ROLE OF LOCAL STAKEHOLDERS IN REACHING, DEVELOPING, AND SUSTAINING COLLABORATIVE MANAGEMENT: CASE STUDY OF URBAN WETLANDS OF BOGOTÁ, COLOMBIA

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In memory of Ciro Angarita
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ABSTRACT

This research analyzes how local stakeholder participation helps reach, develop, and sustain collaborative management in urban wetlands of Bogotá. Trajectories of management are traced from the early 1990s to present. Based on semi-structured interviews and focus groups carried out in seven urban wetlands, comparison were made by using a framework that allows analyzing deliberate social transformations. The results indicate that types of local stakeholder participation have effect on reaching, developing and sustaining collaborative management. The trajectories toward collaborative management of seven urban wetlands show that five of them reached this type of management at some point, two of these five were able to develop it, and only one could sustain it. All cases start with independent actions but only those that routinize collaborative and transformative participation events were able to develop collaborative management. The only case that sustains this type of management is because local stakeholder participation to make decisions is secured by court ruling that protects it from changes in the city’s political leadership.

The case sheds light on the vulnerability of local stakeholder participation and collaborative management under unstable government rules to manage urban wetlands. The most successful strategy that local stakeholders use to address this volatile management condition is legal actions, which not only allow reaching collaborative management, but also protects their participation to develop and sustain this type of management.
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1. INTRODUCTION

Wetlands cover 1280 million hectares on Earth (Millennium Ecosystem Assessment 2005), approximately 8.5% of its land surface. These ecosystems are globally important because they provide a wide range of ecosystem services and have been a long-persistent refugia for flora and fauna throughout the Earth’s history (Greb et al. 2006). Despite their importance, more than 50% of these ecosystems have been destroyed and highly degraded during the twentieth century (Millennium Ecosystem Assessment 2005), becoming one of the most threatened ecosystems on earth (Mitsch & Gosseling 2007, as cited in Hettiarachchi et al. 2013). One of the causes of wetland destruction and degradation is the increased urbanization because it has effects on their hydrological, physicochemical, and biotic components (Hettiarachchi et al. 2014). For these reasons, how urban wetlands are managed is a key factor to conserve these endangered ecosystems and to maintain the ecosystem services they generate for urban inhabitants.

Public participation has been recognized as important for long-term management of urban ecosystems (Sakurai et al. 2015) but the potential of community engagement is not fully acknowledged by environmental managers (Kronenberg 2015, Nagendra & Ostrom 2014). This fact takes significant relevance in cities located in areas with high biodiversity, where urbanization competes with its conservation, where public institutions do not have resources to fulfill all their tasks.

Collaborative management has many benefits (Carlsson & Berkes 2005) and may be particularly important in the urban context (Nagendra & Ostrom 2014). This type of management involves agreement between at least two parts that are willing to share functions, authority, and responsibilities for a territory or a resource (Borrini-Feyerabend et al. 2000).

In cities it is not clear who the counterpart of collaborative management is, as “community” is very large and heterogeneous. However, studies show examples of cities across the world, e.g. Stockholm (Ernstson et al. 2009), Bangalore (Luna 2014, Enqvist et al. 2014), and Capetown (Graham & Ernstson 2012), where people come together to protect and manage urban green spaces and wetlands. Great need to better understand how such initiatives emerge and develop, how they can be supported, and how collaborative management can and does emerge and develop in an urban context. To understand such process, it can be useful to view the emergence of collaborative management as a potential transformation (Olsson et al. 2004, Luna 2014).

This thesis will address the complex challenge of managing urban wetlands, and in particular the role of local stakeholders for protecting and managing urban wetlands. It builds on insights into participation in environmental management, and into collaborative management as a transformation process.
The development and unfolding of collaborative management of urban wetlands in Bogotá provides a useful case study to build further understanding because there are different local contexts, approaches, and outcomes that influence trajectories toward co-management. This case allows comparing trajectories of local stakeholder participation that are under the same regulations, giving insights about how collaborative management can be developed and sustained.

The aim of this research is to compare cases that have the same rules at District level to assess the effect of local stakeholder participation on reaching, developing and sustaining collaborative management of urban wetlands in Bogotá.

This research uses focus groups and semi-structured interviews to address the following questions:

- How does local stakeholder participation change throughout the wetland’s management phases at both District and local level?
- How does local stakeholder participation help initiate collaborative management?
- How is collaborative management developed and sustained?

Based on these findings, I will compare the cases and discuss the main differences among them, and discuss using frameworks for social-ecological transformation.

This research is important for local communities that want to sustain collaborative management to protect wetlands within Bogotá. Current wetlands of Bogotá are part of a remaining 3% of the former wetland ecosystem areas found within the Sabana of Bogotá a few decades ago (Renjifo 1992). It can also provide general insights around co-management in an urban context, in particular form a Global South perspective, where the conditions for management of urban wetlands may differ significantly from a European or North American context.

2. THEORETICAL BACKGROUND

Management, in relation to natural resources, is defined as the right to regulate internal use patterns and transform the resource by making improvement (Ostrom & Schlager 1996). Management can be implemented by single actors or by cooperation among different actors (Carlsson & Berkes 2005). Collaborative management or co-management is one type of management and it is defined as “a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources” (Borrini-Feyerabend et al. 2007:1). Co-management implies a pluralist approach produced by political and cultural processes that are complex, continuous, and often lengthy (Borrini-Feyerabend et al., 2007).
Collaborative management is seen as a desirable path to manage common pool resources, such as urban wetlands, due to their advantages. Carlsson and Berkes (2005) summarize them as follows: 1) increased efficiency due to the allocation of tasks according to level of knowledge and skills; 2) exchange of resources when a group or individual of the network cannot produce it independently; 3) established linkages among different groups to coordinate tasks within networks; 4) reduction of transaction costs and risks; 5) means of conflict resolution between groups.

When collaborative management is a process between public and private sectors, there exist complexities of the State, the community, the dynamics of the system, the conditions available to support the system, the governance, the process of adaptive learning and problem solving, and the ecosystem that produces the resources that are being managed (Carlsson & Berkes, 2005). These complexities lead case studies of collaborative management to have different processes and outcomes even when the criteria of participation are met. For example, Margerum (2008) compares two case studies of co-management, San Francisco Estuary Project in California and the Applegate Partnership in Oregon; both cases involve cross-section of stakeholders and the public, consensus through intensive deliberation, creative problem solving, and plans to meet their objectives. However, Margerum (2008) finds differences between them in terms of demographic context, type of actors, and implementation approach.

An embedded element of collaborative management is stakeholder participation. Stakeholder is defined as those who are affected by or can affect a decision (Reed 2008). Participation is defined as the process in which individuals, groups or communities take part in the goal of influencing a decision that affect them (André et al. 2012). Participation can be organized by members of a society (e.g. class actions, protests, and local committees), by decision makers (e.g. public consultation of projects, referendums, and implementation of environmental management plans), or by both parts (e.g. agreements, participative policies, and conflict resolution).

Many researchers claim advantages of stakeholder participation in environmental decisions. Reed (2008) classifies them into normative and pragmatic. The normative advantages are focused on democratic society, equity, and citizenship. Among the normative advantages are the inclusion of marginalized groups (Reed 2008), benefits for wider society (Martin & Sherington 1997), increased public trust in decisions (Richards et al. 2007), perception of fair and holistic decisions (Richards et al. 2007), and promotion of social learning (Blackstock et al. 2007). The pragmatic advantages of stakeholder participation focus on the quality and durability of the environmental decisions made. These advantages are: better adaptation of decisions to local social and environmental conditions; increased adoption of decisions (Reed et al. 2007); higher likelihood of meeting local needs and priorities (Martin & Sherington 1997); higher quality of information inputs (Reed et al. 2006); capacity to transform
adversarial relationships and new ways to work together (Stringer et al. 2006); long-term support and active implementation of decisions (Richards et al., 2007); and reduction of implementation costs (Reed 2008).

Some of the claimed effects of stakeholder participation on environmental management have been tested. For example, Beierle (2002) analyzed 239 published case studies of stakeholder involvement in environmental decision making. His findings suggest that higher stakeholder participation is more likely to result in higher-quality decisions. Koontz (2005) reviewed 15 case studies to assess the effects of stakeholder participation on policy making at the local level; his results indicated that the effects of stakeholder participation on policymaking achievements are associated to local context. Sultana & Abeyasekera (2008) evaluated 36 cases in Bangladesh to evaluate the impact of stakeholder participation on fishery management; their statistical findings suggest that communities that initiated the process through a participatory planning were more effective at identifying problems and solving them. Schultz et al. (2011) analyzed surveys from 146 biosphere reserves in 55 countries to understand how stakeholder participation and adaptive co-management are linked to management performance; they found statistical evidence that effectiveness in sustainable development goals was associated to participation of local inhabitants.

Participation has different dimensions such as who is participating, how people are participating, and what are the effects of participation (Wandersman, 1981). Moreover, participation occurs in different social and environmental contexts, which leads to different ways to interpret it. As a result, there exist different typologies of participation. Reed (2008) analyzed typologies of participation and found that researchers used different types of criteria such as level of engagement, flow of communication between parts, and objectives of the participation. Among the typologies focused on level of engagement, Arnstein (1969) proposed a ladder of participation of eight rungs that shows the continuum of citizen engagement from non-participation to active participation. Afterwards, other authors proposed different names to the rungs of this ladder of participation, added new categories, and also shrank or expanded Arnstein's (1969) typology according to the context of their research (Biggs 1989, Pretty 1995, Farrington, 1998). Among the typologies focused on communication flow, Rowe & Frewer (2000) proposed that participation can be classified into one-way flow of information, which indicates a top-down communication; and two-way flow information exchange, which indicates that there is dialogue between the parties. Finally, among the typologies of participation focused on their objectives, Michener (1998) proposed a range of participation from the perspective of the planner (planner-centered) to the perspective of the participant (people-centered); planner-centered is focused on administrative and financial efficiency, while people-centered perceives participation as a means and as an end in itself. Lawrence (2006) proposed a typology of participation that synthetized previous
proposals and used five criteria of classification (role and outcome of the actors, methods implemented, power distribution, flow of resources and knowledge, and scale of participation). The main difference between previous typologies and Lawrance’s typology is that the former used one criterion of classification while the latter used a multi-criteria approach to analyze participation events.

The transition toward collaborative management can be seen as a social-ecological transformation because it either reorganizes or renews processes of an untenable social-ecological system leading to a desired new system (Olsson et al. 2004). Transformability here is defined as “the capacity to create a fundamentally new system when ecological, economic, or social structures make the existing system untenable” (Walker et al., 2004:1). The new system is sustained by new state variables or by the old state variables complemented by new ones (Olsson et al. 2004). Transformation implies changes in state variables of social-ecological systems by altering their components or processes (Olsson et al., 2006). These changes can be caused by different events such as perceived threats to cultural and ecological values (Olsson et al. 2004), ecological disasters (Strunz, 2014), unexpected ecological changes (Marín et al. 2014), shift from agricultural society to industrial society (Qin, 2014), technological innovations (Enfors, 2013), changes in land use and settlement patterns (Bergma et al., 2013), and recognition of decline of resource stocks (Gelcich et al., 2010).

When stakeholders agree that some elements of the system are dysfunctional, society is more open to alternative solutions. At this point, society can respond to the crisis in two different forms. On one hand, society fails to seize an alternative solution, leading the system to become rooted in the causes that led it to crisis and increasing the probabilities of unintended transformations (Chapin et al. 2009). For example, the floods in the Everglades were a major problem that federal authorities tried to control by means of flood control projects that made more vulnerable the region to weather events (Walker & Salt 2006). On the other hand, society could seize alternative solutions that lead to a more desired system. This type of transformation is called directional (Chapin et al., 2009) or deliberate (Moore et al., 2014). For example, the development of Kristianstads Vattenrike, Sweden’s largest flooded meadows used for agriculture production, affected water flow and control in various ways social-ecological. After trying to control the floods without obtaining positive results, the community tried other alternatives that lead to the recovery of ecosystem values desired by the stakeholders (Walker & Salt, 2006).

Social-ecological transformations have been evaluated by using analytical methods. The seminal work of Olsson et al. (2004) proposed a framework to describe transformations as a process that involves three phases. The first phase is preparing the system for change. The second phase is seizing a window of opportunity, which means a transition to a new social context for ecosystem management. The third
phase is building social-ecological resilience for the new direction (Olsson et al. 2004). This framework is the most widely used to describe directional transformations in social ecological systems.

The framework proposed by Olsson et al. (2004) was enhanced by Moore et al. (2014). These authors added new elements that come from social science literature: social innovation, transition management, and social movements. The result is a framework that includes more phases and subprocesses, giving a more complete consideration of social transformation processes that lead to improved social and ecological outcomes (Moore et al. 2014). These authors also identified what parts of the social-ecological system could change during a transformation and the role of the scale in this process. The parts that could change are ecological -natural capital and their ecosystem services- and social -norms, beliefs, values, rules, practices, and the distribution and flow of power, authority and resources-. The role of the scale matters because changes during a transformation can start at a specific scale but affect other scales and different elements of the social-ecological system (Moore et al. 2014).

Changes in a system through a transformation can be seen in many cases. For example, the introduction of community-based arrangements for marine resource management (CBRM) in Solomon Islands causes change of management rules and practices when the community perceives social or ecological changes. The acceptance of this new approach grew when local communities experienced harvesting benefits, increased community cohesion through engaging young people, and solved a problem of inequity when the leaders banned netting to everyone (Abernethy et al. 2014).

There are different social elements that influence the trajectory toward collaborative management. For example, key leaders can lead a system to collaborative management when they generate or integrate ideas, viewpoints, and solutions (Olsson et al. 2004). Demonstration-scale experimental trials improve cooperation among stakeholders, integrating knowledge and building trust, which facilitates the trajectory toward collaborative management (Gelcich et al. 2010). Shadow networks can prepare a system for change by providing novel ideas and selecting strategies to reach a desired future (Olsson et al. 2006). A flexible authority is crucial to initiate and sustain collaborative management (Olsson et al. 2008).

Based on this concise review, local stakeholder participation is a key element of collaborative management to reach desired system states. Most of the reviewed cases are top-down participatory processes that pursue conservation efforts. A few cases examined the trajectory towards collaborative management of wetlands located in either periurban or urban settings. Questions remain about how local stakeholder participation impacts the trajectory towards collaborative management of urban wetlands.
3. **CASE DESCRIPTION**

The urban wetlands of Bogotá are located in the south of The Sabana de Bogotá (see Figure 2), one of the Andean wetland complexes in South America and a major center of evolution and endemism of waterbirds (Fjeldså 1985, Rosselli & Stiles 2012). This major center is far away from other Andean complex wetlands since the Pleistocene (Fjeldså 1985) and it has been extensively transformed to the point that only 3% of it remains (Renjifo 1992). Bogota’s population has increased exponentially since 1951 (Vargas & Zambrano 1988, Niño et al. n.d.) and its free areas to urbanize decreased exponentially since 1985 (Niño et al. n.d.) This urban expansion has concentrated towards the west of the city, where the wetlands of Bogotá are located, leading to draining and landfilling urban wetlands (see Figure 1 and Figure 2).

![Figure 1. Evolution of population growth and free areas to urbanize in Bogotá (sources: Vargas & Zambrano, 1988; Niño et al., n.d.)](image)

During the early 1990s, some local communities started protecting Bogotá’s urban wetlands because wetlands were degraded and destroyed. At that time, it was then legal to drain and landfill wetlands in Bogotá. In 1993, the city council prohibited these activities over lakes and swamps (Consejo de Bogotá, 1993) and legally recognized 14 wetlands (Consejo de Bogotá, 1994) making this the first time that the District used the word “humedal” (wetland) in its regulation. Despite these District agreements, the government offices were absent in the management of these ecosystems and then they proposed to transform wetlands into parks for recreation purposes in 1998. This proposal caused a bitter conflict between local stakeholders and District offices until 2004, when both parties held a truce and wrote a participative policy to manage wetlands. Part of this policy established that wetlands will be managed with the
participation of local communities. Even though the District and local communities were willing to work together to protect wetlands, a few cases reached this objective.

4. METHODS
The study assesses the effect of local stakeholder participation on reaching, developing and sustaining collaborative management of wetlands through a multi-case study research approach (Yin 2014).

4.1. Site selection
There are 14 urban wetlands in Bogotá that were recognized by Bogota City Council in 1994 (Consejo de Bogotá, 1994), and have been protected by local stakeholders such as individuals, community-based organizations, or environmental committees. These wetlands are: La Florida, Córdoba, El Burro, Jaboque, Meandro del Say, Juan Amarillo, Capellanía, La Conejera, La Vaca, Tibanica, Santa María del Lago, Techo, Torca-Guaymaral. These wetlands can be clustered in five groups:

- Wetlands owned by the District government with the longest periods of collaborative management (La Conejera and Córdoba).
- Wetlands owned by the District government and strongly altered by them without participation of the local stakeholders (Juan Amarillo and Jaboque).
- Wetlands owned and managed only by the District (Santa María del Lago).
- Wetlands located in suburban areas where landowners want to urbanize their farms (Torca-Guaymaral and La Florida).
- Mix of different types of management with different types of participation of local communities (El Burro, La Vaca, Techo, Tibanica, Capellanía, and Meandro del Say).

Seven wetlands were included in this study by selecting at least one within each group mentioned above; two wetlands were chosen from the first group and the largest group (see Table 1 and Figure 2).

4.2. Operationalization of the research questions
Data collection was based on semi-structured interviews and focus groups. The interviewees of this study were individuals of the community or members of community-based organizations involved in the protection of the wetlands selected. I contacted the most knowledgeable persons of urban wetlands of Bogotá to make a preliminary list of people that have protected urban wetlands. This preliminary list was completed by snowball sampling. Then, I selected individuals that have been mentioned more than once during this process.

In addition, I contacted researchers and government officials that are engaged in wetland protection. The state offices are The Water Company of Bogotá, the District
Secretariat of the Environment, and the Bogotá Botanical Garden. These people were identified in the list of persons made by the key informants.

Semi-structured interviews (Kvale 2013) were conducted with local stakeholders of each wetland to reflect on the main problems of the wetland, activities to solve problems, relationships among the leaders, land tenure, contact with external organizations or researchers, key events that changed the wetland management, phases of management, community involvement in the management of the wetland, and the importance of the wetland to the local community.

The semi-structured individual interviews were used to complement the timelines and triangulate information collected during the focus group activities. All of them were conducted in Spanish and digitally recorded.

Semi-structured interviews were conducted with persons representing local stakeholders (n=21), researchers (n=4), government officials (n=1), and government officials that previously worked with community-based organizations (n=7).

Table 1. Main characteristics of the selected wetlands

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>Torca-Guaymaral</th>
<th>La Conejera</th>
<th>Córdoba</th>
<th>Santa Maria del Lago</th>
<th>Jaboque</th>
<th>Capellania</th>
<th>El Burro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (ha)</td>
<td>79.93</td>
<td>58.89</td>
<td>40.51</td>
<td>10.86</td>
<td>148</td>
<td>27</td>
<td>18.84</td>
</tr>
<tr>
<td>Location</td>
<td>Usaquén</td>
<td>Suba</td>
<td>Suba</td>
<td>Engativá</td>
<td>Engativá</td>
<td>Fontibón</td>
<td>Kennedy</td>
</tr>
<tr>
<td>Economic level</td>
<td>High – medium</td>
<td>Medium</td>
<td>High – medium</td>
<td>Medium – low</td>
<td>Low</td>
<td>Medium – low</td>
<td>Low - medium</td>
</tr>
<tr>
<td>Occupation of neighbors</td>
<td>Professional, technician</td>
<td>Professional, technician</td>
<td>Professional</td>
<td>Technician, professional</td>
<td>Worker, technician</td>
<td>Worker, technician, professional</td>
<td>Worker, technician</td>
</tr>
<tr>
<td>Location</td>
<td>Usaquén</td>
<td>Suba</td>
<td>Suba</td>
<td>Engativá</td>
<td>Engativá</td>
<td>Fontibón</td>
<td>Kennedy</td>
</tr>
<tr>
<td>Landowner</td>
<td>Private / State</td>
<td>State</td>
<td>State</td>
<td>State</td>
<td>State</td>
<td>State</td>
<td>State</td>
</tr>
<tr>
<td>Matrix</td>
<td>Rural</td>
<td>Urban-rural</td>
<td>Urban</td>
<td>Urban</td>
<td>Urban</td>
<td>Urban</td>
<td>Urban</td>
</tr>
<tr>
<td>Climate</td>
<td>Semi-humid cold</td>
<td>Semi-arid cold</td>
<td>Semi-arid cold</td>
<td>Semi-arid cold</td>
<td>Semi-arid cold</td>
<td>Semi-arid cold</td>
<td>Semi-arid cold</td>
</tr>
</tbody>
</table>

A focus groups activity was conducted in each wetland based on Abernethy and her colleagues’ approach (2014). This approach is an innovation history, which is a method that comprises people that were involved in an innovation to describe and discuss how they solve problems (Douthwaite & Ashby 2005). The focus groups started by identifying and reflecting on the main problems of the wetland. Then, the next questions were about when these events happened; who solved the problems; when

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1 Source: District Secretariat of the Environment (http://ambientebogota.gov.co/web/sda/humedales)
the solution was proposed; what influence the events had on the management of the wetland; what external events influenced the solutions to the problems identified; what was learnt from the solutions provided; how the local community overcame barriers, if any, to solve problems. These questions were adapted from (Abernethy et al. 2014).

Figure 2. Location of urban wetlands of Bogotá where research was undertaken.

The events of each wetland were plotted in a timeline to identify relationships of them across scales (national/international, District, and local) and within scales. The events were crossed checked with available documents and information obtained in the semi-structured interviews.

Ten focus groups were conducted with a range of three to five local stakeholders as participants. Two focus groups were conducted with two participants each due to their time constraints.
The semi-structured individual interviews and the focus group interviews were undertaken between November 2014 and January 2015. Each individual interview lasted 90-120 minutes, while focus group interviews lasted 150-200 minutes.

4.2.1. Changes of local stakeholder participation over District and local management phases of wetlands

The identification of management phases of wetlands at District and local level are needed to explain possible changes of local stakeholder participation. For this reason, the method used here to identify these changes started with the identification of management phases of wetlands at District and local level. Then, I identified and categorized types of participation of local stakeholders.

Local stakeholder participation was reflected in the strategies implemented by them to solve problems of wetlands. These strategies were described during the focus groups and semi-structured interviews. The strategies were classified according to the typology of participation proposed by Lawrence (2006). I selected this typology because it comprises criteria of processes and outcomes of the stakeholders, power distribution, flow of information, and scale of the participation event. I added two types of participation to this typology because the data obtained during fieldwork showed that some important strategies cannot be fully included in Lawrence’s typology. The additional types of participation are non-participation and independent actions. Non-participation expands the continuum of participation and it was often mentioned by the interviewees; this type of participation was proposed by Arnstein (1969) in his ladder of citizen of participation. Independent actions are a new category that refers to corrective actions that local stakeholders make to protect wetlands when government offices adopt a passive role to address environmental problems. The typology of stakeholder participation adopted in this research is presented in Table 2. The total quantity of each type of participation in each wetland was plotted in a bar graph along with phases of wetland management at District level. The resulting bar graph facilitates comparisons of types of participation among wetlands through time.

The Participation events were weighted by assigning a value that corresponds to the level of participation that is displayed on the first column of Table 2. The values of events of each wetland were added over time and plotted in a line graph to facilitate its interpretation. This cumulative score method was adapted from Abernethy et al. (2014). In addition, the wetland management phases at District and local level were added to the line graphs to facilitate comparisons among wetlands.
Table 2. Types of stakeholder participation in urban wetland activities (Adopted from Lawrence (2006))

<table>
<thead>
<tr>
<th>Type of participation</th>
<th>Process and outcome by actors</th>
<th>Power (including initiative)</th>
<th>Resources (finance / knowledge)</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre (Government offices)</td>
<td>Local (CBOs or local community)</td>
<td>Centre does not use its power to solve problems</td>
<td>Status quo maintained; Centre does not initiate any action</td>
<td>No flow of finance between actors</td>
</tr>
<tr>
<td>Non-participation^2 - (-5)</td>
<td>Play a passive role; and / or bounce responsibilities to other government offices; misuse of public power to economic gain; and / or outsiders threaten locals; make the decision</td>
<td>Claim for protection of wetlands; and / or get disoriented to solve problems; keep silence when they are threatened</td>
<td>Status quo maintained; Centre does not initiate consultation; experts considered to be those at center</td>
<td>No net flow of finance between actors</td>
</tr>
<tr>
<td>Consultative - (-3)</td>
<td>Ask for information; make the decisions</td>
<td>Centre distributes questionnaire, invitation to respond to documented proposals</td>
<td>Status quo maintained; Centre / existing structures initiate consultation; experts considered to be those at center</td>
<td>No net flow of finance between actors; flow of knowledge from local to centre</td>
</tr>
<tr>
<td>Functional - (-1)</td>
<td>Make decisions, then involve local people to help implement them</td>
<td>Contribute information and action based on decisions already made</td>
<td>Knowledgeable (&quot;center&quot;) actors train local people in biological survey methods, who carry out tasks (collect data) as instructed</td>
<td>Status quo maintained; Centre / existing structures initiate consultation; expert considered to be those at center</td>
</tr>
<tr>
<td>Independent actions - (1)</td>
<td>Make no decisions until they consider local is operating outside the law</td>
<td>Make decisions to protect wetlands on their own</td>
<td>Local makes corrective actions to protect wetlands since the centre adopts a passive role to deal with problems</td>
<td>Has the potential to empower local, but is not supported by the centre</td>
</tr>
</tbody>
</table>

^2 Non participation was coined by Arnstein (1969)
<table>
<thead>
<tr>
<th>Type of participation</th>
<th>Centre (Government offices)</th>
<th>Local (CBOs or local community)</th>
<th>Methods</th>
<th>Power (including initiative)</th>
<th>Resources (finance / knowledge)</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative</td>
<td>Work with local people to decide what is needed, and contribute expert knowledge where necessary</td>
<td>Work with centre to decide what is needed, and contribute expert knowledge where necessary</td>
<td>Power (including initiative)</td>
<td>Status quo maintained; centre / existing structures initiate consultation, both local and central considered to be expert</td>
<td>Usually no net flow of finance, occasionally centre helps local to obtain finance; knowledge can be exchanged in both directions</td>
<td>Local, more resource intensive so less easily replicated</td>
</tr>
<tr>
<td></td>
<td>face-to-face consultation; workshops; conflict management processes; training in biological survey methods as necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformative</td>
<td>Support local people with information</td>
<td>Make decisions; seek experts where needed; implement decisions</td>
<td>Reflection as part of learning cycle, changing consciousness through experience / observation leads to organic growth of movement, network or organization</td>
<td>Has potential to empower local, but only if (a) initiated by local actors; and / or (b) allowed to by existing powers; and / or (c) occurs through a facilitated learning process knowledge held locally</td>
<td>May occur with no external support, finance or training</td>
<td>Unique to specific location, but processes can inspire others to take own action; always grows from identifiable point</td>
</tr>
</tbody>
</table>

### 4.2.2. Identifying phases and subprocesses of transformation toward collaborative management

The emergence and development of collaborative management of urban wetlands were analyzed by using the framework for understanding deliberate social transformations proposed by Moore et al. (2014). This framework was adopted due to three reasons. First of all, the framework highlights the importance of features of participation that can cause changes to social elements in a system (Lawrence 2006). Second, the framework allows including multiple subprocesses that occur in each phase of transformation. Third, the framework identifies what parts of the system should be observed if a transformation occurs; Moore et al. (2014) identified what ecological and social parts of the system could change during a transformation.

Each main event that produced a change in the system was weighted according to the number of the subprocess displayed in Table 3. These scores were used to plot line graphs that facilitate a visual representation of phases of transformation. In addition, the scores of the subprocesses were plotted as Harvey balls to facilitate a visual representation of them.
Table 3. Phases and subprocesses of transformation toward collaborative management of wetlands of Bogotá. Adopted from Moore et al. (2014)

<table>
<thead>
<tr>
<th>Features of stages and subprocesses descriptor (Moore et al., 2014)</th>
</tr>
</thead>
</table>
| 1. **Triggers or Pretransformation**  
Characterized by major social or ecological disruptions, which in turn, create windows of opportunity |
| 2. **Preparing for change** |
| 2.1. **Sense making** - analysis of the structures that are most problematic for current trajectory. |
| 2.2. **Envisioning** - generating new innovations and visions for the future. |
| 2.3. **Gathering momentum** - self-organization around new ideas, networks of support are often created and mobilized, experimentation in protected “niches”. |
| 3. **Navigating the transition** |
| 3.1. **Selecting** - choosing which innovation or change process in which to invest social, intellectual, and financial capital. |
| 3.2. **Learning** - evaluating the results of earlier experiments and developing shared understanding or new forms of knowledge. |
| 3.3. **Adoption** - widespread uptake or replication of innovative change that was successful in experimental stage, tipping point. |
| 4. **Institutionalizing the new trajectory** |
| 4.1. **Routinization** – managing dynamic stability to embed new trajectory and establish or strengthen new feedbacks. |
| 4.2. **Strengthening cross-scale relationships** – involves scaling up the change, which often involves a different type of innovation that was created originally in niche (needs to suit different context). |
| 4.3. **Stabilization** – transformed system reaches new “attractor” but active resistance from powerful actors at different scales is likely, and actors need to deal with next, unanticipated perturbations. |

5. **RESULTS**  
This section presents the results of local stakeholder participation in relation to (1) its changes across wetland management phases at the district and local level, (2) its contribution to reach collaborative management, and (3) its effect on developing and sustaining collaborative management.

5.1. **Changes of stakeholder participation over management phases at District and local level**  
The selected wetlands can be visually clustered in three groups according to its cumulative participation score through time (see Figure 3).
• The first group is composed of the wetlands with the longest periods of collaborative management -La Conejera and Córdoba- and the highest scores of local stakeholder participation due to their high number of collaborative and transformative participation events (see Figure 4).

• The second group is composed of Jaboque and Santa María del Lago wetlands, whose cumulative score of participation is the lowest. This group of wetlands began with direct management by District offices or third parties in 2000, and local stakeholder participation has been very limited since then. Santa María del Lago did not reach collaborative management, while Jaboque reached a short period of collaborative management when a third party that managed the wetland promoted community participation from 2004 to 2006.

• The third group is composed of El Burro, Capellanía and Torca-Guaymaral wetlands. They reached a medium total score of participation due to fewer participation events categorized as collaborative and transformative compared to the first group (see Figure 4); two of them -El Buro and Torca-Guaymaral- reached short periods of collaborative management (see Appendix 2 and Figure 3). Capellanía and Torca-Guaymaral have reached this point due to activities done by local leaders that protected these wetlands despite the absence of District government offices (see Appendix 1). El Burro wetland began to be managed by third parties hired by the Water Company in 2006; the initial third party gave high participation to the local stakeholders, reaching collaborative management; then, the next third party that managed the wetland hired local stakeholders but the latter were co-opted.

Local stakeholders used 34 types of strategies to protect wetlands (see Appendix 3). These strategies were characterized according to the participation typology adopted here (see Table 2).

Local stakeholders started protecting wetlands by means of independent actions and then the patterns of participation changed through time among the wetlands. The patterns of change of local stakeholder participation are as follows:

• Change from independent actions to transformative participation was triggered when courts ruled in favor of local stakeholders. This change occurred in the first group of wetlands and in two wetlands of the second group -El Burro and Capellanía-. Most of the legal actions were submitted during the conflict of visions between District offices and local stakeholders. The transformative participation emerged during the phase that District offices and local stakeholder worked together (see Figure 4).
Figure 3. Cumulative score of local stakeholder participation of selected wetlands. Parentheses numbers refer to management phases at District level described in Appendix 1. The lines correspond to local community participation in key events of wetland management.

- Change from independent actions to collaborative actions is caused by two factors. First, when local stakeholder and District offices worked together in projects to rehabilitate wetlands. This change was reached in La Conejera wetland during mid-1990s and mid-2000s, and Jaboque wetland during early 2000s. Second, legal proceedings that were ruled in favor of local stakeholders led to set agreements between District offices and local stakeholders. This change was reached in Córdoba and El Burro wetlands (see Figure 4).

- Change from independent actions to non-participation emerged when District offices imposed state management leaving no space for other types of participation. This is the case in Santa María del Lago, where the District offices hired third-parties to administrate the wetland since 2000 (see Appendix 2 and Figure 4).

- There were also cases where independent actions did not change in any significant way. The CBO in Torca –Guaymaral wetlands interacted with District offices only a few times for very short periods due to the lengthy absence of the latter. Despite this absence, the CBO kept protecting the wetlands by means of independent actions.
Figure 4. Types of local stakeholder participation events to manage urban wetlands of Bogotá. Bars indicate the number of events (from one to three events) classified as types of local stakeholder participation per year. Parentheses numbers refer to phases of urban management at the district level: (3) corresponds to participative policy of District wetlands phase, and (5) corresponds to state management phase.

5.2. Effect of local stakeholder participation on the emergence of collaborative management

According to the informants in the individual and the focus groups, local stakeholders faced barriers at District and local level to reach collaborative management. The barriers at District level were a lax attitude of government offices to protect wetlands, lack of knowledge about wetlands, conflicting visions of wetlands, and state management.
Lax attitude of District government offices during the 1990’s was addressed by independent actions of local stakeholder such as legal proceedings, de facto actions, environmental education to local communities, and communication strategies such as newspaper, radio, and television (see Appendix 3). Even though all of them helped reach collaborative management, legal proceedings such as class actions were the most effective strategy to move government offices from their long-standing inertia. An interviewee from Capellánía wetland said that “legal proceedings are the only way to be heard by District authorities”. A researcher interviewed mentioned that one of the managers of the Water Company said “what are the projects in the wetlands that have to be done to not go to jail?”; the researcher added that “some managers of the Water Company implemented these actions only to avoid legal actions that were submitted by local stakeholders and courts ruled in favor of them”. Part of this lax attitude was also how some government officials perceived local stakeholders. An interviewee from Córdoba wetland said “the staff members of the Water Company were arrogant, and they -the staff said that nobody is going to tell them how to manage wetlands, let alone the community”.

The second barrier, a lack of knowledge of wetlands, was a main barrier until mid-2000s. Local stakeholders addressed this barrier by supporting research that filled ecological knowledge gaps, by contacting natural science researchers, and by making cooperation agreements with universities to support graduate and undergraduate thesis. These new knowledge and researcher contacts were used not only to implement ecological rehabilitation projects, but also to support action classes, to discuss projects that the government wanted to implement in the wetlands, and to provide scientific and technical bases for communication strategies.

The third barrier at District level was the government offices’ vision of wetlands as urban parks from 1998 to 2004. Local stakeholders realized that the municipality wanted to transform wetlands into parks by using the words “ecological restoration”. This triggered a clash of visions between District offices and local stakeholders, causing the most conflicting period of urban wetland management of Bogotá. Local stakeholders used different legal proceedings such as class actions and legal claims to stop projects that sought to transform degraded wetlands into parks. They complemented these actions with a strategy of communication to the local community. This conflict ended when there was a change of city mayor in 2003. The new city mayor brought to his team experts in managing projects with grass-roots. After first meetings between the new Director of District Environment Secretariat and local stakeholders, they agreed on writing a participative policy for District wetlands, which was presented in 2005. One of the principles of this policy recognized communities and social organizations as stakeholders that can participate in wetland conservation according to their capacities.
The fourth barrier was a new model of wetland management implemented by District offices in 2014. The municipality elected to keep protecting urban wetlands on their own by creating work groups managed by the Bogota Botanical Garden, which had no previous experience in managing wetlands. This new work team format included some local stakeholders but none of them obtained a coordinator position to manage wetlands. In addition, no CBO members were part of this new work team format. The environmental committee of Niza was the only CBO that kept collaborative management due to a legal action in favor of protecting the Córdoba wetland with the participation of local stakeholders. On the other hand, the CBO that protected La Conejera wetland could not keep their participation to manage the wetland.

In addition, the informants described barriers at local level that prevent local stakeholder participation in protecting wetlands. These are corruption, threats, and co-option. The first two barriers emerged when local stakeholder reported landfills, which were one of the most common problems of wetlands during the 1990’s. When local stakeholders reported landfills to local authorities, they did not stop these actions and in some cases the local stakeholders were threatened. Currently, these types of events are rare but persist in Torca-Guaymaral wetlands. Despite the difficulties of overcoming corruption, local stakeholders of La Conejera sued a local mayor for not stopping landfill activities on the wetland; the court ruled in favor of the local stakeholders and the local mayor was dismissed. However, local stakeholders of La Conejera are the only case that solved corruption activities from local authorities.

Co-option appeared when some third parties that managed wetlands hired local stakeholders. The third parties sometimes presented previous social work implemented by local stakeholders as it was done by them during the contract. This situation caused bitter conflicts between third parties and local stakeholders. Some of the local stakeholders quit to stop more co-option.

These results show that some barriers to reach collaborative management - lax attitude of the government to fulfill its responsibilities as wetland managers, lack of knowledge, conflicting visions of wetlands, and some cases of corruption - were solved by local stakeholders. However, threats and co-opt are barriers that local stakeholders could not solve (see Harvey balls in Figure 5).

Collaborative management was reached in two ways. The first one is when flexible authorities allow local stakeholders to participate in managing wetlands (see Appendix 1, fourth management phase at District level). This was is achieved when CBOs won public tenders to manage wetlands, as in the case of the CBO that protected La Conejera wetland. Despite some government offices willingness to support collaborative management, other offices showed resistance. For example, the wetland management plan of La Conejera, created by the CBO that protected La Conejera wetland, took 10 years to be made and approved, while the environmental
management plan of Córdoba and Capellanía, created by third parties hired by District offices, took three years. It is important to mention that the CBO that protected la Conejera wetland had a research strategy since mid-1990s that enabled them to obtain a body of knowledge that nobody else had. The second way to reach collaborative management is by means of legal proceedings. This was the case of the CBO that protected Córdoba wetland, which submitted a class action against the District government in 2000 to stop a project that would transform the wetland into a park. The court ruled in favor of the community but the Water Company kept developing the project. Then, the CBO sued the Water Company for contempt of court. The Water Company appealed the legal action and the contempt twice but the court ruled in favor of the environment committee of Niza in 2005. The court asked the Water Company to implement measures to ecologically rehabilitate Córdoba wetland. The Water Company had to reach conciliation with this CBO.

5.3. Factors that help develop and sustain collaborative management
Developing and sustaining collaborative management has also been achieved in two ways, which were aligned with the ways that collaborative management was reached.

The two cases that developed collaborative management have characteristics that the others did not have. First of all, these CBOs were heterogeneous groups composed of members with different types of knowledge such as law, communication strategies, education, natural science, and civil engineering. Second, these cases -Córdoba and La Conejera wetlands- have contact with researchers in natural science and law. Third, they have experience in managing cooperation programs that in some cases were high budget projects. Lastly, most of the community supported the decisions of the CBOs that protect their wetlands. In comparison, the other three cases -El Burro, Capellanía, and Jaboque wetlands- did not have members with this variety of professional backgrounds. Their contact with external researchers was limited. The CBOs only had some experience in managing low budget projects, and the support of the community was low because the neighborhoods surrounding these wetlands were economically poor and had other priorities.

The first case, by winning a public tender, is based on previous of project management experience and work together with local community. La Conejera Foundation was the only CBO with that experience. They also worked in projects of ecological rehabilitation of other important green areas such as La Salitrosa stream and Las Mercedes Forest, which are connected to La Conejera wetland. This experience widened their partnership experience and results as wetland managers. However, its partnership experience was not enough to sustain collaborative management when the municipality changed the rules of managing wetlands in 2014 (see Figure 5).

The second case of developing and sustaining collaborative management is when local stakeholder reached it by means of legal proceedings. The environment committee of...
Niza sustained collaborative management by doing different activities. They analyze carefully all technical details of any District office’s project on the wetland. The CBO also kept watching how the Water Company implemented projects on the wetland. When the CBO noticed any inconsistency in project proposals and field work, they contacted the Water Company to discuss it. If the problem persisted, the CBO commented to the Water Company that they will initiate a contempt of court. These strategies were effective to make corrective actions on time and reached goals that the Water Company refused to do it such as bring clean water from a stream through a channel that crosses the city to get to Córdoba wetland. This CBO is the only case that have developed and sustained collaborative management since 2006 (see Figure 5).

**Figure 5.** Trajectories of transformation toward collaborative management in seven urban wetlands of Bogotá. Section A shows the phases of transformation identified. Section B shows the subprocesses within each phase of transformation. The Parentheses numbers correspond to management phases at District level; (3) corresponds to participative policy of District wetlands, and (5) corresponds to state management.
6. DISCUSSION
I would like to highlight three main findings of this research. First of all, four classes of local stakeholder participation changes were identified among the management phases of urban wetlands. The changes from independent actions to both collaborative and transformative participation are likely to trigger collaborative management. Second, the trajectories toward collaborative management of seven urban wetlands show that five of them reached this type of management at some point, two of these five were able to develop it, and only one could sustain it. Third, the main barriers toward collaborative management are the continuous change of political will to allow local stakeholders to participate, and the reluctance of District offices to share their power and authority to achieve this type of management. In the following, I discuss these findings in more detail.

The change from independent actions to collaborative participation in this case could be achieved if either government offices are willing to work with local stakeholders or by means of legal proceedings. However, none of these ways is easy to achieve. Thus, when District government offices wanted to work with local stakeholders, the former did not adapt their contract system to the latter. On one hand, the contract system of the Water Company manages high budget projects that require working groups composed of members with professional training. On the other hand, most of the CBOs were informal organizations where most members had neither professional training nor experience in managing high budget projects. These facts suggest that the contract system of the Water Company was more a disadvantage than an advantage to local stakeholders who wanted to participate in protecting urban wetlands. These facts are probably the reason that this opportunity was taken mostly by third parties that had experience in managing high budget projects.

The use of legal proceedings to produce the change from independent actions to transformative participation is likely to show the reluctance of government offices to support collaborative management. Transformative participation implies distribution of power, authority, and functions, which are chore elements of collaborative management. Government offices were reluctant to share its authority despite local stakeholders had technical knowledge (e.g. the Foundation of la Conejera were the pioneers of ecological restoration in wetlands of Bogotá and good reputation within local communities (Guzman et al. 2011).

The results suggest that District government offices offered a very limited participation to local stakeholders. This could explain why legal proceedings are the most widely strategy used by local stakeholders. When courts ruled in favor of local stakeholders, the likely main effect is to reduce the power asymmetry between government offices and local stakeholders to participate in decisions about wetlands. Previous research in Bangalore, India, have shown how courts have ruled in favor of local civic groups and
ordered against municipal authorities to stop the development of lakes of this city (D’Souza & Nagendra 2011) and to consult local citizen groups before trees are cut (The High Court of Karnataka 2005, cited in Enqvist et al. 2014). This thesis therefore confirms previous findings that courts can play an important role for bottom-up influence on ecosystem management.

The reluctance of government offices to transformative participation could be caused by different factors. First, bitter conflicts between District authorities and local stakeholders before 2004 could leave quarrels unsolved that still block processes. This may be evident from the time it took to make and adopt environmental management plans. While the environmental management plan of La Conejera wetland made by a CBO – The Foundation of La Conejera Wetland- took 10 years to be made and adopted, environmental management plans made by third parties in Córdoba and Capellanía wetlands took three years in the same process. A second factor is that District offices did not want to discuss technical projects with local communities because they may think that local communities did not have a proper technical background. Guzman et al. (2011) found that the Water Company was willing to discuss technical projects because they thought that local community did not have technical expertise and that it would delay in the project increased its cost. A third factor is that District offices presented projects already signed to local communities; this was mentioned by interviewees of La Conejera, Córdoba, Jaboque, and Santa María del Lago wetlands. This has also been shown in previous research; Guzman et al. (2011) found that the Water Company presented projects already signed in La Conejera and Córdoba wetlands. These findings suggest that District offices probably wanted only consultative participation that did not produce any change to their projects.

The barriers mentioned above also make difficult to reach, develop, and sustain collaborative management. In addition, there could be another barrier to collaborative management, which is the unsteady District management rule of urban wetlands among city mayor periods, which can be seen in District management phases of urban wetlands (see Appendix 2). The repeated changes in District wetland management led to a discontinuity of rules about how to incorporate local stakeholders in wetland protection, which make difficult to maintain any effort of collaborative management.

Reaching collaborative management requires either participative or transformative participation. The fact that five cases reached collaborative management but only two cases can develop it, may imply that there were differences among the cases. Two main differences between them are the composition of the CBOs and the social context of the wetlands. While La Conejera and Córdoba wetlands are protected by CBOs that are interdisciplinary, have easy access to external researchers, have experience in ecological restoration programs and cooperation projects, receive wide
support of local community, and most of their neighbors meet their basic needs, the other cases did not have these characteristics.

Development of collaborative management seems to be reached by a combination of collaborative and transformative participation events. However, the trajectories to reach this point are different. In one example, the trajectory of the CBO of La Conejera wetland used their technical knowledge to implement ecological rehabilitation programs and their experience in cooperation programs to obtain economic sources to fund high budget projects such as hydrological restoration. In another case, the CBO of Córdoba wetland was focused on participating in discussing technical details of any project that could be implemented in the wetland, and constantly monitor the implementation of the projects approved. Both strategies converge in that they were effective to develop collaborative management.

Sustained collaborative management was reached only by the CBO of Córdoba wetland. They reached this point probably because their participation was secured by a legal proceeding. They kept using transformative and collaborative participation even when government offices imposed state management at District level in 2014. On the other hand, the CBO of La Conejera wetland could not sustain collaborative management when the District offices changed the management rules that caused a shift from collaborative management to state management. These two trajectories suggest that irrespectively of the pathway to come to collaborative management, it needs to be secured to be sustained in an unpredictable governance context.

Previous studies allow for a comparison of different ways that collaborative management of urban wetlands emerges. The first case is Kristianstads Vattenrike, southern Sweden (Olsson et al. 2004; Olsson et al. 2006) is similar to the Bogotá case in several ways. First, local actors started protecting wetlands when they perceived that these ecosystems were threatened and many people perceived them as a problem. Second, local actors share the same vision from the beginning of the process. Third, local actors self-organized into a social network. Fourth, RAMSAR was the framework used for protecting wetlands. Fifth, there was a policy window accompanied of a new organization to protect wetlands. Lastly, both are bottom-up cases. Despite these similarities, the cases describe different outcomes. An important difference that is likely to have contributed to this is that municipal authorities in Kristianstad supported and enforced collaborative management, while in Bogotá they did not. These main differences are probably because environmental authorities of Kristianstad are participative, support long-term processes, and are able to enforce their own norms, while the environment authorities of Bogotá are unsteady and are dependent on the mayor city in power. In addition, Bogotá is a metropolis with high rate of urbanization that has around 7.8 million inhabitants, has approximately 800 hectares of urban wetlands, and is located in a developing country, while Kristianstad
is a town with approximately 36,000 inhabitants, has 110,000 hectares in periurban wetlands (Olsson et al. 2004), and is placed in a developed country.

The second case that can be compared with urban wetlands of Bogotá is urban lakes of Bangalore, India. These two cases share features such as being metropolis located in developing countries and experience high urban growth that compete with green spaces (Enqvist et al. 2014). They also have social networks and local organizations that try to prevent further loss of urban ecosystems despite city administrations imposed state management. Both city administrations have seen wetlands as parks and have a number of city authorities responsible for their management that have been changed through time. Local stakeholders have opposed to government plans of using wetlands for recreation purposes. Lastly, local stakeholders used legal actions to stop government offices of transforming these ecosystems into parks (D’Souza & Nagendra 2011). However, there are two main differences between these cases. While Bangalore authorities keep seeing lakes for recreational purposes and sustain state management for a long time (D’Souza & Nagendra 2011, Nagendra & Ostrom 2014), Bogotá authorities have changed their vision of wetlands and many times have modified their rules to include local stakeholder participation into urban wetland management. These differences suggest that legal actions in Bangalore are useful for one purpose -stopping government plans of transforming lakes-, while in Bogotá there is an additional purpose, which is maintaining local stakeholder participation due to repeated changes of District government rules to manage wetlands.

The methods used in this research allow for an analysis of different types of participation and how they change. However, the findings from this case show that it is necessary to add two categories to the participation typology -non participation and independent actions-. Non participation, which was included in Arnstein (1969) typology, is important here because its descriptors can explain why some local stakeholder participation events have either no effect on the problems or negative effect on stakeholders that tried to solve problems. Independent actions are a new category because none of the existing participation typologies included it. A possible explanation for this could be that these typologies were proposed based on cases where participation was initiated “from above”, i.e. by public authorities, while this study analyzes collaborative management as an outcome of bottom-up participation. Independent actions were the most common participation among the cases probably because the long-lasting government inertia and apathy to address problems of wetlands. The participation typology complemented with these two categories, not only shows the wide range of participation types found in this study, but also how different categories implies different degrees of power distribution. This variable may be the main cause of government authority reluctance to collaborative management.
The analytical framework for analyzing directional social-ecological transformations was used here allowed pinpointing the main subprocesses within each phase of transformation, and analyzing the role of power to reach, develop, and sustain collaborative management.

One of the limitations of the methods used here were the focus groups. Although they promote discussion among participants and enrich details of processes, they are difficult to arrange in urban settings because interviewees have different business hours. For this reason, two focus groups were attended by two people each. Another disadvantage of focus groups in this case was the conflicting relationships among some participants. Some of them conditioned their participation to avoid meet other leaders who they have some differences with in the past.

Another limitation of the methods used here was that I interviewed only one government official that was not a previous member of community-based organizations. This implies that the research presents the perspective of local stakeholders only. However, it is important to mention that some of the facts mentioned by local stakeholders were confirmed by the government official interviewed.

7. CONCLUSION

This study investigates how local stakeholder contributes to reaching, developing, and sustaining collaborative management of urban wetlands of Bogotá. The results suggest that this depends on the type of local stakeholder participation and the conditions that government offices provided to enable them to participate.

Local stakeholder participation described in this case is based on independent actions, i.e. management initiatives undertaken without the involvement of or support from city authorities. Based on these actions, there exist two ways to achieve collaborative management. One of them occurs when independent actions are protected by legal proceedings that courts ruled in favor of local stakeholders; legal proceedings are the trigger to achieve transformative and collaborative participation. The other way to reach this type of management is when government offices facilitate conditions to develop collaborative participation with local stakeholders.

Local stakeholders that developed collaborative participation without court decisions to protect their continued involvement in decision-making have not been able to sustain this type of management, due to the changing political will of the city mayor in power.

Legal actions are a likely important strategy that local stakeholders utilize to address unsteady government rules of wetland management. This strategy no only allows
reaching collaborative management, but also secures local stakeholder participation to develop and sustain this type of management.

This failure to implement collaborative management has different implications. First of all, an opportunity is missed to unify and strengthen government authorities’ and local stakeholders’ interests to protect these ecosystems from other land urban uses that compete with wetland conservation such as road projects and construction of housing. Second, District government efforts to protect wetlands are short lasting because most of them are not supported by local stakeholder participation. Third, not acknowledging the role of local stakeholder participation can lead to the re-emergence of problems of the wetlands that were already solved by local stakeholders.
8. LITERATURE CITED


http://doi.org/10.5751/ES-06582-190267


Appendix 1. Management phases of wetlands at District level

<table>
<thead>
<tr>
<th>Management phase</th>
<th>Description</th>
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</table>
| {1} Lax attitude of the District government toward wetlands (before 1997) | - Most interviewees told the history of the wetlands of Bogotá from 1990, while some of them told the history from the 1960’s.  
- In 1994, Bogotá municipality entrusted The Water Company - District office that provide water to Bogotá- to protect the wetlands. The Water Company, mainly managed by engineers, was largely absent of protecting possibly because they saw wetlands as a hydraulic engineering work. In addition, the District Environment Secretariat, founded in 1990, did not enforce the conservation of wetlands during most of this phase.  
- The word “humedal” -wetland- started being used during the mid-1990’s in Bogotá.  
- Most local authorities kept a lax attitude towards debris landfillers of wetlands. District and local authorities were alerted by local communities about the actions of landfillers and home builders but the former did not take any action. Part of local authorities was paid by landfillers to allow them throwing debris into the wetlands; two members of the City Council were illegal home builders.  
- Wetlands were not seen as valuable ecosystems but as pestilent waters and source of problems to the neighborhood. District offices, home builders, and some neighbors saw the wetlands as the place to throw waste water, industrial waste, debris, and garbage. Home builders -legal and illegal- also saw the wetlands as an opportunity to build new houses since there was a deficit of them in Bogotá. Some people saw wetlands as a place for committing crimes. Thus, most neighbors perceived wetlands as abandoned places that cause problems. However, a few neighbors and newcomers saw the wetlands as places that should be restored since all of them were degraded. The question was “what to do with the wetlands?”.  
- Most local communities started working in the early 1990s; some of them founded community-based organizations - CBOs- during this period. The most successful CBO at this time was La Conejera wetland Foundation -FHLC- since they were the first ones that stopped urbanization and landfill on La Conejera wetland, and also undertook legal actions against local and District authorities that did not protect wetlands. Other CBOs started asking FHLC for advice on how to protect urban wetlands because all of them have similar problems. Since FHLC were overwhelmed by the other CBOs interested in protecting wetlands, they promote to establish a wetland network. In 1997, the wetland network of La Sabana of Bogotá |
### Management phase  
**Description**
- was founded. Most CBOs and individuals that protected wetlands of Bogotá became members of this network.

### Conflict of visions: parks vs ecosystems (1997-2004)

- The RAMSAR convention, an intergovernmental treaty that provides a framework to conserve and use wisely wetlands, is adopted by Colombia in 1997.
- The wetland network of La Sabana was founded in 1997. This network comprised local stakeholders who saw wetlands as ecosystems.
- During Enrique Peñalosa city administration (1998-2000), the municipality proposed to transform three wetlands -Juan Amarillo, Jaboque, and Córdoba- into parks; the proposal to Torca-Guaymaral wetland was to build houses of social interest. These proposals were rejected by most local communities.
- The contrasting visions of wetlands caused a conflict between the District government and local stakeholders. Most of the legal actions against the municipality to protect wetlands were during this period.

### Participative Policy of District wetlands (2005)

- Luis Garzón city administration (2004-2007) brought personnel with experience in participative processes. This administration allowed a better understanding and relation with local communities that protected wetlands. Both parts declared a truce; the District government asked the wetland network to stop new legal actions while they changed the approach to manage the wetlands.
- Both sides agreed to make a participative policy to manage the wetlands. The policy was made with the participation of people of all wetlands and government offices that have responsibilities in these ecosystems. One of the strategies to protect wetlands was that government offices and social organizations manage together these ecosystems.

### District government offices and local communities worked “together” (2006-2013)

- Government offices made a call for organizations interested in managing wetlands of Bogotá. The call was made by using the standards of public procurement of the Water Company. The requirements -economic, education background, and experience- for entering into the public procurement were high for most of the community-based organizations -CBOs-. Most of the CBOs were informal or composed of people with local knowledge of wetlands but without academic background in environmental issues.
- Only two CBOs met the requirements of the public procurement. The environmental committee of Niza Communal Action Board, which was the CBO that protects Córdoba wetland, met these requirements but they did not participate in the public procurement because they wanted to ...

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<table>
<thead>
<tr>
<th>Management phase</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>was founded. Most CBOs and individuals that protected wetlands of Bogotá became members of this network.</td>
<td></td>
</tr>
</tbody>
</table>
| **Conflict of visions: parks vs ecosystems (1997-2004)** | - The RAMSAR convention, an intergovernmental treaty that provides a framework to conserve and use wisely wetlands, is adopted by Colombia in 1997.  
- The wetland network of La Sabana was founded in 1997. This network comprised local stakeholders who saw wetlands as ecosystems.  
- During Enrique Peñalosa city administration (1998-2000), the municipality proposed to transform three wetlands -Juan Amarillo, Jaboque, and Córdoba- into parks; the proposal to Torca-Guaymaral wetland was to build houses of social interest. These proposals were rejected by most local communities.  
- The contrasting visions of wetlands caused a conflict between the District government and local stakeholders. Most of the legal actions against the municipality to protect wetlands were during this period. |
| **Participative Policy of District wetlands (2005)** | - Luis Garzón city administration (2004-2007) brought personnel with experience in participative processes. This administration allowed a better understanding and relation with local communities that protected wetlands. Both parts declared a truce; the District government asked the wetland network to stop new legal actions while they changed the approach to manage the wetlands.  
- Both sides agreed to make a participative policy to manage the wetlands. The policy was made with the participation of people of all wetlands and government offices that have responsibilities in these ecosystems. One of the strategies to protect wetlands was that government offices and social organizations manage together these ecosystems. |
| **District government offices and local communities worked “together” (2006-2013)** | - Government offices made a call for organizations interested in managing wetlands of Bogotá. The call was made by using the standards of public procurement of the Water Company. The requirements -economic, education background, and experience- for entering into the public procurement were high for most of the community-based organizations -CBOs-. Most of the CBOs were informal or composed of people with local knowledge of wetlands but without academic background in environmental issues.  
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<th>Management phase</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Description</td>
<td>keep their independence and operate free from any external pressure. The Foundation Humedal La Conejera -FHLC-, the CBO that protected La Conejera wetland, awarded the public procurement to manage this wetland.</td>
</tr>
<tr>
<td></td>
<td>- Most of the public procurements were awarded to environmental organizations -third parties- that were not CBOs. Some persons of local communities were hired by the third parties that managed the wetlands.</td>
</tr>
<tr>
<td></td>
<td>- The administration of wetlands was not continuous because it took between three to six months to open, participate, and award contracts. In addition, there was money shortage to sustain continuous administrations of wetlands. During those periods third parties stopped working; these administrative discontinuities were solved by local stakeholders that worked voluntarily. CBOs that awarded contracts kept working after the next public procurement.</td>
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<tr>
<td></td>
<td>- During this phase, people that worked in CBOs were hired by District offices to work in protection of wetlands. The leader of FHLC was appointed the manager of the office of the environment in the Water Company during two periods (2005-2007 and 2012-present). Since then, the office of the environment obtained more power to make decisions on the management of wetlands and changed its profile from an office that transforms wetlands into parks to a management office that restores wetlands.</td>
</tr>
<tr>
<td>{5} State management</td>
<td>Gustavo Petro city administration (2012-2015) proposed an urban development plan around the water. This administration promoted the conservation of water and entrusted three District offices to manage the wetlands (Bogota Waters, Botanical Garden of Bogotá, and District Environment Secretariat); the Water Company was excluded of this work.</td>
</tr>
<tr>
<td>(2014-present)</td>
<td>- Under this new management model, the municipality created their own teams; some people of local communities were included in these teams but the CBOs were excluded from wetland management.</td>
</tr>
</tbody>
</table>
Appendix 2. Management phases of wetlands at local level. Parenthesis numbers refer to management phases at District level. (3) = participative policy phase, and (5) = state management phase.

<table>
<thead>
<tr>
<th>PHASE AT DISTRICT LEVEL</th>
<th>1990s</th>
<th>2000s</th>
<th>2010s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>90 91</td>
<td>92 93</td>
<td>94 95</td>
</tr>
<tr>
<td>WETLAND</td>
<td></td>
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<tr>
<td>Torca Guaymaral</td>
<td>Lax attitude of government offices</td>
<td>Conflict of visions: Parks vs Ecosystems</td>
<td>(3)</td>
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<tr>
<td>La Conejera</td>
<td></td>
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<tr>
<td>Córdoba</td>
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<tr>
<td>Sta María del Lago</td>
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<td></td>
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<tr>
<td>Jaboque</td>
<td></td>
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<tr>
<td>Capellanía</td>
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<td></td>
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<tr>
<td>El Burro</td>
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</tbody>
</table>

*Community-based management here refers to strategies of local stakeholders to protect wetlands since government offices did not fulfill its management responsibilities (Claridge & O’Callaghan 1996).
**Appendix 3. Strategies of local stakeholders to protect urban wetlands of Bogotá**

<table>
<thead>
<tr>
<th>WETLAND</th>
<th>Environmental education, citizen participation, and communication</th>
<th>Environmental research and techniques</th>
<th>Legal proceedings</th>
<th>Financial management</th>
<th>De Facto proceedings</th>
<th>Agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Córdoba</td>
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<tr>
<td>La Conejera</td>
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<td>El Burro</td>
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<td>Capellanía</td>
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<td>Torca</td>
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<tr>
<td>Guayamaral</td>
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<tr>
<td>Jaboque</td>
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<tr>
<td>Santa María del Lago</td>
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<tr>
<th>STRATEGIES</th>
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</thead>
<tbody>
<tr>
<td>Environmental workshops</td>
<td>Public hearings</td>
<td>Environmental education proposals for schools</td>
<td>Press, TV, radio</td>
<td>Sponsoring trees</td>
<td>Organizing environmental education</td>
<td>Participating in the wetland network</td>
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<tr>
<td>Santa María del Lago</td>
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</tbody>
</table>

**Scale of the strategies**
- **International**
- **National**
- **District**
- **Local**

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