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# Strength in Numbers and Voice: An Assessment of the Networking Capacity of Chinese ENGOs

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*Under authoritarian regimes, citizen-led NGOs such as environmental NGOs (ENGOs) often operate under close scrutiny of the government. While this presents a challenge to a single ENGO, we propose here – in line with existing research on network effects – that there are opportunities for multiple ENGOs to coordinate and thus work in ways that supersede government controls, affect public opinion, and contribute to policy revision and/or creation. In this paper, we specifically examine the possibility that the gamut of citizen-based ENGOs in China are coordinating. Based on network analysis of ENGOs web pages as well as interviews with more than a dozen ENGO leaders between 2014 and 2016, we find that ENGOs have few direct and public connections to each other, but social media sites and personal connections offline provide a crucial function in creating bridges. A closer examination of these bridges reveals, however, that they can be substantive to the environmental discussion or functional to the dissemination of web page information but typically not both. In short, ENGOs in China are not directly connected but rather are connected in a way that responds to the available social media and the government's censorship practices.*

*Keywords: Environmental policy, ENGOs, Chinese politics, Chinese environmentalism, social network analysis*

## Introduction

There are two conditions present in China that we expect would contribute to rapid and effective mobilization around environmental policy-related concerns. First, at around 22 percent, China currently represents the single-largest share of the world's Internet users, and its penetration rate

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was over half of the population as of 2017[4]. As of 2016, China had more Internet users than the United States, India, and Japan, the next three largest countries combined (Internet Live Statistics, 2016). Of these Internet users, 313 million are monthly users on Weibo, the Chinese version of Twitter, and 700 million are active on Weixin, a multipurpose messaging app. Second, China's pollution levels – sulfur content in fuels, nitrogen oxides, carbon monoxide, and black carbon – have reached record levels (Lin et al., 2014). In other words, environmental problems have escalated simultaneously with the public's accessibility to the Internet, and online communications can provide the vehicle for framing, discussing, and mobilizing around the issue. It is the purpose of this paper to examine the connections between environmental mobilization and Internet use in China.

Our study is rooted in the assumption that coordination problems exist among Chinese environmental groups in light of the central government's limits on non-sanctioned collectivism. That is, the government accepts criticism about the environment at individual or less consequential scales while restricting large-scale collectivization attempts inherently critical of the government (King, Pan, & Roberts, 2013). We show in the following pages, thus, that the online environmental activist network in China is fragmented but held together by a small selection of social networking sites, search engines, and discussion fora. To be an environmental activist in China thus implies that one has a limited set of ties with the rest of the environmental community. This does not preclude opportunities for activism in the form of protests and mass gatherings as large as tens of thousands of people, which are organized online by environmentalists that stoke opposition to pollution. If environmentalists opt to distance themselves from these events, their isolation is self-imposed to avoid government scrutiny. In this way, China's environmentalist movement is quite different from that portrayed outside of China, where coalitions of like-minded organizations and individuals are crucial for effecting policy change (Henry, Lubell, & McCoy, 2011; Weible & Sabatier, 2005).

The focus here is on China's environmental non-government organizations (ENGOs). Despite the Chinese government's attempts to limit environmental collectivism, it has called for greater civil society since the late 1990s to assist with administration and oversight (Ho, 2008), particularly with regard to the national environmental protection effort (Ru & Ortolano, 2009). Our study begins, thus, with an overview of the institutional environment in which ENGOs and environmental activism function, alluding at times to the possibility of governmental intervention in the face of burgeoning online collectivism. After presenting the details of the Chinese case, the data collection process for our identified 116 ENGO websites is outlined, followed by an analysis of their online connections through network analysis. We argue that, due to factors including government pressure, limited funding, and lack of experience, the network of ENGOs in China has taken on a rhizomatic and dispersed structure. A final section discusses the prospects for greater coordination across the ENGO-based network in China.

4 See https://www.statista.com/statistics/369560/china-internet-user-penetration-projection/ (accessed September 15, 2018) for complete details.

## Framing the Chinese Case

In China, adherence to formal rules is increasing (Lo, Fryxell, & Van Rooij, 2009), and there is a correlation between legal institutional development and decreases in environmental pollution (Shapiro, 2012). At times, Chinese citizens invoke these new policies to take legal action to be compensated for pollution-related effects (Wu, 2009). Specific reforms impacting the environment include the 2003 Environmental Impact Assessment (EIA) Law, which calls for public hearings and the public dissemination of environmental information. While there is evidence that environmental impact assessments are established with limited consultation of the public (Du, Yang, Xu, Harashina, & Li, 2010; Tang, Tang, & Lo, 2005), we agree with Mol's (2009) observation that the Law's 2006 public participation provisions provide access to greater amounts of information (via the 2008 Environmental Information Disclosure Decree), safeguard participants' rights, and provide details of procedures for the public's involvement.

EIA legislation positively impacts pollution reduction initiatives and other environmental protection efforts, but many ENGOs are embedded in and constrained by the government (Ho, 2008; Tang & Zhan, 2008; Zhan & Tang, 2010). This impacts the work they do and the structure of their connections. Top-down pressures preclude hierarchical structures and close connections, fostering instead more rhizomatic horizontal connections. For example, employees of an ENGO may create their own ENGO spinoff, while others may limit their exposure to governmental scrutiny while reinventing themselves under a new name and organization. This horizontal structure, to a degree, protects actors from potential government scrutiny and mirrors the structure of mass demonstrations in China as outlined in Brunner (2017). In this way, ENGOs are apolitical (Howell, 2007), engage largely in education campaigns and narrowly constructed conservation projects, and use conventional communication channels to influence government decisions (Tang & Zhan, 2008). This reflects the tension between unrestricted policymaking access by ENGOs and the government's unwillingness to allow citizens to collectivize, highlighted in King et al. (2013).

ENGO success is thus achieved when they engage in a delicate, deliberate, and non-contentious process (Wu, 2009). ENGOs' campaigns against the construction of the Nujiang River dam, for example, shows that the role of civil society through ENGOs is gradual, complex, and constantly threatened through the potential to destabilize traditional state-society divisions (Buesgen, 2008). Those ENGOs that do challenge the government or are viewed as instigators risk having their non-profit status revoked, which forces organizations to shut down or pay taxes from their limited budgets. This is one of the central distinctions between local ENGOs and international ENGOs based in China: Chinese-based western NGOs are more effective given relatively fewer funding constraints (Mol, 2009), although this has changed with the implementation of the 2017 law requiring international NGOs to turn over financial records and thus submit themselves to greater scrutiny[5].

5 See details here: http://www.chinafile.com/ngo/latest/fact-sheet-chinas-foreign-ngo-law (accessed September 15, 2018).

The government's effect on the development of a cohesive online environmental activism network does not preclude ENGOs from attempting to tap into public sentiment and attract widespread support. Such efforts, however, have been met at times with self-inflicted failure as environmental awareness becomes a form of cultural capital for the rising middle class. Tsang and Lee (2013) found that ENGOs founded by the new middle-class in Guangdong did not become politically active or advocate for change because organizational leaders were using their newly-established ENGOs to "extend their business networks instead of articulating societal interests" (p. 158). If ENGOs are connected through a network of educational backgrounds and professionally-oriented social elites (Ru & Ortolano, 2009), it provides a clear example of the distinction between the public interest model and the private interest model of environmental interest groups. Specifically, private interest groups are specialized to the point where the general public's interests are excluded and unrepresented (Zywicki, 2002). Diffuse and weak ENGO-based networks are thus not simply a function of government intervention but rather impacted by those ENGOs operating with limited accountability to the general public. The private-interest approach, however, is inconsistent with how information may now be disseminated across social media platforms in China. Microblogs such as Weibo capture and convey the public's sustained interest, particularly with regard to environmental issues like air pollution.

Social media has also repeatedly been used to organize massive protests that draw attention to polluting projects and the corruption that facilitates the approval of such projects (Brunner, 2017). Social media is also where an environmental vernacular is created. In January 2013, for example, nearly 70 percent of microblog users in Zhejiang and 40 percent of microblog users in Shanghai mentioned "smog" ("A giant cage: special report - China and the Internet," 2013), which had previously been absent from a broad, public-based discussion of environmentalism. Air pollution awareness increased exponentially after the 2015 release of Chai Jing's documentary on air pollution in China, *Under the Dome*, which drew massive and unexpected support from citizens across China before access to the online video was blocked by the government (Deng & Peng, 2018). In short, we acknowledge the role of the Chinese government but also attend to the impact of widespread social media use by the Chinese public, the public's increased focus on environmental concerns, and the existing activist infrastructure based on the network of ENGOs' websites. To those ends, the following research question is proposed: *What is the structure of the online Chinese ENGO network, and to what can we attribute this structure?*

## Data Collection & Cleaning

Our focus here is on citizen-launched ENGOs, which are non-government organizations and differ from government-launched ENGOs, student-organized ENGOs, or international-level ENGOs in that they are relatively more independent of the government. ENGOs in China are still developing, with organizations annually coming into and going out of existence, and establishing an accurate count of these ENGOs has been extremely challenging. This is compounded by the fact that the government is deficient in how it discloses ENGO-related information. Information about ENGOs is of a limited nature, relegated primarily to a piecemeal presentation on government websites. Our

efforts are, at best, a reflection of a selective and imperfect attempt to aggregate the profiles of all of China's citizen-launched ENGOs.

Citizen-launched ENGO data come in two forms. First, we refer to interviews with over a dozen ENGO leaders based in major Chinese cities. Second, we surveyed the Internet for information about all citizen-launched ENGOs, relying primarily on three sources of information: the list of citizen-launched ENGOs published by All-China Environment Federation, the most authoritative government organized ENGO in China (http://www.acef.com.cn/ngohy/); the China Development Brief, an independent and non-profit publication which has focused since 1996 on the activities of Chinese and international grass-roots NGOs as well as future developments of Chinese NGOs (http://www.chinadevelopmentbrief.org.cn/); and each ENGO's website, which was accessed for information about their ENGO registration date, their registration status, their working focus, their geographic distribution, and to authenticate whether they have in fact been launched by ordinary citizens. This posed an important challenge as the online and offline presence of each ENGO is not uniform. In other words, not all citizen-launched ENGOs have a dedicated website, and some in fact have multiple websites. The lack of official websites may be linked to the rise in social media and the use of apps such as Weixin. Indeed, our personal connections to Chinese ENGOs are rooted in Weixin use rather than email and website-based announcements. Our final tabulation generated a list of 221 websites which ultimately were further cleaned to yield a list of 116 websites of citizen-launched ENGOs.

Hyperlink citations between the websites of these 116 ENGOs were captured at the end of January 2015 through Webometric Analyst 2.0 (Thelwall, 2012). This program downloads the connections between each pair of URLs in addition to the connections between these URLs and all other websites. Our analysis of these data is based on network graph modeling through NodeXL (Smith, 2015; Smith et al., 2010) (Smith et al., 2010). NodeXL is a free and open network overview, discovery and exploration add-in for Excel (http://nodexl.codeplex.com/) provided by the Social Media Research Foundation.

**Network Analysis**

In terms of social network analysis, we employ URL citation analysis to identify how citizen-launched ENGOs connect to each other, constructing first a micro-network of the direct connections between the seed URLs of the 116 ENGOs outlined in the previous section. This approach is not unlike that of Meier (2016). A second, larger network is also created in which we integrate all URLs that cite each seed URL as well as all those URLs that each seed URL cites. In this way, we provide two qualitatively different ENGO worlds, which together provide a complete overview of how ENGOs are connected. Among the measures relevant for our analysis, the focus here is on betweenness centrality, which is a measure of how many shortest paths in a network pass through a specific node (Easley & Kleinberg, 2010). This ultimately allows us to assess which nodes are crucial in the ENGO-based online network.

*The Micro-Network*

The micro-network of 116 seed URLs – representing strictly the 116 ENGOs – excludes non-ENGOs, blogs, social media services, etc. from the network. Given the propensity for coalitions to form around environmental issues, we expect that there will be at least moderate connectivity among ENGOs in China. We cluster ENGOs (Figure 1) according to the Clauset-Newman-Moore algorithm (Clauset, Newman, & Moore, 2004), assigning nodes to different groups based on their position in the network. Nodes have been sorted into nine different groups, described in Table 1. Contrary to our expectations, we observe in Figure 1, where node size is representative of betweenness, that there are in fact very few connections among these 116 ENGOs. Indeed, more than half of these ENGOs are isolates (blue nodes) and are completely disconnected from the network.

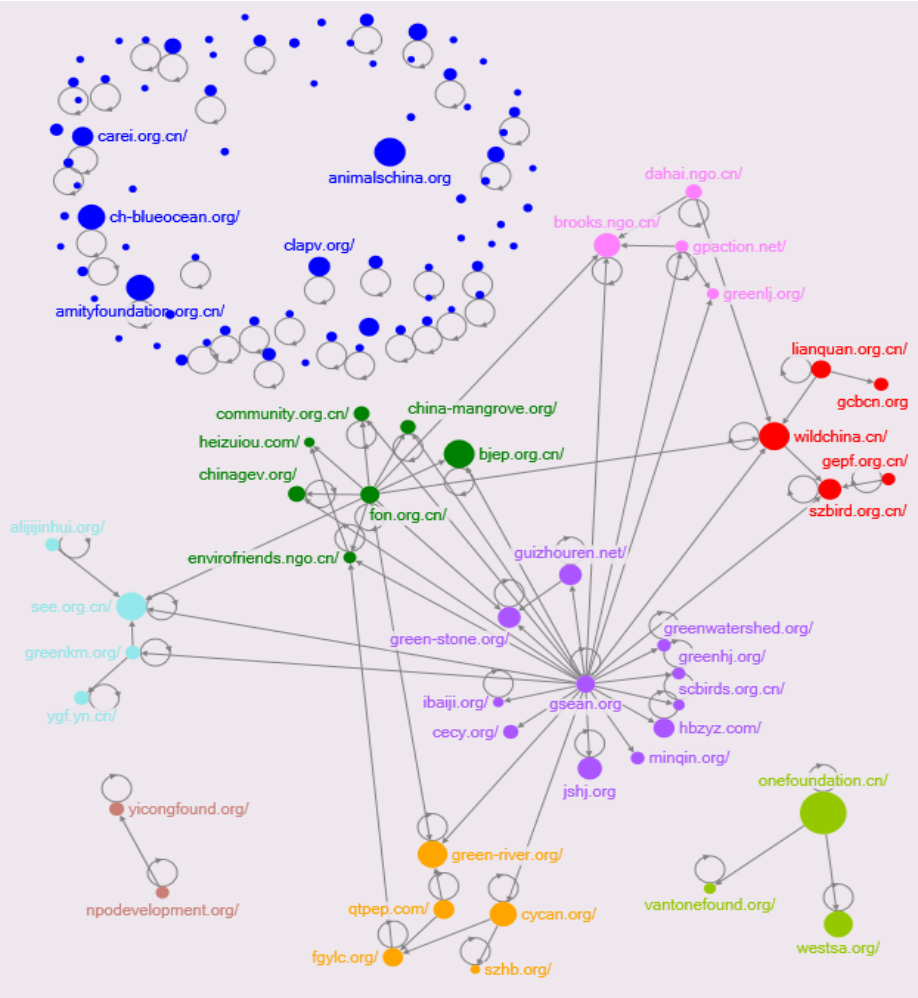


**Figure 1** Micro-network and groups of 116 citizen-launched ENGOs' URLs

**Table 1. Attributes of the groups from the micro-network of 116 seed URLs**

| Group | Node color | Number of nodes | Unique edges | Self-loops | Graph density |
|---|---|---|---|---|---|
| 1 | blue | 32 | 32 | 32 | 0.000 |
| 2 | purple | 11 | 20 | 9 | 0.100 |
| 3 | green | 7 | 13 | 6 | 0.167 |
| 4 | red | 5 | 8 | 4 | 0.200 |
| 5 | orange | 5 | 9 | 5 | 0.200 |
| 6 | pink | 4 | 6 | 3 | 0.250 |
| 7 | light blue | 4 | 7 | 4 | 0.250 |
| 8 | light green | 3 | 5 | 3 | 0.333 |
| 9 | brown | 2 | 3 | 2 | 0.500 |

The constituent ENGOs of these nine groups are connected on the basis of their specific environmental focus and/or their relationship across certain structural features. Our analysis reveals that Groups 1 and 2 are determined by function, while Groups 3 through 9 are grouped according to environmental focus. Specifically, Group 1 represents isolationism, consisting of 76 isolate nodes. In other words, more than half of the citizen-launched ENGOs have no Internet-based connections with the rest of the 116 seed URLs. The core node in Group 2, gsean.org, is based in Sichuan Province in southwestern China, and indeed many of the ENGOs in Group 2 connected to gsean.org are also based in southern China, reflecting the strong manufacturing orientation of the region. Meanwhile, gsean.org's followers are not connected at all to each other, possibly reflecting the fact that gsean.org is itself an Internet-based ENGO offering a platform for other ENGOs to communicate with the larger online community but not necessarily with the ENGO-based community.

Having reviewed the registration and management structures provided online by these 116 citizen-launched ENGOs, we have identified a number of overlapping environmental foci. Partially explaining the clusters identified in Figure 1, we note for example that ENGOs in Group 3 share a focus on environmental quality research and promoting public participation in environmental issues. ENGOs in Group 4, however, focus on animal protection, ENGOs in Group 6 are dedicated to environmental education, and ENGOs in Group 7 are focused on biodiversity protection. Three ENGOs in Group 8 are foundations with environmentally-oriented fundraising concerns, and two ENGOs in Group 9 devote themselves to promoting non-profit cooperation. Additionally, in Group 5, three of the ENGOs focus on Qinghai-Tibet plateau ecological environment protection, while two of them focus on youth group-based environmental protection.

These findings are confirmed by our interviews. The growing networks between ENGOs are indeed largely issue-based. In this way, for example, animal/bird conservationists aggregate together as do mangrove conservationists, much like the clusters identified in Figure 1. Interviewees have confirmed that ENGOs are in fact connected to other ENGOs based on either

referrals or internationally-funded efforts to connect ENGOs. Others prefer to remain autonomous for a variety of reasons, including a lack of desire to connect, geographic isolation, and the perceived lack of need to establish a network for local work. Referrals may be separated by several degrees for those ENGOs interested in fostering a network of connections. Many ENGOs may thus be connected by two or more degrees of separation without realizing it. In this way, the networks are connected rather rhizomatically rather than in large clusters.

Nodes that are peripherally located within a single group are possibly being assigned to their groups not because of a shared environmental focus with the other ENGOs but because of the larger network structure. To use as an example, szhb.org in Group 5, an ENGO focusing on protecting Saunders' Gull, does not fall in Group 3 (focusing on environmental quality and promoting public participation) because it has connections only to ENGOs in Group 5 and is assigned to this group automatically. This provides yet another example of the rhizomatic connections of this network. Rhizomatic networks in China have been outlined by scholars of social movements who find that individual movements tend to grow horizontally due to the downward pressure by government entities (Herold & Marolt, 2013; Lagerkvist, 2015). This metaphor is an apt one, as the data shows, because the connections show no distinct center or hierarchy, but rather numerous unpredictable connections (Hacking & Flynn, 2018). Similarly, gcbcn.org in Group 4, an ENGO in Gansu Province in western China, does not necessarily have a focus on animal protection; yet, it has no connections with other ENGOs except for lianquan.org.cn.

*The Macro-Network: Truncated Domains*

Holding constant the micro-group qualities of the 116 seed URLs while integrating the remaining nodes of Internet-based environmental activism in China, we are able to examine the larger online network structure beyond just the 116 ENGOs identified in our ENGO curation process. These 3,385 additional nodes – truncated and aggregated at the domain level to help identify key domains – are presented graphically in Figure 2 while employing the Clauset-Newman-Moore grouping algorithm. We observe that the number of groups increases from nine to 24, and the color attributes of original nine groups are the same as in Figure 1; node size reflects betweenness centrality.

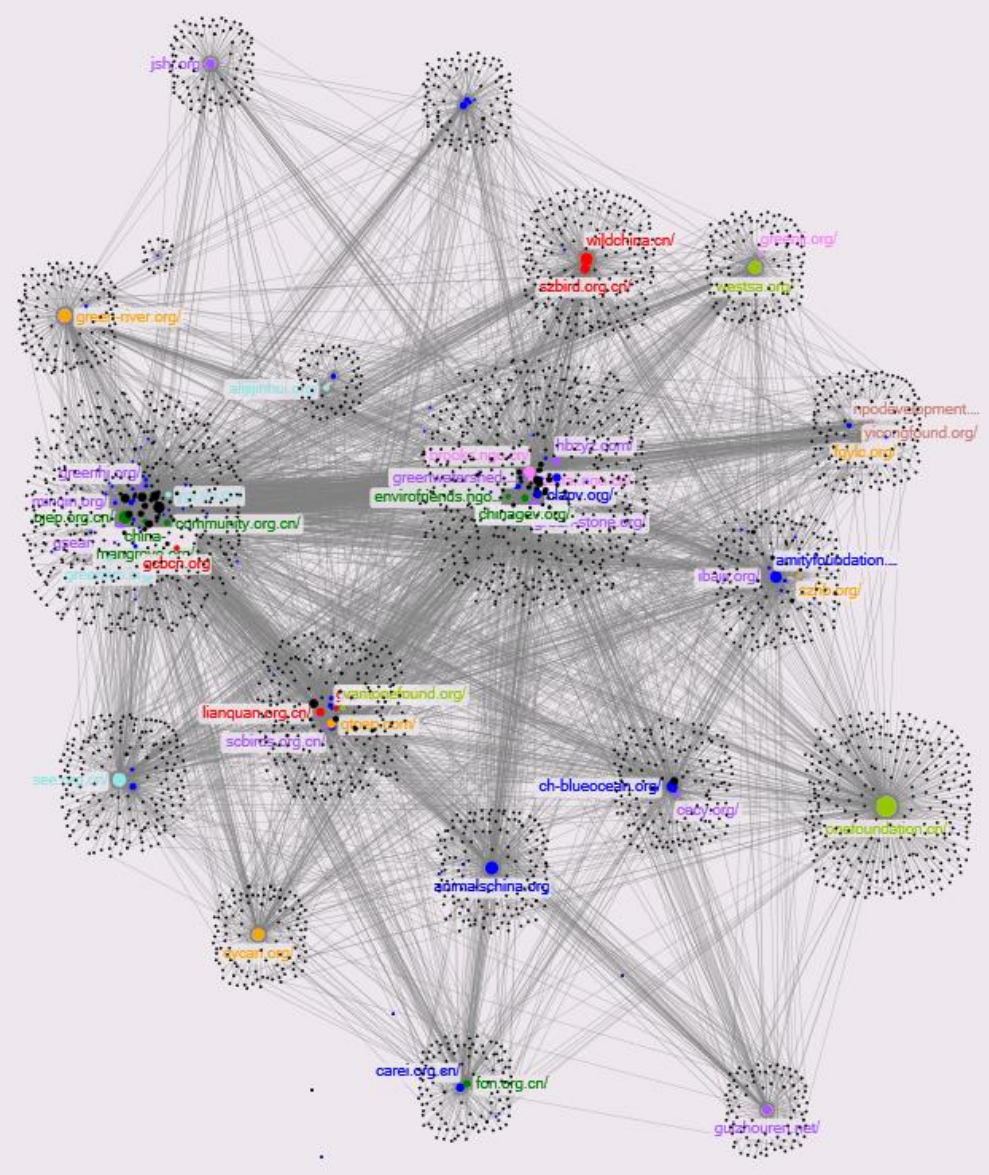


**Figure 2** Full network and groups of 116 citizen-launched ENGOs' URLs plus all citing/cited nodes

We observe that the original groups are all partitioned. For instance, the members of Group 5 from Figure 1 – szhb.org, cycan.org, fgylc.org, qtpep.com, and green-river.org – have been assigned to five completely different groups. Meanwhile, only wildchina.cn and szbird.org.cn, two ENGOs with shared concerns about animal protection, are grouped together on the basis of a shared environmental focus. We attribute the fundamental differences between these new group structures and those identified in Figure 1 to the presence of a number of non-ENGO-based nodes that are

central across not only a number of groups in Figure 2 but also within groups that are central to the entire network. We will provide further analysis of these black colored nodes below.

In the absence of the Clauset-Newman-Moore grouping algorithm, but while still retaining the original grouping color of the 116 seed URLs, i.e. colored in line with Table 1, we observe very different network structures in Figures 3 and 4. As before, node size represents betweenness centrality, or the measure of how many shortest paths in a network pass through a specific node (Easley & Kleinberg, 2010). While the number of shortest paths passing through a node influences its betweenness value, the betweenness centrality statistic is related to the betweenness values of the other nodes to which a node is connected. In Figure 3, thus, we can identify many ENGOs' nodes that possess larger betweenness values because they are connected to many other peripheral nodes. Similarly, many of the black-colored non-ENGO nodes are not connected to many other nodes but nonetheless have relatively high betweenness values simply because they are directly connected to those ENGOs which themselves have greater betweenness centrality measures.

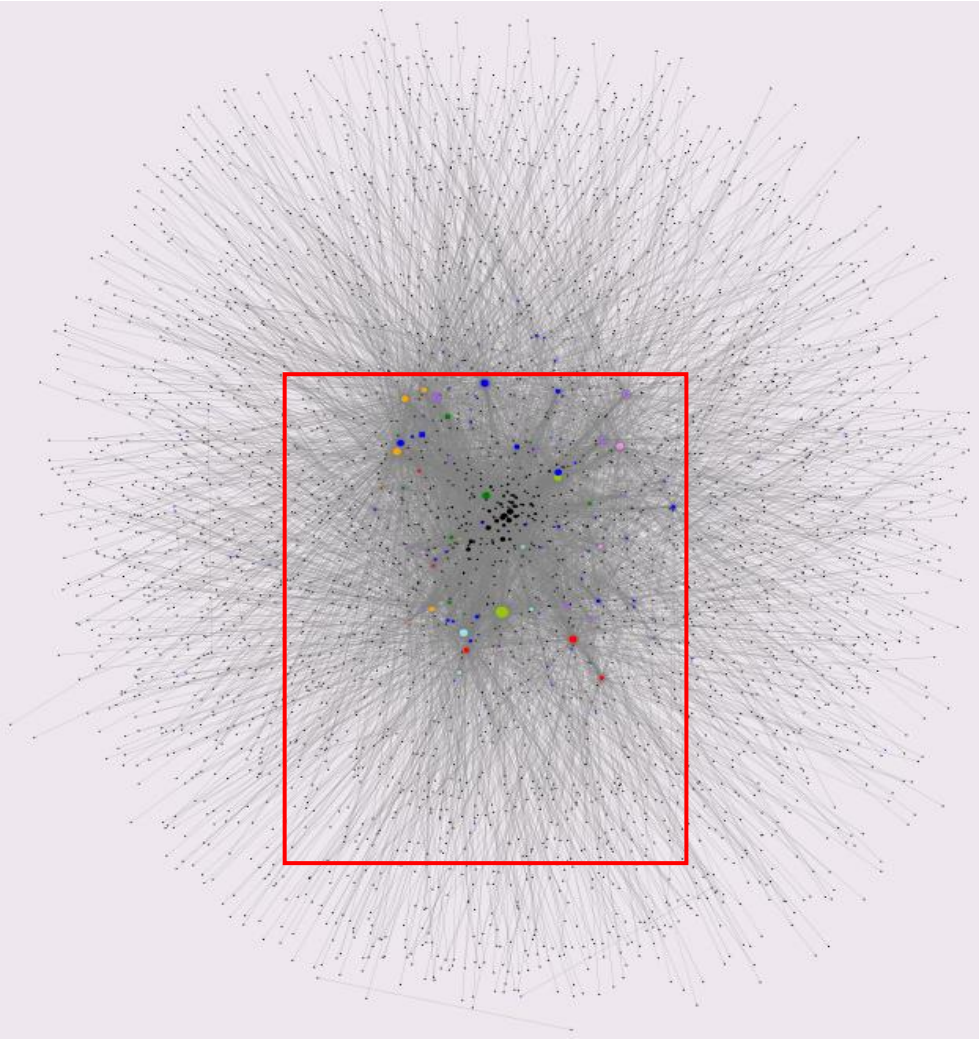

**Figure 3** Full network, without groups, of 116 citizen-launched ENGOs' URLs plus citing/cited nodes

Note: The area within the red rectangle is enlarged in Figure 4.

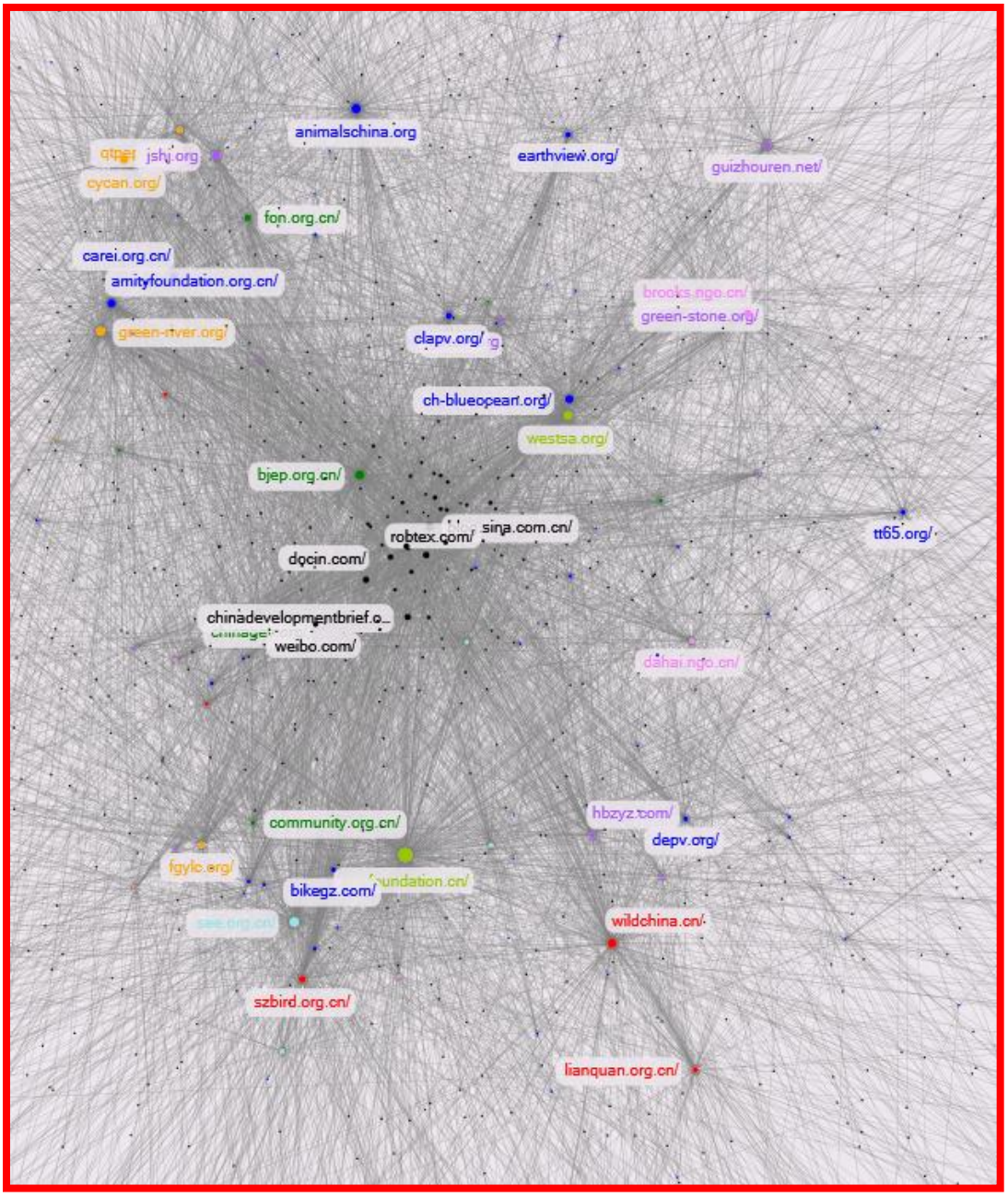


**Figure 4** Enlargement of core area from Figure 3

In network analysis, nodes with high betweenness tend to be influential within the network (Newman, 2005), likely filling a structural hole. Ranked in Table 2 are the most central 25 seed URLs. The average betweenness value for the entire network is 9,170 (see Appendix for details), which is exceeded by 88 of the seed-URL nodes. This indicates that the online environmental community is targeting the majority of these 116 seed URLs.

**Table 2. Properties of the most central 25 seed-nodes based on the entire network**

| | Node (URL) | In-degree | Out-degree | Betweenness centrality |
|---|---|---|---|---|
| 1 | onefoundation.cn/ | 436 | 3 | 2068463.5 |
| 2 | animalschina.org | 219 | 0 | 909522.8 |
| 3 | bjep.org.cn/ | 227 | 1 | 881650.4 |
| 4 | see.org.cn/ | 242 | 1 | 875352.4 |
| 5 | wildchina.cn/ | 219 | 2 | 862466.9 |
| 6 | green-river.org/ | 228 | 1 | 811727.0 |
| 7 | westsa.org/ | 217 | 1 | 764639.9 |
| 8 | amityfoundation.org.cn/ | 203 | 1 | 726674.5 |
| 9 | ch-blueocean.org/ | 148 | 1 | 690863.7 |
| 10 | cycan.org/ | 192 | 3 | 668206.6 |
| 11 | brooks.ngo.cn/ | 193 | 1 | 631981.7 |
| 12 | jshj.org | 131 | 1 | 542930.6 |
| 13 | szbird.org.cn/ | 135 | 1 | 472840.2 |
| 14 | green-stone.org/ | 165 | 1 | 472807.0 |
| 15 | guizhouren.net/ | 137 | 2 | 465808.4 |
| 16 | clapv.org/ | 140 | 1 | 418895.2 |
| 17 | carei.org.cn/ | 112 | 1 | 397530.6 |
| 18 | hbzyz.com/ | 125 | 1 | 394909.1 |
| 19 | qtpep.com/ | 119 | 3 | 383037.9 |
| 20 | fgylc.org/ | 118 | 2 | 363341.5 |
| 21 | earthview.org/ | 101 | 0 | 354607.6 |
| 22 | lianquan.org.cn/ | 89 | 3 | 332605.3 |
| 23 | fon.org.cn/ | 87 | 12 | 311141.3 |
| 24 | gsean.org | 58 | 25 | 306034.5 |
| 25 | tt65.org/ | 81 | 1 | 297127.1 |

Note: See Appendix for list of all 116 seed URLs.

Given the importance of non-seed URLs in the network accounting for citing/cited nodes (Figures 3 and 4), we present in Table 3 those with the greatest betweenness centrality. Among these 25 non-seed URLs, five are social networking sites, six are online document sharing platforms, two are search engines, six are domain searching websites, two are Q&A knowledge-sharing platforms, while the remaining four are special nodes which have relatively close and direct relations with citizen-launched ENGOs in China.

This last grouping deserves special note. The official website chiandevelopmentbrief.org.cn has been established by China Development Brief, a Chinese non-profit organization whose mission

is to empower China's civil society and facilitate the free flow of resources and views for NGOs. This website is designed to serve China's NGO community by providing exclusive reports, news, publications, directories, job information, and training, especially for citizen-launched ENGOs in China. It has been and continues to play an important role in strengthening the connections between citizen-launched ENGOs in China. The second of this group is yingjiesheng.com, where ENGOs in China post job advertisements and, thus, where recent graduates can find employment. Third, greengrants.org.cn, Global Greengrants Fund's website, is designed to make small grants to start-up ENGOs in developing countries. This node's betweenness value ranks twenty-second in the entire network, reflecting a real need for Chinese ENGOs to identify funding opportunities from international organizations based in China or abroad. Finally, the fourth URL of this group is jianghuaisw.com, a website designed to facilitate provincial social network organization, to seek social funding, to cultivate non-profit organizations, and to help vulnerable groups. ENGOs can use this website to learn about relevant policies and train individuals. Overall, the importance of these four URLs highlights the challenges that citizen-launched ENGOs in China are facing, i.e. a shortage of human resources and funding.

Our interviews add insight into why the networks among ENGOs are not stronger. In talking with ENGO leaders, the reasons listed for a lack of better networks included lack of government funding, fear of politically-related risk, and lack of professional training for small ENGO leaders. The first of these two reasons account for potential tactics used by the government to discourage collaboration and coordination, including limiting the number of ENGOs in a given location and making the process of achieving non-profit status both lengthy and difficult. Despite the Chinese government's dependence on ENGOs for information and research, most NGOs struggle for limited domestic funding and must apply for international aid and/or depend upon the generosity of locals to sustain operations (Gadsden, 2010). Foreign NGOs have also been faced with increased scrutiny by the Chinese government (Blanchard, 2014), and a more recent law passed in 2016 and put into effect in 2017 increases oversight and forces international NGOs to open up their financial records to the Chinese government. With over 500,000 registered NGOs in China and many more operating unregistered (Cai, 2017), and given relatively limited funding, it is unsurprising that interviewees reported domestic government funding being scant. The unfortunate outcome is that ENGOs compete directly with one another for limited resources rather than encouraging collaboration. It also creates competition for other limited resources that could bolster an ENGO's likelihood of being awarded a grant. For example, those ENGOs covered in media outlets tend to have an advantage over lesser or unknown ENGOs. According to one interviewee, ENGOs "must cooperate with journalists so you can promote your name, so you can establish yourself as connected to an issue" (interview, 2016). This need for media coverage also influences what issues ENGOs tackle as well as how they are presented to the general public in outlets such as Xinhua. Due to government restrictions on journalists, the implication is that the government can indirectly influence ENGO projects.

Several interviewees also reported that they sometimes distance themselves from counterparts at other ENGOs due to the political risk from being associated with them. For example, when a counterpart at another ENGO takes an anti-government stance on an issue or enters into a

politically sensitive project, one is more likely to break ties with them. Public associations with these controversial counterparts are not worth an ENGO's loss of standing with the government. Loose connections, thus, reflect the fear of government retaliation or punishment, which creates schisms between those ENGOs engaging in more politically sensitive work and potential collaborators that are more restrained regarding political conflict. This aligns with Gadsden's (2010) assertion that many "NGO leaders avoid identifying themselves or their work in expressly political terms" and avoid any discourse that might suggest they are "organizing" (p. 3). Instead, they often frame their work in terms of outreach and assistance to those in need.

The last major theme from the interviews that helps to explain the loose connections among ENGOs is a lack of experience among leaders. Many groups are founded by individuals untrained in professional organizing, including husband-wife duos and those directly impacted by local pollution in rural areas. Many ENGOs are thus still in the early stages of development and are simply unaware of "developmental strategies, resources, and organizational boundaries" (interview, 2016). Or, as another interviewee put it, "Lack of experience collaborating and lack of resources have contributed to loose relations among [ENGOs]" (interview, 2016). Regarding this problem, one ENGO leader who regularly organizes a meeting of ENGOs stated that several smaller and less experienced ENGOs only attend the networking sessions "to travel to a desirable location for free" (interview, 2016), but they ultimately lack the resources or knowledge to sustain contact with partners beyond the conferences.

**Table 3. The 25 most central non-seed nodes, grouped by web page type**

| Web page type | Node (URL) | Betweenness value | Betweenness value ranking |
|---|---|---|---|
| Social network | blog.sina.com.cn/ | 666213.9 | 1 |
| | weibo.com/ | 259271.0 | 10 |
| | bbs.tianya.cn/ | 203688.5 | 11 |
| | tieba.baidu.com/ | 189368.0 | 13 |
| | hi.baidu.com/ | 124388.5 | 19 |
| Online documents sharing platform | douban.com/ | 441029.2 | 2 |
| | docin.com/ | 424732.5 | 3 |
| | wenku.baidu.com/ | 343957.1 | 6 |
| | doc88.com/ | 142524.1 | 16 |
| | nexoncn.com/ | 135885.1 | 17 |
| | 87994.com/ | 112914.1 | 20 |
| Search engine | bing.com/ | 410872.1 | 5 |
| | cn.bing.com/ | 293826.8 | 7 |
| Domain research websites | robtex.com/ | 293405.3 | 8 |
| | web3389.com/ | 262103.5 | 9 |
| | aizhan.com/ | 168571.87 | 14 |
| | swkong.com/ | 126930.6 | 18 |
| | aboutus.org/ | 99621.6 | 23 |
| | site.gimoo.net/ | 97627.0 | 25 |
| Q&A sharing platform | zhidao.baidu.com/ | 195225.5 | 12 |
| | wenwen.sogou.com/ | 143849.81 | 15 |

| | | | |
|---|---|---|---|
| Environment-specific | chinadevelopmentbrief.org.cn/ | 415671.4 | 4 |
| | yingjiesheng.com/ | 110719.0 | 21 |
| | greengrants.org.cn/ | 101669.5 | 22 |
| | jianghuaisw.com/ | 98282.7 | 24 |

*The Macro-Network: Non-truncated Domains*

Our analysis of the full network of ENGO-related online activity has thus far indicated that there are a number of web domains playing key roles in structuring the Chinese ENGO network. To observe connections among ENGOs at an even deeper level, we conduct yet another analysis of the full ENGO network but without truncating web page URLs. This allows us to identify the precise nodes – not just their domains – that connect ENGOs in China. Presented in Figures 5 and 6, node color is again representative of the original nine groups of ENGOs in Figure 1, and node size represents betweenness. Ranked in Table 4 are the most central 25 seed URLs. We observe that the presence of non-ENGO URLs – the black colored nodes – continues to play a crucial role in filling a structural hole in the network.

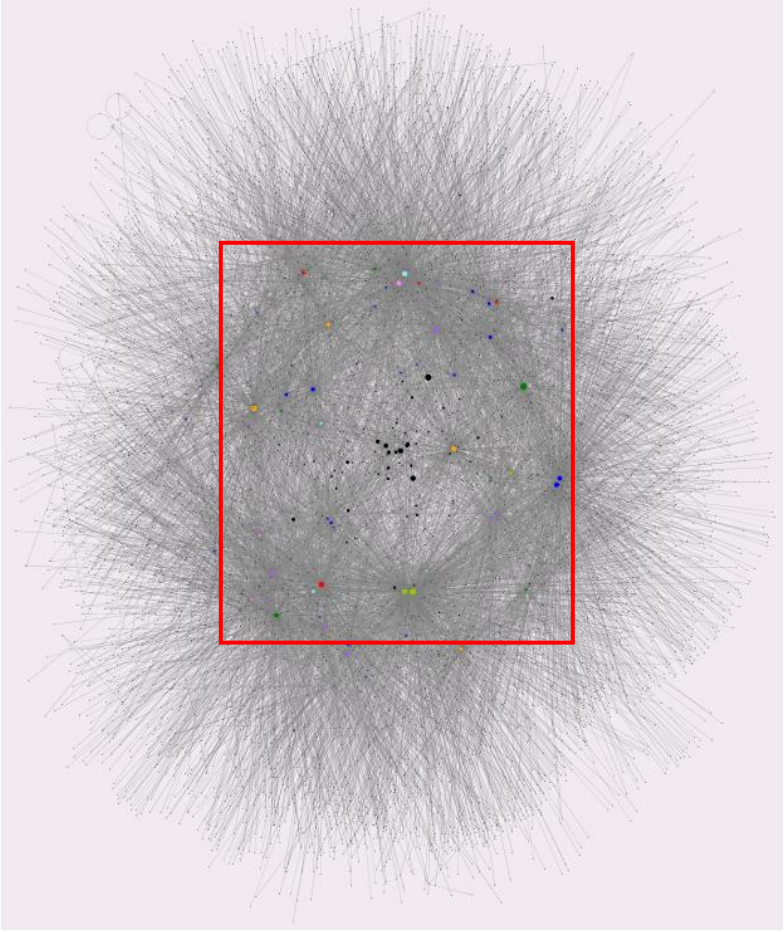

**Figure 5** Full network, without groups or trimmed domains, of 116 citizen-launched ENGOs' URLs and following/followed nodes

Note: The area within the red rectangle is enlarged in Figure 6.

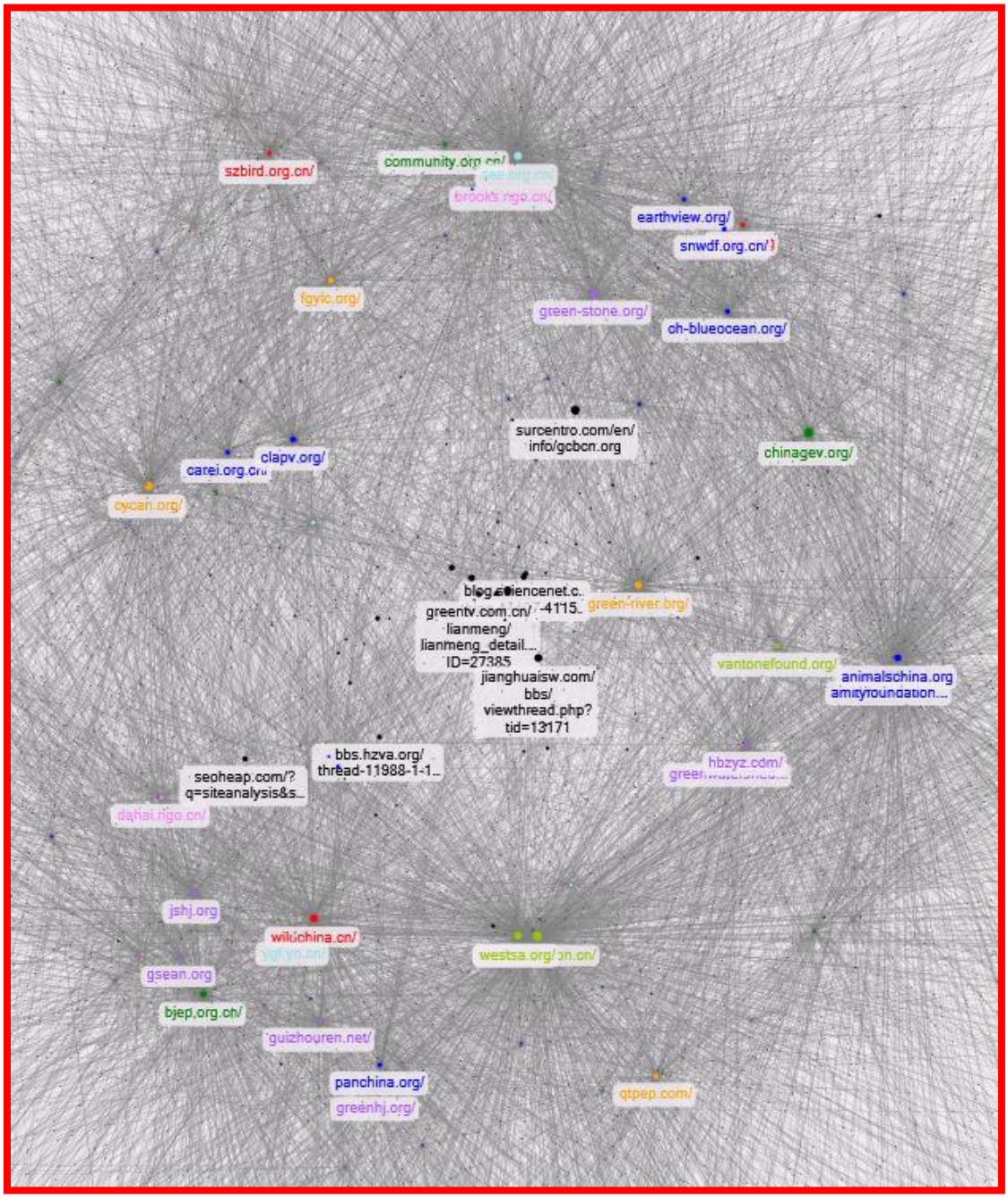


**Figure 6** Enlargement of core area from Figure 5.

**Table 4. Properties of most central 25 seed-nodes based on the entire network, no trimmed domains**

| | Node (URL) | In-degree | Out-degree | Betweenness centrality |
|---|---|---|---|---|
| 1 | chinagev.org/ | 125 | 1 | 8555417.2 |
| 2 | onefoundation.cn/ | 562 | 1 | 7808080.0 |
| 3 | cycan.org/ | 255 | 1 | 6242820.9 |
| 4 | wildchina.cn/ | 289 | 1 | 6155668.4 |
| 5 | see.org.cn/ | 316 | 1 | 5979663.4 |
| 6 | westsa.org/ | 276 | 1 | 5673430.0 |
| 7 | amityfoundation.org.cn/ | 272 | 1 | 5277802.6 |
| 8 | brooks.ngo.cn/ | 249 | 1 | 4995288.4 |
| 9 | green-stone.org/ | 216 | 1 | 4908902.6 |
| 10 | bjep.org.cn/ | 299 | 1 | 4893842.3 |
| 11 | animalschina.org | 297 | 0 | 4744963.4 |
| 12 | green-river.org/ | 295 | 1 | 4661273.7 |
| 13 | clapv.org/ | 193 | 1 | 3551979.0 |
| 14 | fgylc.org/ | 163 | 1 | 3275132.9 |
| 15 | jshj.org | 172 | 1 | 2945546.0 |
| 16 | ch-blueocean.org/ | 188 | 1 | 2662962.0 |
| 17 | greenhj.org/ | 78 | 1 | 2530201.6 |
| 18 | qtpep.com/ | 155 | 1 | 2511463.4 |
| 19 | szbird.org.cn/ | 180 | 1 | 2403361.4 |
| 20 | vantonefound.org/ | 65 | 1 | 2387766.9 |
| 21 | hbzyz.com/ | 168 | 1 | 2339904.8 |
| 22 | carei.org.cn/ | 143 | 1 | 2213794.4 |
| 23 | ygf.yn.cn/ | 90 | 1 | 2209505.1 |
| 24 | guizhouren.net/ | 167 | 1 | 2136391.9 |
| 25 | panchina.org/ | 77 | 1 | 2129678.3 |

Note: See Appendix for list of all 116 seed URLs.

Identified in Table 5 are the 25 most central nodes among the non-seed URLs. The high betweenness values indicate that these URLs serve a bridging function across the network. Our qualitative analysis of these web pages shows that the majority of these are sub-pages of particular website domains with a shared quality, namely they are hubs with many citations to ENGOs' portal websites, i.e. webpages with lists of ENGOs. Internet users seeking out information about Chinese ENGOs would go to these web pages to obtain general information about ENGOs.

These sub-pages can be categorized into two distinct types. On the one hand, there are sub-pages of domain searching web sites, such as surcentro.com/en/info/gcbcn.org, which is under the domain of surcentro.com/en, a website proving domain research for GCBN, a popular citizen-launched ENGO in China. This type of web page has little substantive value for environmental activism in China relative to the other identified group of non-seed URLs in Table 5, namely those sub-pages which present a list of ENGO websites for social work-related domains, for NGO-

oriented domains, for environmental blogs, or for document sharing platforms that are environmentally or NGO related. These 18 websites, listed in the bottom half of Table 5, represent the bulk of the most central nodes in the non-truncated domain macro-network, indicating that civil society-promulgating websites are actually playing a key role in solidifying the ENGO-based network and filling structural holes.

**Table 5. The 25 most central non-seed nodes, no trimmed domains**

| Node (URL) | Betweenness value | Betweenness value ranking |
|---|---|---|
| ***Sub-pages of domain research website*** | | |
| surcentro.com/en/info/gcbcn.org | 7618309.7 | 1 |
| urlfind.org/?site=widget.weibo.com | 3575629.5 | 5 |
| seoheap.com/?q=siteanalysis&s=bilinstar.com | 2650758.2 | 9 |
| robtex.net/en/advisory/dns/cn/org/fon/ | 1354572.2 | 15 |
| wlrdw.com/ | 1328891.5 | 16 |
| web3389.com/domain_cqep.org.html | 1324759.0 | 17 |
| seoheap.com/?q=siteanalysis&s=gsean.org | 825072.8 | 23 |
| ***Sub-pages presenting a list of ENGO websites*** | | |
| jianghuaisw.com/bbs/viewthread.php?tid=13171<br>--Xunxing social work website. | 5959370.0 | 2 |
| jianghuaisw.com/bbs/redirect.php?tid=3771&goto=lastpost<br>--Xunxing social work website. | 5743666.4 | 3 |
| ngologo.blog.163.com/blog/static/172617529201010171273527 8/<br>--A design and brand-building company for Chinese NGOs. | 4445177.3 | 4 |
| 99daziran.com/html/huanbaojienenzixun/200906/10-281.html<br>--Portal website of Jinan Environmental Public Welfare. | 3422256.7 | 6 |
| greentv.com.cn/lianmeng/lianmeng_detail.aspx?ID=27385<br>--Public welfare portal site. | 3133320.6 | 7 |
| blog.sciencenet.cn/blog-44407-41153.html<br>--A blog reporting the science community of NGOs. | 2700743.5 | 8 |
| loongzone.com/forum.php?mod=viewthread&tid=2025<br>--Public welfare and charity website. | 2506261.1 | 10 |
| jica.go.jp/china/chinese/office/activities/ngodesk/pdf/environment_03.pdf<br>--A Chinese ENGO directory of the Japan Intl. Coop. Agency | 2333437.9 | 11 |
| bbs.hzva.org/thread-11988-1-1.html<br>--Hangzhou volunteers' list of NGOs. | 2255030.9 | 12 |
| 6980122.blog.163.com/blog/static/74075205200871412318241<br>--A blog titled "Volunteers' Home". | 2024805.6 | 13 |
| npi.org.cn/report_file/3_1740_124457.pdf<br>--NPI's website, an incubator for Chinese non-profit orgs. | 1529030.0 | 14 |
| reviewmysite.org/domain/gongyi.baidu.com<br>--Baidu Public Service website. | 1307887.2 | 18 |
| bbs.hzva.org/thread-60789-1-1.html<br>Hangzhou Volunteers's list of NGOs. | 1297399.3 | 19 |
| 99daziran.com/html/huanbaojienenzixun/200906/10-281_2.html<br>--Save Nature, an environmental protection website. | 1193896.7 | 20 |
| yufund.org.cn/page/5189 | 1054182.1 | 21 |

| | | |
|---|---|---|
| --The Yu Ren fund. | | |
| bbs.nantaihu.com/read-htm-tid-16519466.html<br>--Nantaiji Public Welfare Website. | 870227.9 | 22 |
| wenku.baidu.com/view/96b137255901020207409c7c.html<br>--Baidu Document Sharing Platform. | 798315.3 | 24 |
| nexoncn.com/read/85c35f912840c28738e0fb44.html<br>--A document sharing platform. | 773750.3 | 25 |

## Conclusion

Our central concern regarding this research project has focused on the integrity of the network of Chinese ENGOs, focusing specifically on the online network but also addressing offline connections among ENGOs. The networks analyzed above account for differences between the micro- and macro-networks to identify the qualitative differences between nodes which are truncated at the domain level and those which are not. We observe that the micro-network is relatively underdeveloped: many isolates rely on non-ENGO-based URLs to connect them to the community of Chinese ENGOs. We have also determined that social networking sites, domain research sites, and related Internet service-based sites are important overall, based on the truncated domain-based analysis; however, there is a burgeoning online civil society, evidenced by the centrality of civil society-related sites in our non-truncated domain-based analysis. Individuals go to these websites to not only receive information about the gamut of ENGOs in China, but to engage in further research about environmental issues.

There are thousands of ENGOs with rather weak connections. This factor is being noticed and addressed in China. For example, there is a group of twenty-four ENGOs that meet twice a year to discuss strategies, projects, successes, and failures of their environmental efforts. This group is largely able to meet because they are sponsored by the Danish Center for Human Rights (Nilsson, Tota, Nordquist, & Andreasen, 2016). Counterintuitively, other groups of ENGOs are organized by government entities to strategize and enlist ENGOs gathered to help with data collection and analysis of various pollution issues (interview, 2016), a practice which is in line with the government's expansion of civil society in the late 1990s to assist with administration and oversight (Ho, 2008; Ru & Ortolano, 2009). The importance of stronger connections is thus a function of international funding as well as government initiatives that strategically access ENGO resources without acknowledging nor directly supporting these ENGOs efforts as a group.

We cannot offer verifiable evidence that ENGO networks are diffuse because of government intervention or because the ENGOs operate without accounting for the general public. However, our analysis indicates that there is greater coordination than might otherwise be expected. In the micro-network, there are geographic- and substantive-foci which drive the group structures. This is consistent with existing evidence that local efforts, particularly in Guangdong and elsewhere, are arising with greater frequency and are rooted in the ability to make connections across ENGOs (Wu, 2013). There are opportunities for the public to familiarize itself with the body of ENGOs online, providing that individuals are willing to peruse the Internet for accurate information.

It is also possible that social media plays a more important role in connecting organizations than formal websites, which offers a possible explanation for the rhizomatic nature of connections described above. When meeting with ENGO leadership in China, they would often request that they be followed on Weixin. Some have email newsletters, but most post announcements, calls, and opportunities on Weixin as it is more inexpensive and simpler than managing a website, and it also allows ENGOs with the opportunity to tap into a network of approximately 800 million users. Perhaps most importantly, Weixin is distinct from Facebook or Twitter given that users are offered more privacy with increased functionality (e.g., paying one's utility bills, renting a bicycle, reading restaurant reviews, buying produce from a street vendor). In short, ENGOs in China are not directly connected but rather are connected in a way that responds to the social media available as well as government censorship practices.

Future analyses of ENGOs online activities should target Weixin as we expect that a formal analysis of those networks would take the form of private/indirect/rhizomatic social networks in which connections are differently configured, weak ties are more prevalent, and nodes are smaller. This may be a unique feature of Chinese environmentalism – and any public activism in China for that matter – given that public websites and the more public social networks draw attention (and censorship) from the government. Weixin and other private social networks, however, are expected to create connections in a more decentralized model, making it relatively easy for one ENGO to sever its ties with another if necessary, particularly when a particular ENGO places mounting challenges on the government.

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## Appendix

Table A1. Properties of the 116 seed-nodes calculated based on the entire network.

| | Node (URL) | In-degree | Out-degree | Betweenness centrality |
|---|---|---|---|---|
| 1 | onefoundation.cn/ | 436 | 3 | 2068463.511 |
| 2 | animalschina.org | 219 | 0 | 909522.878 |
| 3 | bjep.org.cn/ | 227 | 1 | 881650.453 |
| 4 | see.org.cn/ | 242 | 1 | 875352.490 |
| 5 | wildchina.cn/ | 219 | 2 | 862466.934 |
| 6 | green-river.org/ | 228 | 1 | 811727.096 |
| 7 | westsa.org/ | 217 | 1 | 764639.983 |
| 8 | amityfoundation.org.cn/ | 203 | 1 | 726674.519 |
| 9 | ch-blueocean.org/ | 148 | 1 | 690863.746 |
| 10 | cycan.org/ | 192 | 3 | 668206.667 |
| 11 | brooks.ngo.cn/ | 193 | 1 | 631981.737 |
| 12 | jshj.org | 131 | 1 | 542930.674 |
| 13 | szbird.org.cn/ | 135 | 1 | 472840.211 |
| 14 | green-stone.org/ | 165 | 1 | 472807.069 |
| 15 | guizhouren.net/ | 137 | 2 | 465808.497 |
| 16 | clapv.org/ | 140 | 1 | 418895.267 |
| 17 | carei.org.cn/ | 112 | 1 | 397530.677 |
| 18 | hbzyz.com/ | 125 | 1 | 394909.194 |
| 19 | qtpep.com/ | 119 | 3 | 383037.976 |
| 20 | fgylc.org/ | 118 | 2 | 363341.553 |
| 21 | earthview.org/ | 101 | 0 | 354607.641 |
| 22 | lianquan.org.cn/ | 89 | 3 | 332605.330 |
| 23 | fon.org.cn/ | 87 | 12 | 311141.334 |
| 24 | gsean.org | 58 | 25 | 306034.597 |
| 25 | tt65.org/ | 81 | 1 | 297127.195 |
| 26 | chinagev.org/ | 99 | 1 | 251811.096 |
| 27 | depv.org/ | 85 | 1 | 242110.150 |
| 28 | bikegz.com/ | 64 | 1 | 237651.122 |
| 29 | dahai.ngo.cn/ | 80 | 3 | 213003.567 |
| 30 | community.org.cn/ | 89 | 1 | 204761.569 |
| 31 | china-mangrove.org/ | 81 | 1 | 185334.625 |
| 32 | ygf.yn.cn/ | 66 | 1 | 183019.873 |
| 33 | cecy.org/ | 53 | 0 | 181003.962 |
| 34 | greenkm.org/ | 71 | 3 | 176535.368 |
| 35 | yicongfound.org/ | 53 | 1 | 171051.217 |
| 36 | alijijinhui.org/ | 48 | 2 | 151947.619 |
| 37 | gcbcn.org | 71 | 0 | 151513.392 |
| 38 | vankefoundation.org/ | 39 | 1 | 150269.087 |
| 39 | greenba.org/ | 50 | 1 | 140840.257 |
| 40 | minqin.org/ | 43 | 0 | 140175.801 |
| 41 | panchina.org/ | 65 | 1 | 139445.532 |
| 42 | greenwatershed.org/ | 67 | 1 | 132837.864 |
| 43 | gepf.org.cn/ | 45 | 2 | 130381.854 |
| 44 | cleanwater.org.cn/ | 45 | 1 | 129866.136 |
| 45 | npodevelopment.org/ | 57 | 2 | 127455.765 |
| 46 | lvgeng.org/ | 48 | 0 | 123622.868 |
| 47 | greenhj.org/ | 64 | 1 | 121233.317 |
| 48 | gpaction.net/ | 59 | 3 | 120787.087 |

| | | | | |
|---|---|---|---|---|
| 49 | envirofriends.ngo.cn/ | 48 | 2 | 112319.992 |
| 50 | snwdf.org.cn/ | 46 | 1 | 111618.353 |
| 51 | tjlybj.com/ | 25 | 1 | 101618.019 |
| 52 | greenlj.org/ | 32 | 0 | 93301.251 |
| 53 | vantonefound.org/ | 52 | 1 | 92222.734 |
| 54 | pecc.cc/ | 28 | 1 | 91321.956 |
| 55 | scbirds.org.cn/ | 49 | 1 | 86706.404 |
| 56 | sxmmhb.org.cn/ | 30 | 1 | 79193.584 |
| 57 | greenu.org.cn/ | 29 | 1 | 76162.388 |
| 58 | yyma.org/ | 32 | 1 | 66104.192 |
| 59 | yen.ngo.cn/ | 31 | 1 | 63990.657 |
| 60 | xmgca.cn/ | 22 | 1 | 63728.978 |
| 61 | ibaiji.org/ | 30 | 1 | 62380.005 |
| 62 | wowcn.org.cn/ | 40 | 1 | 61937.940 |
| 63 | heizuiou.com/ | 34 | 0 | 59719.250 |
| 64 | zyz.beihai365.com/ | 29 | 1 | 59132.439 |
| 65 | weibo.com/hanhaisha | 20 | 0 | 58339.393 |
| 66 | bjxnyxh.com/ | 17 | 1 | 53945.206 |
| 67 | yedi.org.cn/ | 30 | 1 | 50057.902 |
| 68 | daorong.org.cn/ | 21 | 1 | 49688.047 |
| 69 | blog.sina.com.cn/shanshuibaohu | 21 | 0 | 44245.080 |
| 70 | szhb.org/ | 22 | 1 | 43584.066 |
| 71 | huaiheyuan.net/ | 16 | 0 | 43509.079 |
| 72 | oasiseco.org/bbs | 25 | 0 | 33232.698 |
| 73 | shuiyuan.org.cn/ | 26 | 1 | 33225.906 |
| 74 | greenbeijing.net/forum.php | 9 | 0 | 27462.060 |
| 75 | eco-sgr.org/ | 8 | 1 | 26933.451 |
| 76 | gongyi.baidu.com/foundation.html | 15 | 0 | 23803.539 |
| 77 | weibo.com/gep2008 | 11 | 0 | 22258.700 |
| 78 | weibo.com/liangjiangzhiyuan | 13 | 0 | 21289.221 |
| 79 | t.qq.com/GEI_China | 7 | 0 | 20574.353 |
| 80 | xiaoyudian.org.cn/ | 7 | 1 | 20473.133 |
| 81 | greenhn.org/ | 15 | 1 | 16768.235 |
| 82 | cbw.org.cn/main.jsp | 9 | 0 | 15789.545 |
| 83 | lehuo121.com/ | 10 | 0 | 15632.574 |
| 84 | t.qq.com/greenhunan/ | 9 | 0 | 14841.509 |
| 85 | ecowomen.cn/ | 10 | 1 | 14381.304 |
| 86 | sggreen.org/index.html | 4 | 0 | 13419.680 |
| 87 | ipe.org.cn/default.aspx | 6 | 0 | 7985.920 |
| 88 | qchb.gov.cn/ | 7 | 1 | 7661.016 |
| 89 | weibo.com/wec2008 | 5 | 0 | 7361.341 |
| 90 | gxbrc.com/ | 6 | 0 | 7141.456 |
| 91 | weibo.com/pendeba | 4 | 0 | 6813.502 |
| 92 | weibo.com/sunnyepc | 3 | 0 | 6754.381 |
| 93 | szlsjjh.com.cn/ | 3 | 1 | 6706.000 |
| 94 | weibo.com/hhkgn | 2 | 0 | 6706.000 |
| 95 | weibo.com/u/2738146140 | 2 | 0 | 6706.000 |
| 96 | blog.sina.com.cn/greenkham | 5 | 0 | 824.804 |
| 97 | hbtch.org/bbs/index.php?m=area | 4 | 1 | 426.581 |
| 98 | greenpower.org.hk/html/chi/index.shtml | 19 | 0 | 342.000 |
| 99 | blog.sina.com.cn/greenhomefj | 3 | 0 | 258.695 |
| 100 | weibo.com/345900500 | 3 | 0 | 244.713 |
| 101 | t.qq.com/youthfuture/ | 5 | 0 | 222.580 |
| 102 | blog.sina.com.cn/u/1274159755 | 5 | 0 | 198.975 |

| | | | | |
|---|---|---|---|---|
| 103 | blog.sina.com.cn/huaiheweishi | 4 | 0 | 133.849 |
| 104 | rivers.org.cn/html/index.html | 3 | 0 | 130.975 |
| 105 | weibo.com/ied2010 | 3 | 0 | 93.991 |
| 106 | blog.sina.com?.cn/renqinenzhu | 2 | 0 | 8.941 |
| 107 | blog.sina.com.cn/tibetssg | 1 | 0 | 0.000 |
| 108 | blog.sina.com.cn/yelan156 | 1 | 0 | 0.000 |
| 109 | gogopzh.com/dqzYz/ | 1 | 0 | 0.000 |
| 110 | gongyi.qq.com/zt2013/txjjh6/index.htm | 1 | 0 | 0.000 |
| 111 | green-anhui.org/index.php | 1 | 0 | 0.000 |
| 112 | hyyg.org/portal.php | 1 | 0 | 0.000 |
| 113 | langshan.cn/xnhb.html | 1 | 0 | 0.000 |
| 114 | nmgfszsjj.com/ | 1 | 0 | 0.000 |
| 115 | t.qq.com/greenzhujiang/ | 1 | 0 | 0.000 |
| 116 | weibo.com/gvbbeijing | 1 | 0 | 0.000 |

Table A2. Properties of the 116 seed-nodes calculated based on the entire network, non-trimmed domains.

| | Node (URL) | In-degree | Out-degree | Betweenness centrality |
|---|---|---|---|---|
| 1 | chinagev.org/ | 125 | 1 | 8555417.206 |
| 2 | onefoundation.cn/ | 562 | 1 | 7808080.000 |
| 3 | cycan.org/ | 255 | 1 | 6242820.901 |
| 4 | wildchina.cn/ | 289 | 1 | 6155668.445 |
| 5 | see.org.cn/ | 316 | 1 | 5979663.480 |
| 6 | westsa.org/ | 276 | 1 | 5673430.042 |
| 7 | amityfoundation.org.cn/ | 272 | 1 | 5277802.665 |
| 8 | brooks.ngo.cn/ | 249 | 1 | 4995288.489 |
| 9 | green-stone.org/ | 216 | 1 | 4908902.610 |
| 10 | bjep.org.cn/ | 299 | 1 | 4893842.340 |
| 11 | animalschina.org | 297 | 0 | 4744963.492 |
| 12 | green-river.org/ | 295 | 1 | 4661273.774 |
| 13 | clapv.org/ | 193 | 1 | 3551979.002 |
| 14 | fgylc.org/ | 163 | 1 | 3275132.956 |
| 15 | jshj.org | 172 | 1 | 2945546.001 |
| 16 | ch-blueocean.org/ | 188 | 1 | 2662962.000 |
| 17 | greenhj.org/ | 78 | 1 | 2530201.638 |
| 18 | qtpep.com/ | 155 | 1 | 2511463.495 |
| 19 | szbird.org.cn/ | 180 | 1 | 2403361.416 |
| 20 | vantonefound.org/ | 65 | 1 | 2387766.993 |
| 21 | hbzyz.com/ | 168 | 1 | 2339904.870 |
| 22 | carei.org.cn/ | 143 | 1 | 2213794.400 |
| 23 | ygf.yn.cn/ | 90 | 1 | 2209505.152 |
| 24 | guizhouren.net/ | 167 | 1 | 2136391.922 |
| 25 | panchina.org/ | 77 | 1 | 2129678.380 |
| 26 | gcbcn.org | 94 | 0 | 2077776.400 |
| 27 | snwdf.org.cn/ | 62 | 1 | 1946904.789 |
| 28 | earthview.org/ | 125 | 0 | 1846825.071 |
| 29 | community.org.cn/ | 119 | 1 | 1736220.769 |
| 30 | greenwatershed.org/ | 79 | 1 | 1688538.091 |
| 31 | dahai.ngo.cn/ | 107 | 1 | 1648492.158 |
| 32 | gsean.org | 68 | 1 | 1621351.275 |
| 33 | china-mangrove.org/ | 111 | 1 | 1598842.427 |
| 34 | greenkm.org/ | 101 | 1 | 1595850.756 |
| 35 | depv.org/ | 110 | 1 | 1584681.197 |
| 36 | lianquan.org.cn/ | 108 | 1 | 1526082.000 |
| 37 | bikegz.com/ | 99 | 1 | 1393201.666 |
| 38 | fon.org.cn/ | 99 | 2 | 1384396.026 |
| 39 | gpaction.net/ | 80 | 1 | 1100988.457 |
| 40 | envirofriends.ngo.cn/ | 62 | 1 | 1069615.466 |
| 41 | cecy.org/ | 63 | 1 | 1053546.191 |
| 42 | npodevelopment.org/ | 72 | 1 | 1043667.106 |
| 43 | greenlj.org/ | 36 | 0 | 972414.773 |
| 44 | yicongfound.org/ | 66 | 1 | 967723.322 |
| 45 | scbirds.org.cn/ | 61 | 1 | 915404.936 |
| 46 | cleanwater.org.cn/ | 59 | 1 | 870126.970 |
| 47 | greenba.org/ | 61 | 1 | 852911.829 |
| 48 | alijijinhui.org/ | 59 | 1 | 817573.568 |
| 49 | ibaiji.org/ | 38 | 1 | 772986.994 |
| 50 | minqin.org/ | 53 | 1 | 708249.000 |

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| 51 | vankefoundation.org/ | 50 | 1 | 693840.000 |
| 52 | heizuiou.com/ | 43 | 0 | 674653.323 |
| 53 | wowcn.org.cn/ | 50 | 1 | 655760.218 |
| 54 | shuiyuan.org.cn/ | 40 | 1 | 613566.337 |
| 55 | yen.ngo.cn/ | 45 | 1 | 610560.445 |
| 56 | yedi.org.cn/ | 33 | 1 | 519035.150 |
| 57 | greenu.org.cn/ | 32 | 1 | 410054.505 |
| 58 | daorong.org.cn/ | 30 | 1 | 405300.000 |
| 59 | weibo.com/hanhaisha | 24 | 1 | 289663.000 |
| 60 | greenhn.org/ | 19 | 1 | 246262.000 |
| 61 | gongyi.baidu.com/foundation.html | 18 | 1 | 231792.000 |
| 62 | greenbeijing.net/forum.php | 13 | 1 | 159412.000 |
| 63 | t.qq.com/youthfuture/ | 7 | 1 | 101472.000 |
| 64 | blog.sina.com.cn/greenkham | 7 | 1 | 51066.075 |
| 65 | t.qq.com/GEI_China | 7 | 1 | 43654.044 |
| 66 | szlsjjh.com.cn/ | 5 | 1 | 43500.000 |
| 67 | tt65.org/ | 96 | 1 | 8930.000 |
| 68 | gepf.org.cn/ | 63 | 1 | 3782.000 |
| 69 | lvgeng.org/ | 58 | 0 | 3306.000 |
| 70 | sxmmhb.org.cn/ | 35 | 1 | 2970.000 |
| 71 | szhb.org/ | 29 | 1 | 2592.000 |
| 72 | zyz.beihai365.com/ | 42 | 1 | 1640.000 |
| 73 | oasiseco.org/bbs | 38 | 0 | 1406.000 |
| 74 | yyma.org/ | 38 | 1 | 1332.000 |
| 75 | pecc.cc/ | 34 | 1 | 1056.000 |
| 76 | huaiheyuan.net/ | 32 | 0 | 992.000 |
| 77 | tjlybj.com/ | 30 | 1 | 812.000 |
| 78 | xmgca.cn/ | 30 | 1 | 812.000 |
| 79 | blog.sina.com.cn/shanshuibaohu | 26 | 1 | 600.000 |
| 80 | bjxnyxh.com/ | 23 | 1 | 462.000 |
| 81 | greenpower.org.hk/html/chi/index.shtml | 20 | 1 | 342.000 |
| 82 | weibo.com/gep2008 | 14 | 1 | 156.000 |
| 83 | ecowomen.cn/ | 13 | 1 | 132.000 |
| 84 | lehuo121.com/ | 13 | 1 | 132.000 |
| 85 | weibo.com/liangjiangzhiyuan | 13 | 1 | 132.000 |
| 86 | t.qq.com/greenhunan/ | 11 | 0 | 110.000 |
| 87 | cbw.org.cn/main.jsp | 11 | 1 | 90.000 |
| 88 | qchb.gov.cn/ | 11 | 1 | 90.000 |
| 89 | eco-sgr.org/ | 10 | 1 | 72.000 |
| 90 | gxbrc.com/ | 9 | 0 | 72.000 |
| 91 | xiaoyudian.org.cn/ | 9 | 1 | 56.000 |
| 92 | ipe.org.cn/default.aspx | 8 | 1 | 42.000 |
| 93 | blog.sina.com.cn/u/1274159755 | 7 | 1 | 30.000 |
| 94 | blog.sina.com.cn/huaiheweishi | 5 | 0 | 20.000 |
| 95 | hbtch.org/bbs/index.php?m=area | 5 | 0 | 20.000 |
| 96 | weibo.com/pendeba | 6 | 1 | 20.000 |
| 97 | blog.sina.com.cn/greenhomefj | 4 | 0 | 12.000 |
| 98 | blog.sina.com?.cn/renqinenzhu | 4 | 0 | 12.000 |
| 99 | sggreen.org/index.html | 5 | 1 | 12.000 |
| 100 | weibo.com/wec2008 | 5 | 1 | 12.000 |
| 101 | weibo.com/ied2010 | 3 | 0 | 6.000 |
| 102 | weibo.com/sunnyepc | 3 | 0 | 6.000 |
| 103 | blog.sina.com.cn/tibetssg | 2 | 0 | 2.000 |
| 104 | blog.sina.com.cn/yelan156 | 2 | 0 | 2.000 |

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|---|---|---|---|---|
| 105 | gongyi.qq.com/zt2013/txjjh6/index.htm | 2 | 0 | 2.000 |
| 106 | rivers.org.cn/html/index.html | 3 | 1 | 2.000 |
| 107 | weibo.com/345900500 | 3 | 1 | 2.000 |
| 108 | weibo.com/u/2738146140 | 2 | 0 | 2.000 |
| 109 | gogopzh.com/dqzYz/ | 1 | 0 | 0.000 |
| 110 | green-anhui.org/index.php | 1 | 1 | 0.000 |
| 111 | hyyg.org/portal.php | 1 | 0 | 0.000 |
| 112 | langshan.cn/xnhb.html | 1 | 1 | 0.000 |
| 113 | nmgfszsjj.com/ | 1 | 0 | 0.000 |
| 114 | t.qq.com/greenzhujiang/ | 1 | 0 | 0.000 |
| 115 | weibo.com/gvbbeijing | 1 | 0 | 0.000 |
| 116 | weibo.com/hhkgn | 2 | 1 | 0.000 |