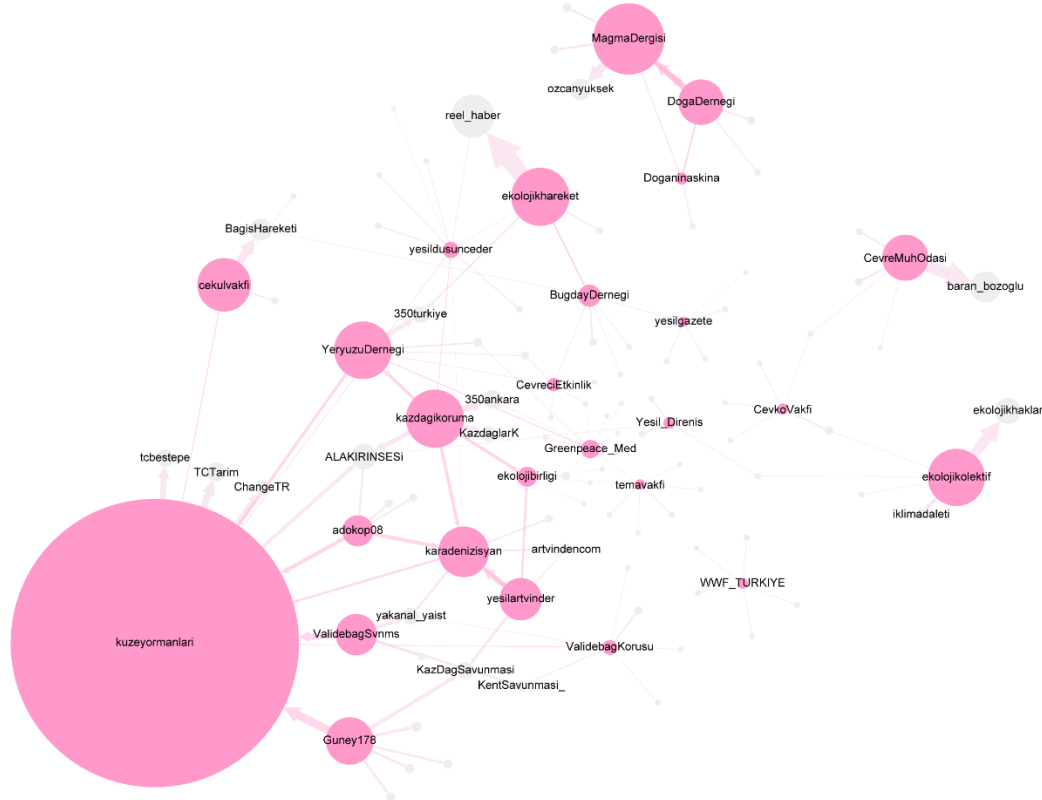

Figure 3. Connections between the actors. Edges indicate the relationship between the accounts based on RT and mentions. Node size is proportional to the weighted degree. Nodes not included in our research sample are grayed.

The environmental actors also have outgoing linkages to other accounts not included in the sample. These accounts consist of mainstream news media, alternative and environmental media, governmental representatives, political bodies, municipalities, celebrities, individual activists, and other environmental organizations. However, we should also note that not all of these connections necessarily represent collaborations. Occasionally, political figures, seen as responsible for an environmental case, were invited to take action, or the role of civic institutions was highlighted to raise awareness of such issues.

In terms of interaction, there is a clear pattern among Northern Forests Defense, Validebağ Defense, Green Habitants, Arhavi Nature Protection Platform, and Validebağ Volunteers. As seen in Figure 3, these actors are better connected, and most are located at the core of the network. Despite their scattered distribution, they share many common concerns, observed through a cross-sectional analysis of Figures 2

and 3. This shows that these actors, which frequently retweet or mention each other, cover similar issues, such as resource depletion and energy production. This outcome is significant in the sense that it shows how "network of active relationships" between different environmental actors is constituted, which, as emphasized by Melucci (1996) and della Porta and Diani (2006), is one of the necessary mechanisms in the construction of collective identity and the formation of social movements (p. 94). On the other hand, some other accounts, mostly NGOs and INGOs and their affiliated news outlets, have far more followers than others in our sample; nevertheless, among them, only *Magma* Magazine appears as a larger node in Figure 3. This means that the highly followed accounts of NGOs and INGOs are peripheral to a network of environmental actors, while maintaining a relatively independent position. Moreover, it is striking that the actors in the NGOs and INGOs category do not have mutual connections. News outlets, on the other hand, are connected to environmental actors in the other categories (e.g., *Magma* Magazine to Doga, and Green Newspaper to Wheat Association).

When it comes to the communicative functions of tweets, we have observed different tendencies among accounts. However, a common factor was the frequent sharing of news and information. Conceptualized as "broadcast tweets" (Merry, 2014), these consisted of around 80% of all the tweets analyzed. Nevertheless, we spotted several tweets directed to form a collective enterprise. Green Resistance, for instance, aimed to establish a solidarity network, while Northern Forests Defense engaged in conversations with other actors in the network. Some other environmental organizations like Environmental Activities, Wheat Association, and Doga organized offline events such as bread making, seed sowing, and other collective work. There are also those (e.g., the Chamber of Environmental Engineers) that use Twitter for promoting their organization and celebrating important events. Various environmental actors also tweeted for action requests. Some organizations, such as Kazdağı Association and Northern Forests Defense, were important amplifiers of these requests. It should be noted that direct action requests are largely derived from collectives, platforms, and EMOs. While NGOs and INGOs do not tweet on action requests, some (e.g., Greenpeace and Green Habitants) brought petitions to the agenda, most often, as an extension of their campaigns. Moreover, some NGOs seek donations via Twitter. ÇEKÜL, for instance, often retweeted Social Donation Movement, a platform founded to support NGOs through charitable contributions.

Discussion and Conclusion

Our findings on the environmental activism on Twitter show that Twitter may perform highly different functions depending on the discourses, identities, and interests of environmental actors. As we have shown so far, two qualitatively different types of environmental activism are manifest on Twitter in Turkey: mainstream environmentalism and confrontational/critical environmentalism. The former centers around the issues of conservation, sustainability, food system, and, to a lesser extent, energy production, climate change, and resilience. As its focus on the issues of conservation and sustainability indicates, this environmentalism envisages the existing socioeconomic system as ecologically sustainable with the adoption of certain measures. It acknowledges some of the existing environmental problems but tends to conceive and present these as isolated, remaining silent about their structural root causes. Thus, it approaches environmental issues predominantly in a depoliticized way, focusing on particular instances of environmental degradation and refraining from making connections to the underlying broader economic and political structures. For instance, it promotes conservation practices but is not much concerned with the social power imbalances leading to the

exploitation of the natural and urban environment, or with environmental injustices that this exploitation creates. Accordingly, this approach neither states nor implies the necessity of structural transformation, nor calls for political action. The other type of environmentalism is what we call confrontational/critical environmentalism, prominently featuring issues such as conservation, resource depletion, energy production, and climate change. Unlike mainstream environmentalism, it is never concerned with the issue of sustainability. It does not see the existing socioeconomic system as sustainable and does not focus solely on particular issues. Accordingly, it shifts the emphasis away from environmental issues toward their causes. By framing existing problems as the outcomes and consequences of the governmental policies and practices, and, to a lesser extent, the neoliberal capitalism shaping the economic structure, it thoroughly politicizes environmental issues. Unlike the mainstream, this type of environmentalism also tries to unmask power relations by explicating how the exploitation of the natural environment serves the interests of a few at the expense of many. In this respect, its primary focus is on the exploitation of the environment by the cronies of the AKP government. As such, this environmentalism questions and poses a challenge to the socioeconomic status quo, currently represented by the AKP government.

The environmental actors whose environmental agenda centers around mainstream environmentalism consist of NGOs and INGOs and some news outlets with ties with NGOs, namely TEMA, ÇEVKO, ÇEKÜL, Green Thought Association, Green Newspaper, and *Magma* Magazine. Most of these environmental actors became active in the 1990s and early 2000s as with the worldwide diffusion of proenvironmental thought, practices, and organizations. The volume of the tweets of this group is not high, perhaps because of branding control (Powers, 2018) and organizational production policies (Comfort & Hester, 2019). Moreover, Twitter, for this group, largely served as a broadcast platform, a finding supporting Raftopoulos and Specht's (2022) argument. This group of actors does not form a collective as most tend to act individually and independently; while some form their small clusters, most are not connected to various other environmental actors active on Twitter. On the other hand, the actors whose environmental agenda is confrontational and critical include most of the collectives/platforms, EMOs, and one NGO. Except for the EMOs, most of the actors in this group came into being after the Gezi protests. The volume of the tweets of this group is much higher compared with the other group. More importantly, this group is more interconnected, and there is more interaction and engagement in concerted actions on Twitter. Despite this, our findings show that the group lacks a strong collective identity with clear boundaries, that is, one that is based on the definitions of "we" and the adversary (i.e., "them"; della Porta & Diani, 2006; Gamson, 1992), or clear ends and means (Melucci, 1996), which are the necessary conditions in the formation of a sustained movement. Nevertheless, our findings on Turkey's Twitter activism provide clear indications of the emergence of an embryonic environmental movement, as this group is connected, at times acting together against the same targets, and, more importantly, voicing similar environmental problems, injustices, and related frustrations and social demands within highly similar frames.

It should be noted that the Gezi protests have become a turning point for the environmental movement in Turkey as intricate relationships between the state, capital and the environment were revealed, making citizens more aware of the fact that environmental problems are situated in the larger political system (Özkaynak, Aydın, Ertör-Akyazı, & Ertör, 2015, p. 111). By turning into nationwide mobilizations and attracting public attention to environmental issues, the Gezi protests nurtured both environmental sensitivities and oppositional culture. It facilitated the establishment of a contemporary protest ecology by creating new

connections among various individuals and groups, leading to the emergence of most of the actors in the confrontational/critical group. Unlike most of the NGOs, the post-Gezi environmental actors established connections with the local EMOs that have been struggling for long years against the devastating environmental consequences of the governmental policies and practices. What is underlined in the literature on the effects of social media on activists and social movements (Bennett & Segerberg, 2012; Chadwick, 2013; Earl et al., 2015; Juris, 2004; Lynch, 2011; della Porta & Mosca, 2005) is also relevant for these actors in the Turkish case: for these geographically dispersed actors, Twitter facilitated the connection of the sharing of awareness and information, and the organization of concerted actions. As it connects various actors from different locales, confrontational/critical environmentalism has a stronger grassroots component. By linking the local EMOs to the post-Gezi environmental actors, it also increased the visibility of the local actors helping them create effect beyond their locality, a point emphasized by Dahlberg-Grundberg and Örestig (2017) concerning the impact of the social media on collective action, and opened a space for dialogic communication (Lee, VanDyke, & Cummins, 2018). Yet, it should also be noted that Twitter connected only those environmental actors having a more confrontational/critical outlook; these actors and the mainstream ones largely act independently and separately from each other. This shows that, rather than coalescing different groups around new meanings and identities, Twitter connected those already having similar identifications and related values, concerns, and commitments. This does not mean that Twitter led, in the Turkish context, to ephemeral protests (Earl et al., 2015), or blocked the generation of "coherent opposition" by displacing and dispersing critical energy (Dean, 2012, p. 126). Rather, it means that a coherent opposition may not be created on Twitter from *ex nihilo*, but through connecting already oppositional, yet dispersed, actors. As indicated in our findings, Twitter provided in the increasingly authoritarian Turkish context, a platform for turning the critical energy into action, as is the case in other authoritarian contexts (Earl et al., 2015; Micó & Casero-Ripollés, 2014). The ever-increasing use of the repressive state apparatus by the AKP government against any protest, along with its strict control over the traditional media, has turned Twitter into a significant platform for the establishment of connections between different environmental actors as it provides these actors a relatively safer outlet for the coordinated protests against environmental threats.

The findings of this study also indicate that the confrontational/critical or the "emancipatory" environmental group, to use Doherty and Doyle's (2006) categories, has become more active on Twitter than the "governance" one, that is, NGOs and INGOs pursuing mainstream environmentalism. This phenomenon reflects a paradigm shift in the field of environmentalism in Turkey coinciding with the landmark Gezi protests: before environmentalism was predominantly mainstream at the national level, rarely entering into the national public agenda, and remaining relatively marginal, whereas after, it has become increasingly more confrontational and critical, and more visible on the national agenda. Although there were already several confrontational/critical environmental actors in the pre-Gezi period, most of these actors were local EMOs struggling at the local level against the environmental impact of particular projects, such as goldmines and various power plants. There were weak connections between the local EMOs and the national NGOs and INGOs, meaning that the support of the latter was rarely beyond lip service. Therefore, the voices of the local mobilizations were only occasionally heard at the national level. Our examination of environmental activism on Twitter illuminates the changes in this picture: a number of new actors adopting confrontational/critical environmentalism, as mentioned earlier, established connections and acted together with local EMOs on Twitter to voice local environmental problems.

The change in the landscape of environmentalism in Turkey is in contrast to the case in the advanced capitalist contexts, where "historically radical and transformative elements of environmental movements and ecopolitical thought are blunted through mainstreaming" (Blühdorn & Welsh, 2007, p. 185). Then what are the implications of this change that reshaped environmentalism in Turkey? It is more than likely that by revealing environmental problems are not isolated, but rather, produced by the dominant cronyist neoliberal system in Turkey, confrontational/critical environmentalism would play a prominent role in struggling against environmental destruction. Since the confrontational/critical environmental actors have been more active on Twitter than the mainstream ones and receiving higher numbers of likes, and thus shaping the environmental agenda on Twitter, it is likely that their influence will further increase, leading, perhaps, to the formation of a broader-based and more sustained environmental movement through the transformation of the currently formed relatively weak solidarity ties into more solid bonds among the diverse urban and rural actors, who have been struggling both at the national and local levels against environmental degradation.

While this study is limited to Twitter and does not contemplate on the offline relations between the environmental actors, it provides a detailed discussion on the dynamics of online activism in a specific context and provides a snapshot of the current state of the environmental movement in Turkey. We assume that online mobilization fundamentally aims at moving people to offline action. As stated by Surman and Reilly (2003), "when we speak of 'online mobilization' we are talking primarily of online efforts to move people to action—to protest, intervene, advocate, support" (p. 48). Extensive evidence can be found as well in emprical studies, such as in Steinert-Threlkeld, Mocanu, Vespignani, and Fowler's (2015) work, that social media may help decentralized groups coordinate online to organize protests offline, while providing the means for perpetual coordination and systematic activity. In the specific case of Turkey, there is experience from the Gezi movement in which informal submerged networks were connected both with the online and offline environments (Karataş, 2021). Still, considering that the role and activities of environmental actors outside of Twitter may be different from what they present here, future research may explore offline relations and focus on other platforms as well, such as Facebook and Instagram, to find out the particular qualities inherent in various settings. Different formations of environmental activism available in other countries may be studied and perhaps brought together with a comparative approach to reveal the similarities and disparities in diverse sociopolitical settings.

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