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IMPLEMENTATION OF THE STEWARDSHIP MAPPING AND ASSESSMENT PROJECT (STEWMAP)
IN SANTO DOMINGO'S NATIONAL DISTRICT, DOMINICAN REPUBLIC

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TECHNICAL REPORT

IMPLEMENTATION OF THE STEWARDSHIP MAPPING AND ASSESSMENT PROJECT (STEWMAP)
IN SANTO DOMINGO'S
NATIONAL DISTRICT, DOMINICAN REPUBLIC

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In Cooperation with:
Ayuntamiento del Distrito Nacional, Santo Domingo

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1.0 INTRODUCTION AND SUMMARY

In cities across the world, urban environmental stewardship efforts are increasingly popular activities that citizens and non-governmental organizations take to address and improve the environmental health and quality of life of their urban environment. Urban environmental stewardship is defined as the act of civic groups of conserving, managing, monitoring, advocating for, and educating the public about a wide range of quality of life issues in urban area through, for example, tree planting, stream restoration, education campaigns, water quality monitoring, to name a few. Traditionally environmental groups pursue these goals, but increasingly other civic groups are taking on environmental issues as well (e.g. block associations that do tree plantings and maintenance, or youth groups that conduct neighborhood park clean-ups) (Fisher et al. 2012).

The Stewardship Mapping and Assessment Project (STEW-MAP) was developed by social scientists working in Forest Service Urban Field Stations to inventory, analyze, and map the social interactions among civic groups doing urban environmental stewardship. STEW-MAP allows the exploration of who, what, where, why, and how are environmental stewardship groups working across the landscape (https://www.nrs.fs.fed.us/STEWMAP). The data generated by STEW-MAP includes each organization's characteristics, knowledge systems, geographic turf, and their social network. This tool has been applied to numerous cities in the U.S. including New York, Baltimore, Chicago, Philadelphia, Seattle, and San Juan (Figure 1).

This study identifies, describes, and analyzes the function and structure of urban environmental stewardship efforts in Santo Domingo's (Dominican Republic) National Municipal District (*Ayuntamiento del Distrito Nacional*) through the use of the STEW-MAP methodology. Specifically, it: 1) highlights stewardship opportunities, priorities, outcomes and resources in the city; and 2) examines the current capacity and networks of organizations to use urban and community activities in the improvement of the physical environment and quality of life issues common to urban areas. To the extent of our knowledge, this is the first study of civic environmental stewardship groups in Santo Domingo, Dominican Republic.

The information gathered from this effort will be useful to city urban and environmental planners to ascertain where, how and when community efforts to plant street trees, planter beds, lots, greenways, parks, and forests is occurring in the National Municipal District within Santo Domingo. Additionally, government agencies and NGO's whose mission includes fostering and supporting environmental stewardship and city sustainability efforts in cities have an interest in understanding how these efforts work in order to make decisions regarding resources, technical expertise, and other capacities they could provide to support stewardship and improve the effectiveness of stewardship organizations. Finally, this information can be used by international agencies and organizations, such as USAID, to identify future partnerships and collaborations, catalyze on-the-ground environmental stewardship projects, and build local capacity to improve environmental outcomes.

Figure 1. Map of the cities where STEWMAP has been implemented.

2.0 STEWMAP METHODS AND APPROACH

To implement STEW-MAP in the National Municipal District, we followed the protocol developed by Svendsen and Campbell (2008) and Fisher et al. (2012). The methods involved a survey questionnaire that had already been developed and that we adapted and translated to Spanish to fit the local vernacular of the city. The survey was distributed to non-governmental and community organizations that conducted stewardship activities, including planning, management, conserve, study, defend, or educate the public on the local urban environment. We used a purposive sampling methodology to create a sample of organizations and informal groups to survey. We identified groups/organizations using existing lists or databases that organizations shared with us (e.g., INTEC) and consulted key informants to identify groups/organizations that were not already in the list. We used snowball sampling methods until we exhausted the number of different groups identified. The common criterion for identifying organizations was that the groups must be actively supporting or caring for a particular piece of the urban landscape (Fisher et al. 2012).

The survey was administered mainly online using the Survey Monkey platform, but also in person when appropriate. We implemented the survey from May through August of 2017. All organizations received email reminders at intervals of two weeks via email or telephone. Once all the data were collected they were entered in standard Excel spreadsheet and basic statistics were conducted to describe the organization's mission, function, staff, and other background information.

We sent the survey to a total of 55 different civic groups/organizations and we received 23 completed responses, for a completion rate of 41.8% (Figure 2). The majority of the organizations surveyed have a formal designation as a non-profit organization (70%) while the other 30% identified as an informal community group or *"junta de vecinos"*. A list of the groups/organizations that completed the survey can be found in Appendix 1.

Figure 2. Number of surveys completed by organization type.
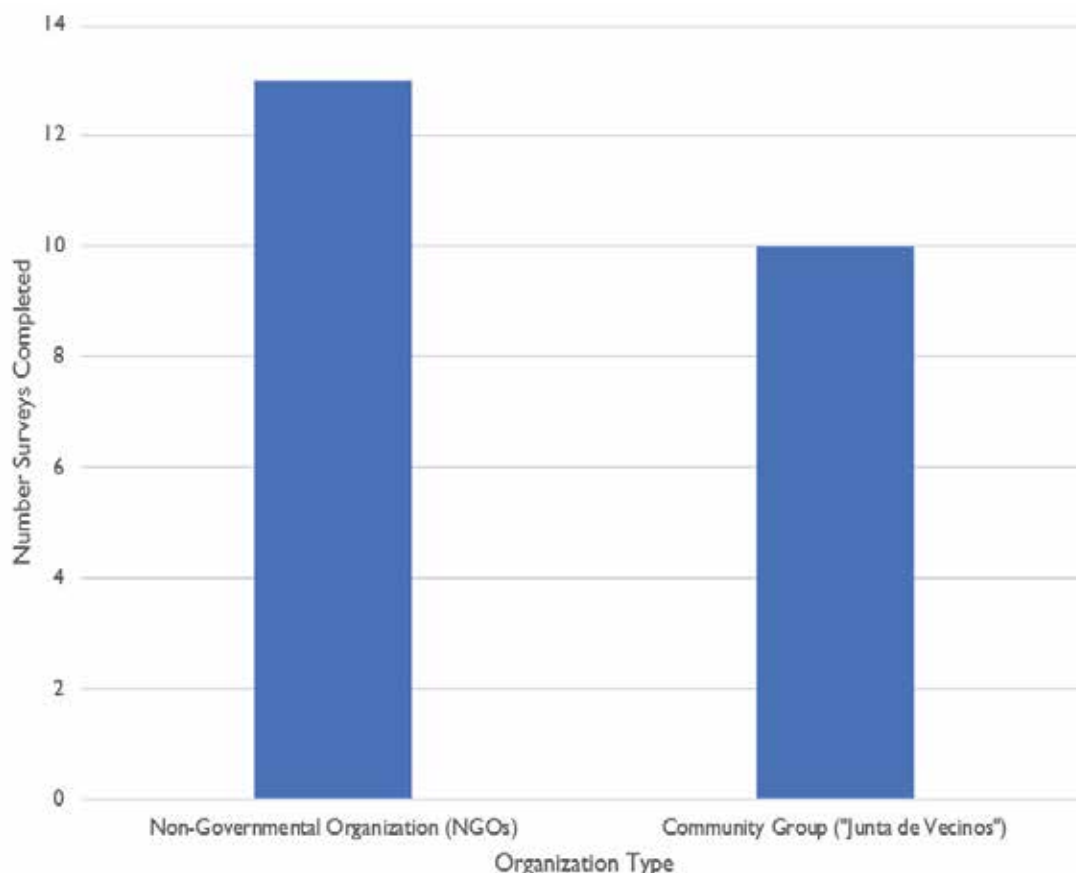
3.0 KEY FINDINGS

Profile of the Organizations Surveyed

The demographic information collected for the groups/organizations surveyed provides a profile of the organizational capacities and work associated with environmental stewardship in the National Municipal District. Most of the organizations surveyed are young, having been founded within the past 30 years, and they work on topics related to environmental conservation, education, community work, youth programs, art and cultural activities, and maintenance or improvements to urban infrastructure (Figure 3). Very few organizations work on generation of electricity, food production, service to elderly populations, legal advice, design and architecture, and foundation work. No group/organization surveyed works in the areas of transportation and criminal justice. The types of physical settings they do stewardship work in is diverse, including different water bodies and infrastructure, land or ecological types, and built infra-structure (see Table 1).

Figure 3. Areas of work conducted by the groups/organizations surveyed.
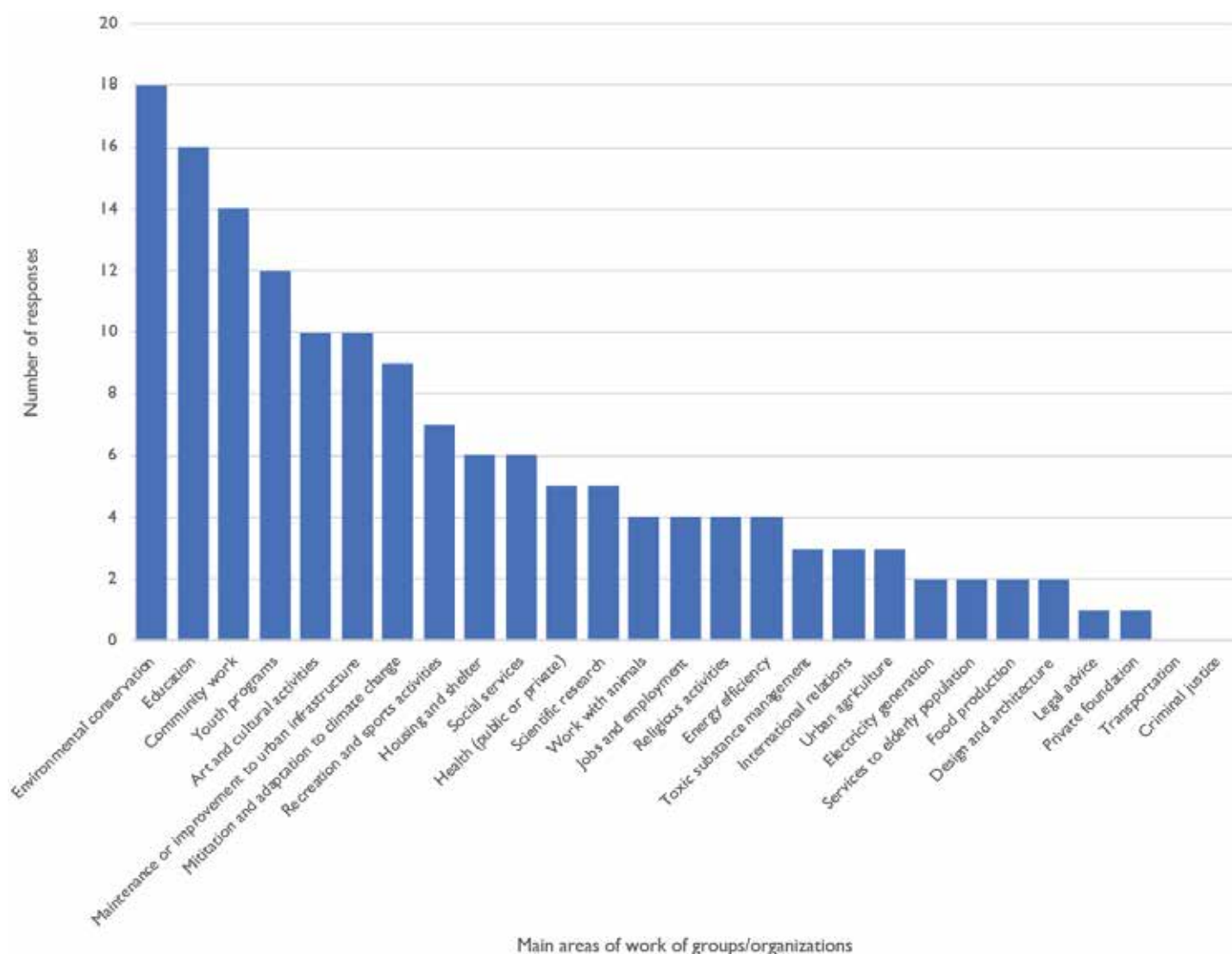
Table 1. The types of settings where the groups/organizations surveyed work in the National District.

Water		Land		Built Environment	
Watershed	50%	Trees in public spaces	62%	School grounds	60%
Rivers	50%	Public parks	57%	Vacant lots	47%
Sewershed	44%	Community gardens	38%	Recreational centers	33%
Stormwater drainage	44%	Restored areas	24%	Gardens in residential areas	27%
Streams	33%	Primary or secondary forests	19%	Abandoned property	27%
Coastal zones and beaches	33%	Trails / Bike paths / Greenway / Rail-trail	19%	Grounds of public buildings other than schools	13%
Wetland	33%	Botanical gardens or Arboretum	14%	Green buildings	57%
Water treatment	11%	Private parks	10%	Green roofs	0
Canals	6%	Urban farm	5%		
		Others: School gardens		Others: National zoo	

The majority of the groups/organizations surveyed are supported financially through fees they collect (40%), such as membership fees, payments received for services, and registration fees they collect for courses and trainings they offer (Figure 4). Government institutions, including local and state (22%) and international (13%) are a secondary source of funding, then followed by donations (13%). Surprisingly, a small percentage comes from private sources like sponsorship (4%) and commercial banks (4%) and none of the respondents identified foundations as a source.

Nearly all of the groups/organizations reported having dedicated a portion of their budget in the past year to environmental stewardship activities (Figure 5). Only two groups/organizations (16%) reported not having a budget for environmental stewardship activities, but nearly half (47%) dedicated 60 to 100% of their budget these activities.

We asked survey participants what motivated them to take on environmental stewardship activities in the National Municipal District and most respondents mentioned these three main factors: 1) the need to improve environmental conditions because of contamination, due to waste disposal or low water quality, was spreading diseases in their communities; 2) to fill a gap or augment the environmental-related work of government institutions in their communities; and 3) to educate others about the environment and the importance of nature, to sustainability. Two organizations linked environmental stewardship work with their religious mission, stating that their motivation comes from their responsibility to take care of nature as a divine creation.

Figure 4. Primary source of finance for the groups/organizations surveyed.

Legend:
- Fees (e.g. membership, service, registrations, etc)
- Government institutions
- Donations
- International cooperation agencies
- Private sponsorship
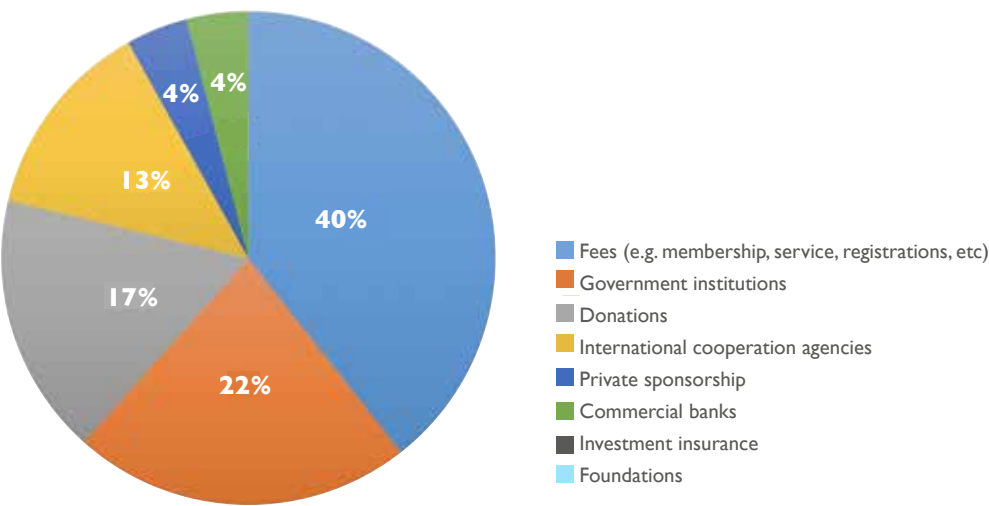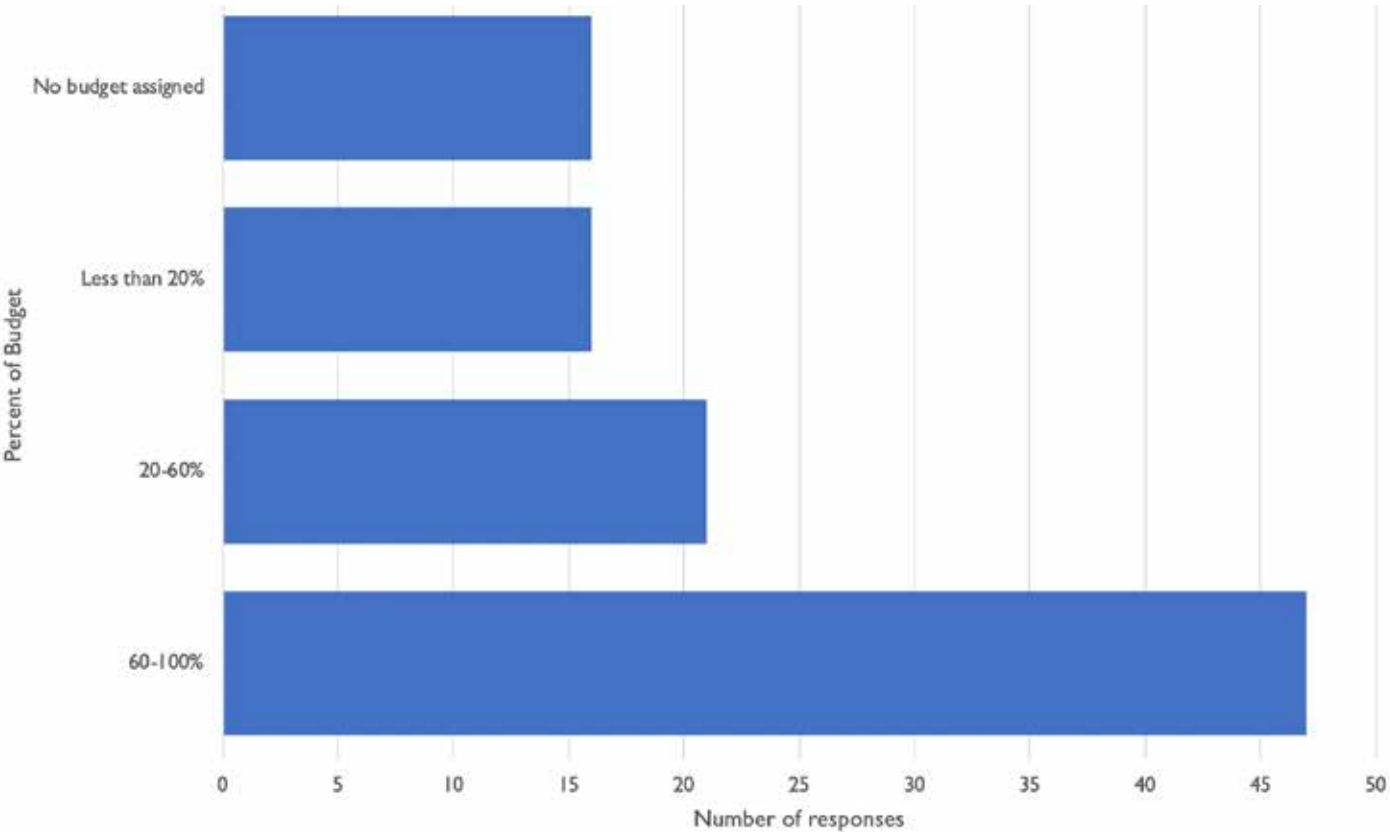- Commercial banks
- Investment insurance
- Foundations

Figure 5. Percentage of the budget that the groups/organizations surveyed dedicated to environmental stewardship activities within the past year.
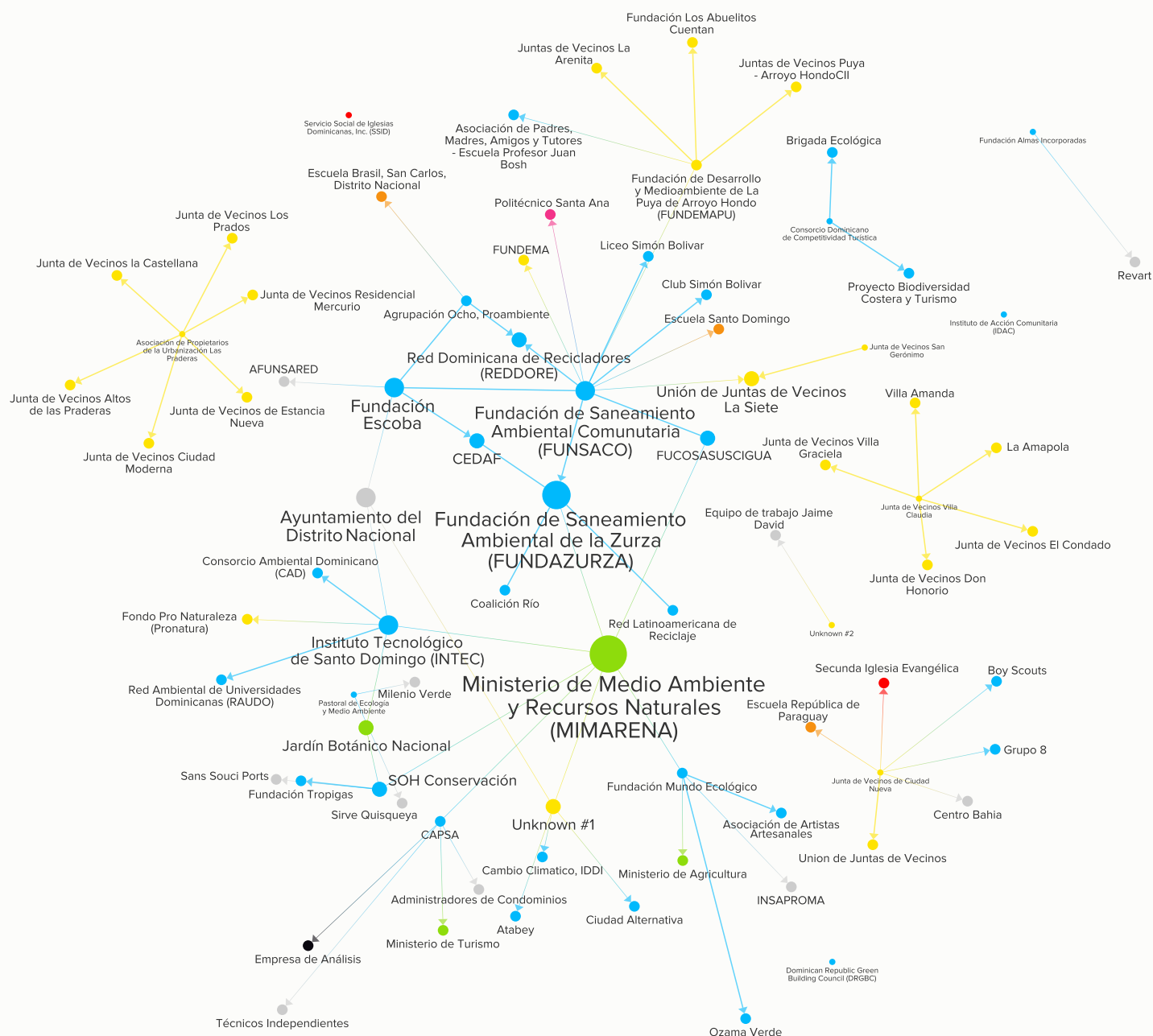
Social Network

To show the connections between civic environmental actors in the National Municipal District, we asked survey respondents to list five groups and organizations that they work with more frequently in carrying out environmental stewardship activities in the city. Eighty different organizations were mentioned by the groups/organizations surveyed (shown in blue and yellow in Figure 6). Overall, the network is composed mostly of other civic groups and organizations. In other words, the respondents mentioned that they collaborate with other non-profits (41%) and community groups (31%) more frequently than other types of organizations.

Only 6% of the organizations mentioned were government agencies, most of which were national agencies, including the Ministry of Environment and Natural Resources (*Ministerio de Medio Ambiente y Recursos Naturales [MIMARENA]*), Ministry of Tourism (*Ministerio de Turismo*), Ministry of Agriculture (*Ministerio de Agricultura*), and the National Botanical Garden (*Jardín Botánico Nacional*) (shown in green in Figure 6). At the local, municipal level, respondents mentioned the National Municipal District (*Ayuntamiento del Distrito Nacional*, ADN) (shown in gray in Figure 6), although no specific department, or secretaría, was mentioned. Although mentioned less frequently, schools and faith-based organizations also appeared in the network. Only one private sector group was mentioned. Groups and organizations that did not appear in the network include international agencies and non-profits, and research institutions or universities other than INTEC.

Organizations have different roles and different levels of influence in the environmental stewardship network depending on the number of connections they have and which organizations they connected to. We used tools of social network analysis (SNA) to run multiple statistics that allow us to identify these roles. To identify the groups and organizations that are the influencers of the network, or that are sought out by others to collaborate with environmental stewardship activities, we calculated the indegree, or number of incoming connections for each organization (or node). We found that the *MIMARENA* has the highest score for indegree and therefore is the organization with more influence on the network (see the largest green node in Figure 6 and score in Table 2). This finding was expected since this national agency has administrative duties over environmental and natural resources management in Santo Domingo and is also responsible for collecting data and information about the environment. We were surprised, however, to find that the ADN has a tertiary role in this network, given also its responsibility over the city's environmental and natural resources administration. Instead, the NGO, the *Fundación de Saneamiento Ambiental de la Zurza* (FUNDAZURZA) obtained a higher indegree score than the ADN as a source of advice and expertise for other civic groups (see Table 2). This suggest that, as a non-governmental organization, FUNDAZURZA is serving an important and complementary leadership role to the ADN for other NGOs and community-based organizations. Another measure of network role and influence that we analyzed was betweeness which reflect which groups and organizations have more control over the flow of information in the network and can act as bridges or liaisons in the network (see Table 2). We found similar results, with MIMARENEA also playing a primary role. However, the non-governmental organizations are playing an even greater role than the ADN as a bridge or liaison for the network. This again confirms the crucial role that NGOs, particularly FUNDAZARZA, FUNSACO, FUCOSASUSCIGUA, and *Fundación Escoba*, play for the civic environmental stewardship network of the National Municipal District.

Figure 6. The network of groups/organizations collaborating on environmental steward-ship activities in the National District. Each circle (or node) represents a group or organization and the size of the node represents the level of influence (or indegree) of that organization because it has a higher number of connections. Colors represent the different types of groups/organizations, as shown in the legend. A larger version of this map can ve found in Appendix II.

Legend

- Asociación Sin Fines de Lucro (ASFL)
- Grupo Comunitario
- Gobierno Nacional
- Escuela
- Organización de Base de Fe
- Institución Académica
- Sector Privado

Table 2. Results for the social network analysis (SNA) metrics for the groups/organizations playing a role as leaders or influencers in the network (indegree) and as bridges or liasions (betweeness). The higher the number means they have a greater role, and the blue indicates the highest scores for the network.

Name Organization	Type of Organization	Indegree	Betweenness	Eigenvector
Ministerio de Medio Ambiente y Recursos Naturales (MIMARE-NA)	Gobierno Nacional	7	0.075	0.10055749211825053
Fundación de Saneamiento Ambiental de la Zurza (FUNDA-ZURZA)	Asociación Sin Fines de Lucro (ASFL)	5	0.032	0.07807476353455763
Fundación Escoba	Asociación Sin Fines de Lucro (ASFL)	3	0.021	0.028760992383236136
Ayuntamiento del Distrito Nacional	Gobierno Local	3	0.015	0.04014861367447902
Fundación de Saneamiento Ambiental Comunutaria (FUNSACO)	Asociación Sin Fines de Lucro (ASFL)	3	0.041	0.02259949284506765
Instituto Tecnológico de Santo Domingo (INTEC)	Asociación Sin Fines de Lucro (ASFL)	3	0.018	0.07085286942048627
CEDAF	Asociación Sin Fines de Lucro (ASFL)	2	0.002	0.027258845412005482
Jardín Botánico Nacional	Gobierno Nacional	2	0.001	0.03195212610429225
Unknown #1	Grupo Comunitario	2	0.012	0.05774083998696015
Red Dominicana de Recicladores (RED-DORE)	Asociación Sin Fines de Lucro (ASFL)	2	0	0.012285412558070101
SOH Conservación	Asociación Sin Fines de Lucro (ASFL)	2	0.008	0.05437728959532024
FUCOSASUSCIGUA	Asociación Sin Fines de Lucro (ASFL)	2	0.026	0.050539297651508566
Unión de Juntas de Vecinos La Siete	Grupo Comunitario	2	0	0.009274037489714452

Spacial Turf

We used Geographic Information Systems (GIS) to visualize where civic environmental groups work in the National Municipal District. We asked survey respondents to specify the sectors where they conduct stewardship activities. Figure 7 shows the spatial areas within the three circuits (*or circunscripciones*) of the National Municipal District. The groups surveyed work mainly in circuits 2 and 3. In circuit 2, much of the stewardship work is done along the Parque Mirador Sur, a major lineal public park that runs across the city. It is not surprising that non-profit and community groups pay close attention to this area as it serves as an important recreational area to residents, mainly of middle and high income classes. Circuit 3 also receives much stewardship attention but for the opposite reason – there is a lack of green areas as compared to circuit 2. This circuit has the highest concentration of low income, migrant, and communities at risk, especially along the *río Ozama*. There is a high concentration of waste disposal and contamination of waters. This is the spatial turf of some of the main NGOs of the stewardship network, including FUCOSASUSCIGUA, FUNSACO, FUNDAZARZA, and *Fundación Escoba* (Figure 8). Most of the work is done in areas owned by the local government, as well as in individually-owned or managed by non-governmental organizations (Figure 9).

Figure 7. Sectors (in yellow outline) where groups are carrying out stewardship work.

Figure 8. Sectors in Circuit 3 where groups are carrying out stewardship work.
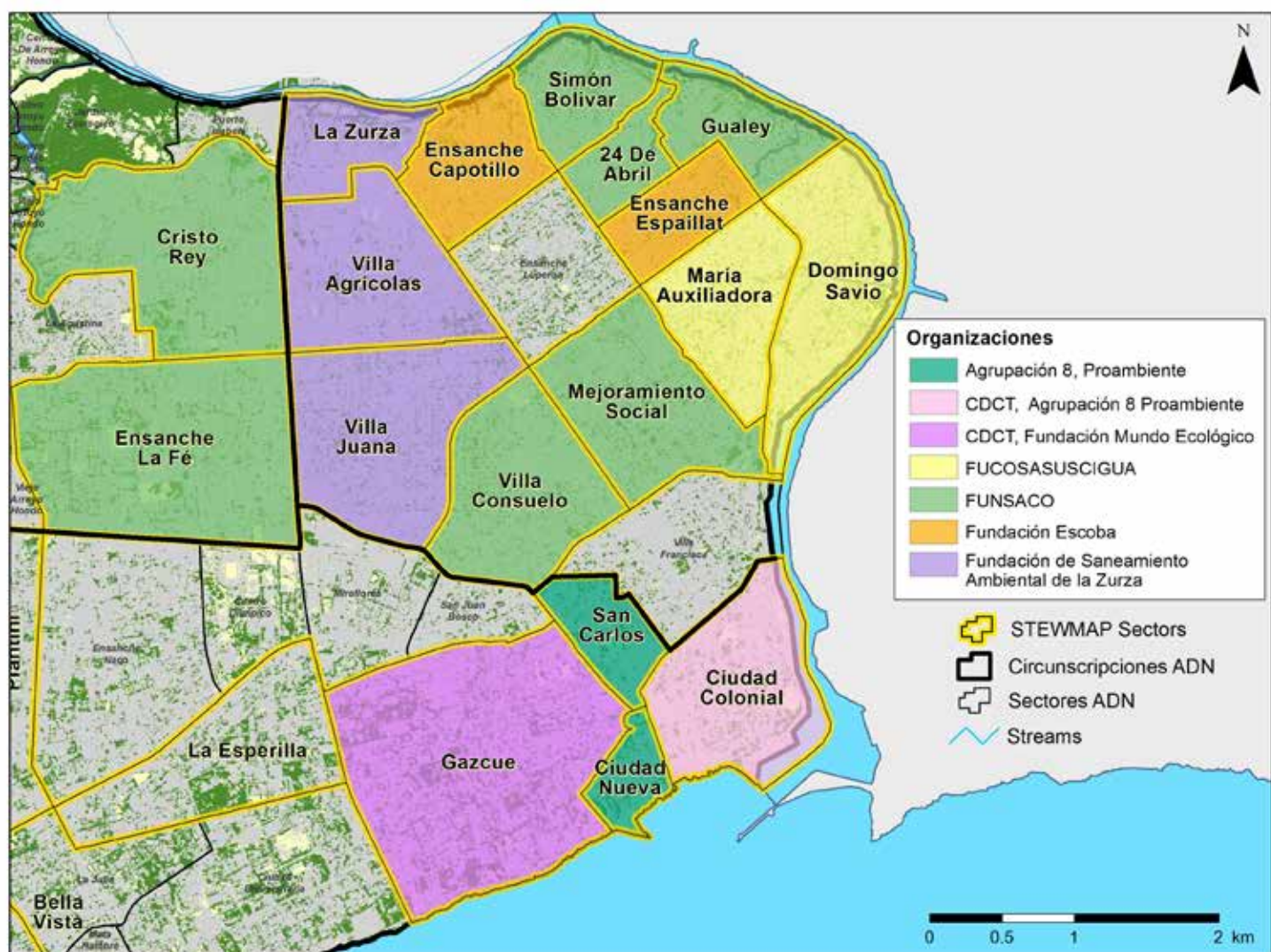
Figure 9. Ownership of the places where groups/organizations surveyed conduct environ-mental stewardship activities.
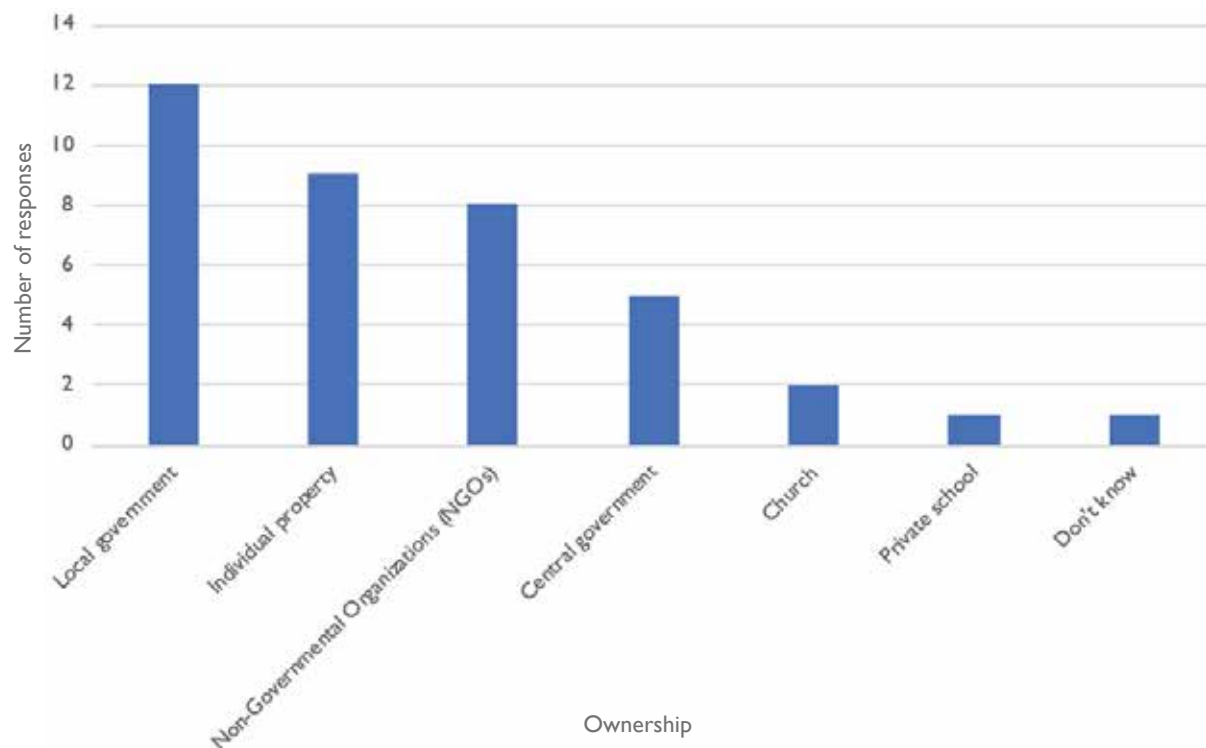
4.0 CONCLUSIONS AND NEXT STEPS

In this first study of civic environmental stewardship groups in Santo Domingo, we found a network of civic groups and organizations that are mostly young and work on various topics related to environmental conservation, education, community work, youth programs, art and cultural activities, and maintenance or improvements to urban infrastructure. In this network, government organizations play a secondary role, whereas NGOs, such as FUNDAZURZA, FUNSACO, FUCOSASUSCIGUA, and Fundación Escoba, play a central key role in providing leadership and connecting different civic groups across the National District. These civic organizations also have key role in one of the most impoverished and contaminated areas of the city – Circuit 3 along the río Ozama. Thus, providing support and capacities to enable the work of these civic groups is crucial to achieve both environmental and quality of life goals for the city.

We have created a webpage through the Forest Service STEWMAP web portal to share these results with our local Santo Domingo partners and broader public (https://www.nrs.fs.fed.us/STEW-MAP/santodomingo/). We are working on making the data collected in this study publicly available, as well as preparing a manuscript to submit for publication in an academic journal. We will also present results at conferences where we can reach both the academic and practitioner community working on urban environmental and sustainability planning.

5.0 LITERATURE CITED

Fisher, D. R., Campbell, L. K., & Svendsen, E. S. (2012). The organizational structure of urban environmental stewardship. Environmental Politics, 21(1), 26–48.

Svendsen, E., & Campbell, L. K. (2008). Urban Ecological Stewardship: Understanding the Structure, Function and Network of Community-based Urban Land Management. Cities and the Environment, 1(1), 4.

Appendix 1
List of groups/organizations that completed the STEWMAP survey
for the National District in Santo Domingo, Dominican Republic.

GROUP/ORGANIZATION	TYPE
Junta de Vecinos Villa Claudia	Community Group
Junta de Vecinos de Ciudad Nueva	Community Group
Fundación de Saneamiento Ambiental de la Zurza (FUNDAZURZA)	Community Group
Fundación de Desarrollo y Medioambiente de La Puya de Arroyo Hondo (FUNDEMAPU)	Community Group
Fundación de Saneamiento Ambiental Comunitaria (FUNSACO)	Community Group
Unknown #1	Community Group
Junta de Vecinos San Geronimo	Community Group
Unknown #2	Community Group
Asociación de Propietarios de la Urbanización Las Praderas	Community Group
CAPSA	Community Group
Fundación Sur Futuro	NGO
FUCOSASUSCIGUA	NGO
Fundación Escoba	NGO
Agrupación Ocho, Proambiente	NGO
Instituto Tecnológico de Santo Domingo (INTEC)	NGO
Fundación Almas Incorporadas	NGO
Fundación Mundo Ecológico	NGO
Instituto de Acción Comunitaria (IDAC)	NGO
Dominican Republic Green Building Council (DRG-BC)	NGO
Consorcio Dominicano de Competitividad Turística (CDCT)	NGO
Servicio Social de Iglesias Dominicanas,inc. (SSID)	NGO
Pastoral de Ecología y Medio Ambiente	NGO
SOH Conservación	NGO

Legend

- Asociación Sin Fines de Lucro (ASFL)
- Grupo Comunitario
- Gobierno Nacional
- Escuela
- Organización de Base de Fe
- Institución Académica
- Sector Privado

Servicio Social de Iglesias Dominicanas, Inc. (SSID)

Asociación de Madres, Amigos - Escuela Pro Bos

Escuela Brasil, San Carlos, Distrito Nacional

Polit

Junta de Vecinos Los Prados

FUN

Junta de Vecinos la Castellana

Junta de Vecinos Residencial Mercurio

Agrupación Ocho, Proam

Asociación de Propietarios de la Urbanización Las Praderas

AFUNSARED

Red Dominicana (REDD

Junta de Vecinos Altos de las Praderas

Junta de Vecinos de Estancia Nueva

Fundación Escoba

Funda Am

Junta de Vecinos Ciudad Moderna

CEDAF

Ayuntamiento del Distrito Nacional

Fundació Ambie (FU

Consorcio Ambiental Dominicano (CAD)

Coalición

Fondo Pro Naturaleza (Pronatura)

Instituto Tecnológico de Santo Domingo (INTEC)

Minist y

Red Ambiental de Universidades Dominicanas (RAUDO)

Milenio Verde

Pastoral de Ecología y Medio Ambiente

Jardín Botánico Nacional

Sans Souci Ports

SOH Conservación

Fundación Tropigas

Sirve Quisqueya

U

CAPSA

Cambi

Administradores de Con

Atab

Ministerio de Turismo

Empresa de Análisis

Técnicos Independientes

20

Fundación Los Abuelitos Cuentan

Juntas de Vecinos La Arenita

Juntas de Vecinos Puya - Arroyo HondoCII

Brigada Ecológica

Fundación Almas Incorporadas

de Padres, os y Tutores ofesor Juan sh

Fundación de Desarrollo y Medioambiente de La Puya de Arroyo Hondo (FUNDEMAPU)

Consorcio Dominicano de Competitividad Turística

Revart

écnico Santa Ana

DEMA

Liceo Simón Bolivar

Club Simón Bolivar

Escuela Santo Domingo

Proyecto Biodiversidad Costera y Turismo

Instituto de Acción Comunitaria (IDAC)

biente

de Recicladores DORE)

ación de Saneamiento biental Comunutaria (FUNSACO)

FUCOSASUSCIGUA

Junta de Vecinos San Gerónimo

Unión de Juntas de Vecinos La Siete

Villa Amanda

La Amapola

Junta de Vecinos Villa Graciela

Junta de Vecinos Villa Claudia

Junta de Vecinos El Condado

n de Saneamiento ental de la Zurza NDAZURZA)

Equipo de trabajo Jaime David

n Río

Red Latinoamericana de Reciclaje

Unknown #2

Junta de Vecinos Don Honorio

terio de Medio Ambiente Recursos Naturales (MIMARENA)

Secunda Iglesia Evangélica

Boy Scouts

Escuela República de Paraguay

Fundación Mundo Ecológico

Unknown #1

Asociación de Artistas Artesanales

Junta de Vecinos de Ciudad Nueva

Grupo 8

Centro Bahia

o Climatico, IDDI

Ministerio de Agricultura

Union de Juntas de Vecinos

domínios bey

Ciudad Alternativa

INSAPROMA

Dominican Republic Green Building Council (DRGBC)

Ozama Verde