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Stakeholder Effects on Shaping Public Policy in Stormwater Management

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Abstract

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MS, University of Florida, 2015

BS, University of Florida 2013

Dissertation Submitted in Partial Fulfillment

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Abstract

In Washington, DC, historical data are used to adequately size for rainfall events, and efforts to increase stormwater management requirements are fought against by internal stakeholders. In urban planning, extreme rainfall events, that may occur more frequently than expected, are often not a consideration when designing for green infrastructure facilities. The purpose of this case study was to explore how internal and external stakeholders influence stormwater management policies related to extreme rainfall events in Washington, DC. The power and politics organization theory, which focuses on how individuals obtain influence, and the resource dependency theory, which explores how organizations benefit from sustainability, were used as the theoretical framework in this study. The case study analysis was conducted via phone interviews; through phone interviews, data were collected from 4 policymakers (i.e., external stakeholders), 5 real estate developers (i.e., internal stakeholders) and 3 internal team members (i.e., internal stakeholders) and analyzed thematically. All the stakeholders believed that it is not necessary to design the green infrastructure systems to the extreme rainfall event; however, the developers said that they would design their green infrastructure systems larger if required by policy. The results of the study showed that each group's effect works in a cyclic fashion to each other. Recommendations for future studies include to expand and increase stakeholder participation. This collaboration and better communication can help in developing more efficient stormwater management policies for a better city, which is an implication for positive social change.

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Dedication

I am dedicating this to my parents, my mother and father, that raised me to always believe how important an education is and the more you know, the more power and influence you have.

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After this long journey, I just feel so much gratitude for everyone that has supported me along the way (and asking me when I'll be done, with the best intentions). During my years at Walden University, I was lucky enough to have some great courses and professors that shaped my perspectives on different issues. I am also forever thankful for my committee. Dr. Joshua Ozymy, who took all my frustrated emails in stride and became more patient with me. Dr. Susan Baer for accepting to be my second chair and for challenging me. Dr. Victoria Adams as my URR, who did not let me off the hook and really helped me in understanding my research study.

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Chapter 1: Introduction to the Study

Introduction

Sustainability is the consideration of social, environmental, and economic impact in all matters during a site development . During a new development project, different groups use the practice of sustainability to determine if it will be practical to build and the burden it will have on the earth . Stormwater management is a subset of sustainability that deals with flooding and can be influenced by multiple stakeholder groups; these groups include engineers, real estate developers, and policymakers. In Washington, DC, an extreme rainfall event is managed via stormwater management.

Since 2008, there has been a boom in real estate development projects in Washington, DC . With this boom, the influence that these stakeholder groups have may have also increased. While there are current policies for all projects to pass the regulations in place, since 2013, the Department of Energy and Environment (DOEE) has published several revisions to its manual . While there are permitting processes to approve a site for stormwater management, it was unclear the effect that these stakeholder groups had in influencing policies related to stormwater management during an extreme rainfall event.

Background

In many areas around the world, flooding occurs because of extreme rainfall events. In Turkey, extreme rainfall events have led to reports of water levels that are too high and the loss of homes . In Australia, extreme rainfall events cause over $175 million in damages per year . During these events, only 18% of the residents in Turkey, were

protected by areas that are managed for stormwater before these extreme events would occur (Tas et al., 2013)

In 2013, the District Department of Environment, now known as the DOEE, accepted the municipal separate storm sewer system (MS4) permit that more closely aligned with the Environmental Protection Agency's (EPA) requirement . The EPA issues a permit every 5 years for the storm sewers in conjunction with the Clean Water Act (CWA) of 1977, Water Quality Act in 1987, and the National Pollution Discharge Elimination System (NPDES; Laws and Regulations, 2017; Manupipatong, 2016). As a result of the issued permit, the DOEE changed their regulation to require that when developing a site, there be a retention requirement between 0.8–1.2 in. of rainfall and fully detain the 15-year storm event using green infrastructure systems . This resulted in a shift from water quality treatment to volume retention, where prior, the developers only had to detain the first flush, half an inch, which was significantly lower in cost and space . These newer requirements caused a difference between a pretreatment device to green infrastructure system that would cost at least five times more . After much debate with internal and external stakeholders, the DOEE had to set the requirement .

The relationship between internal and external stakeholders has a hand in affecting policy and is a direct reflection of the difficulties of using the traditional ideology of policy formation. Related articles further support the need for research to the stormwater management issue:

- Bell, McMillan, Clinton, and Jefferson conducted a cost-benefit analysis of planning for more significant storm events. In their study, they discussed what

each type of storm is, their depths and their frequency, and what this means. While this information was based on research in Australia, it is still relevant in all other areas because rising water levels are not unique to Australia.

- Amoako and Inkoom (2017) discussed whether an area has a higher tendency to flood is as a result of the actual flood event or other internal factors like urbanization, finances related to external stakeholders, or the geographical location as it relates to development. They used qualitative interviews and observations to ask the participants about past flood events and what factors helped or did not. The researchers found that socioeconomic factors, like internal and external stakeholder interactions, play a more significant role than the extreme rainfall events that occurred.
- Morison and Brown found that there is inadequate stormwater management in many cities as a result of poor community support. Their research was a qualitative comparison between eight different environmental organizations in Australia that varied between those that were successful and those that were not. Their results showed that the design of a policy could undermine its intent if the local agency is not willing to support it.

While many studies have been conducted on the effects of flooding, the effect that internal and external stakeholders have in creating policies that affect stormwater management in Washington, DC remains unknown. In this study, I attempted to provide a fuller understanding of the influence that these groups have in shaping stormwater management policies. Both the resource dependency theory and the power and politics

organization theory were used as the theoretical models of the study. Using these theories as lens, I explored both sustainability (with stormwater management) and the creation of policy. The two theories will be further discussed later in this chapter and in following chapters.

Problem Statement

In Washington, DC, depending on the development project, it is policy to retain the first 0.8–1.2 in. of rainfall and fully detain the normal rainfall storm event; this is based on historical rainfall depths, which are used to calculate the current rainfall frequencies and intensities . However, urbanization and technical factors have altered the river networks, which can lead to more frequent and intense flooding (Bell et al., 2016). While currently there is a project in DC to expand the MS4, this cost will end up falling back, indirectly, on the internal stakeholders . Due to lack of community support and education, implementing any policy to improve stormwater conditions is difficult . The main issue that misguides community support is the cost of a more efficient MS4 and facilities, which would be paid by the city's internal stakeholders.

During the planning design process, the engineers in Washington, DC, are required to size their stormwater facilities to a normal rain event . As a result, less than 80% of stormwater runoff is adequately mitigated to stormwater management facilities . According to Amoako and Inkoom , areas that are less developed are more likely to experience flooding, so with that said, areas with more stakeholder influence may possibly be less likely to see this issue. External stakeholders have also claimed to have limited power over managing extreme storm events in lower developed areas . The

problem in this study was that it is unknown how internal and external stakeholders influence stormwater management policies related to extreme rainfall events in Washington, DC.

Purpose of Study

The purpose of this qualitative study was to explore how internal and external stakeholders influence stormwater management policies related to extreme rainfall in Washington, DC. In the fulfillment of this purpose, I conducted a qualitative case study. The case study design allowed me to interview these groups to get a better understanding of the different groups' understandings of the study topic. Qualitative interviews allow for open-ended conversations that provide firsthand accounts of the different groups' understandings of the problem .

Flooding and water damage are issues that affect many stakeholders in DC . However, in metropolitan areas, while the external stakeholders may have positive intent to implement change to stormwater management policy, concern over the internal stakeholders' dynamics with the external stakeholder may cause the policies to not adequately represent the issue . In this study, I highlighted the dynamics between the groups of stakeholders that are involved in creating and influencing stormwater management policy.

Research Questions

I developed the following three research questions to align with the purpose of the study and the theoretical framework as well as guide this study:

Research Question 1: What effect do real estate developers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Research Question 2: What effect do civil engineers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Research Question 3: What effect do policymakers (i.e., external stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Examining the research questions and the theoretical framework: (a) the power and politics organization theory discusses how continued bargaining gathered influence, and as a result, I developed the research questions to address how the groups affected policy within their respective authorities; and (b) the resource dependency theory discusses how sustainability benefits the stakeholders, which led to why stormwater management policies related to extreme rainfall events were explored as well as to my examination of the benefits that are received by the stakeholders. With the use of a combination of both of these theories in this study, I was able to discover the influence the groups have in policymaking, how that influence is obtained, and what benefit these groups get from using that influence towards sustainability.

Theoretical Framework

During a discussion that was had within one of my doctoral courses, I chose to examine both the resource dependency theory and the power and politics organization

theory as proposed by Sharifitz, Ott, and Jang (2016). After landing on the purpose of this study and considering the topic I had in mind, I settled on these two models as a result of how much I felt they related to my topic. Both approaches could be used to examine what I felt was necessary for my research.

The power and politics organization theory emphasizes how human behavior is not always rational and identifies all the players of political power and influence (Shafritz et al., 2016). In this study, I used the theory to discuss how policy is formed. It helped that I also considered that humans are the ones that create the policy and their reasons can be based on this framework theory (see Shafritz et al., 2016). While this theory raised issues with competition that would arise between the stakeholders, it did not solve the issues or problems as they arose. Next, while this theory explained that people do not always behave or make the most rational decisions, it also emphasized or discredited being rational and the benefit of it (Shafritz et al., 2016).

The resource dependency theory "stresses that all organizations exchange resources with their environment as a condition for survival" (Shafritz et al., 2016, p. 403) One of the articles I examined for this study was titled "The Production of Flood Vulnerability in Accra, Ghana: Re-thinking Flooding and Informal Urbanization." The authors of this article provided the identifiers of a flood event, naming both internal and external factors , as far as poverty, government interference, geographic location, etc., that played a factor into the extremity of a flood event . They proposed the resource dependency theory within the article and identified what outside influencers there are in an actual flood, stating that this will be the community or the internal stakeholders alone.

The power and politics organization theory, which focuses on how political influence, has a determining factor in reparations after flooding and in the future with how policies can be formed to change to protect against irresponsible political influence; irresponsible political influence also reflects government or external stakeholders (Amoako & Inkoom, 2017; Shafritz et al., 2016).

Nature of Study

In this study, I used a qualitative case study design. I employed phone interviews of the participants to collect data, which allowed for the asking of open-ended questions. The phone interviews allowed for the exploration of sensitive topics, access to hard to reach or very busy respondents, the safety of interviewer, and were a cost-effective method. The method used in gathering participants will be described in Chapter 3. The participants in this study were both internal and external stakeholders, as defined in the Operational Definitions section of this chapter. The participants in the study were limited by geographical location (i.e., Washington, DC) and experience. My use of this method and design allowed for ease in answering the research questions (see Sturges & Hanrahan, 2004).

Implications for Positive Social Change

According to Yob and Brewer , social change has a few definitions, and one of the primary definitions is “bringing about a ‘new social order’ in which marginalized people would have the same educational and social opportunities as those more privileged” (p. 3). I conducted this study to explore the influence that stakeholders have on stormwater management policy. This study was vital because stormwater management

policy has the power to alleviate flooding due to an extreme rainfall event. Since flooding is more likely to happen in less-developed areas (Choondassery, 2017; Revez et al., 2017; Wheeler & Beatley, 2009), these policies can create more social change due to the influence the three groups have over the policies. Through the lens of the theoretical framework used, I explored how the individuals and groups in their roles used the influence they obtained to impact stormwater management policies and the benefit that the group received from implementing stormwater management on their site development project. The results of this study showed how the stakeholders identified benefits from sustainability, how to obtain influence, and then used that influence in impacting change in policy. An implication of positive social change that was achieved from this study was that the results can be used to create more sustainable neighborhoods and communities through influencing policy.

Operational Definitions

External stakeholder: Stakeholders that are not working on the project directly but instead are invested, even though they are not directly shaping it, they only influence the policy when it comes to forming, implementing, and approving or disapproving of projects . This stakeholder can be the DOEE worker/policymaker or urban planner with certain levels of experiences that will be defined in later chapters.

Extreme rainfall event: A 100-year rainfall event, which means that there is a 1% (1 in 100) chance of this type of rainfall event happening in any given year .

Internal stakeholder: Stakeholders inside the project manager’s organization and include supervisors and team members. All people directly involved in the project are

internal . In this study, they included real estate developers, property investors, civil engineers, architects, and all groups involved in the direct design, construction, and management with certain levels of experiences that will be defined in later chapters.

Normal rainfall event: A 15-year rainfall event, which means that there is a 6.7% (1 in 15) chance of this type event happening in any given year .

Chapter 2: Review of the Literature

Introduction

In Washington, DC, external stakeholders may be compromised in their ability to promote and provide adequate policy because of input from internal stakeholders . One of the reasons for external stakeholders' inability to provide adequate policy is because internal stakeholders are the ultimate resource when making the city more and more sustainable, especially in terms of stormwater management (Revez et al., 2017). In Washington, DC, stormwater management policies have become more stringent, but then more laxed, possibly due to internal stakeholder input . As a result, the traditional method of policy creation is also not visible in these transactions between these groups . There is a gap in the literature concerning the effect that the stakeholders have in creating stormwater management policies. First in this chapter, I will provide the research strategy that assisted in finding the articles used for this literature review. The rest of the literature review will include information about what sustainability is, what stormwater management is, as well as a clear explanation of the different groups and traditional roles in policy making.

Research Strategy

I used several research databases and alternative resources to properly compile an exhaustive literature review that consists of both digital and printed materials. I chose not to limit the number of articles found by the age of the article due to the type of study and the difficulty of finding relevant articles. All relevant resources were reviewed, including district manuals, newspaper articles, textbooks, and websites. Walden University's

Library portal served as my gateway for accessing the following databases: Sage Journals, United Nations Public Administrations Network, Gale Virtual Reference Library, and SciDev.Net. While reviewing an article for relevance, I often used the references that the author cited instead of the material found initially, since those articles were more fruitful in regard to my review. In addition to these resources, Google scholar was used as an additional resource and to cross-reference and find the most current articles to review. Outside publications, guidebooks, and publications were reviewed, including the DOEE stormwater management guidebook, the *Washington Post*, and DataUSA. I used the following keyword search terms to locate the articles used in this study: *stormwater management, flooding, policy, policymaker, stakeholder, urban planners, sustainable development,* and *sustainability*. Over 95 articles were read, and all articles that I deemed as relevant to my topic were included in the review.

Theoretical Framework

I used the power and politics organization Theory and the Resource Dependency Theory, developed by Sharifitz et al. as the basis of the theoretical framework for this study. These theories both identified the power that organizations can have on the survival of a system. Although other theories were examined, like the classical organization theory, I selected the abovementioned theories because the relationship they can be used to examine between the organization and the people within that organization. The power and politics organization theory was used to show the relationship between the DC government and its constituents, while resource dependency theory allowed me to look at how sustainability (i.e., designing for a more extreme rainfall event) can affect the

organization, which was Washington, DC in this study. These theories also helped to guide the literature search. Addressing the gap in literature and using these theories allowed me to address the effect that stakeholders have on shaping stormwater management policy.

These theories also provided a lens through which to view how stakeholders shape stormwater management policy. In the power and politics organization theory, "organizations are viewed as complex systems of individuals and coalitions, each having its own interest, belief, values, preferences, perspectives and perceptions" (Shafritz et al., 2016, p. 271). Within the theory, it was argued that influence is acquired and maintained not by the person with formal authority but as a result of ongoing bargaining (Shafritz et al., 2016). With that said, it would mean that the stakeholder would be the ultimate person with the power. Resource dependency theory discusses how the organizations are there in order to serve the individuals within that organization (Shafritz et al., 2016) . According to this theory, organizations need ideas, energy, and talent, while individuals need opportunities and safety; this describes sustainability and instead gives power to both stakeholders (Shafritz et al., 2016, p. 150). Per the theory, organizations die without the balance. When both of these theories are combined, they provide a guide to explain who in Washington, DC has power and how the resources are best used in order to aid the individuals within the city (see Shafritz, Ott, & Jan, 2016).

These two theories helped to guide the literature review and provided me with a starting point from which to conduct a thorough review of extant information on the topic. Considering the diversity within many different social groups, no individual theory

could possibly account for each, and as a result, the participation of the participants was also important within the research (Shafritz et al., 2016). In the following sections, I will examine sustainability and the stakeholders' effect in policy creation concerning stormwater management using the aforementioned theories.

Review of Literature

Sustainability Internationally

The resource dependency theory basically states that there is an exchange of basic human rights and needs (Shafritz et al., 2016). Since the creation of the United Nations in 1948, there has been a large amount of published literature on the topic of the human rights approach when it comes to sustainable development. On a global scale, in order to have sustainability, investing in sustainable development for future generations is imperative. However, due to an overburden on the planet, this may not be as realistic because creating or protecting the rights of people to have a safe environment and feel safe is sustainable development . So, it is the responsibility of the United Nations to protect this human right.

International definition. There are three different conceptualizations for sustainability: economic development, social development, and environmental protections for all . These factors are also considered when determining which country is the most sustainable overall. Then as far as livability, the most popular definition is provided as the concept of peak oil, global warming, and climate change .

As proposed by economist, Rene Passat, a few similarities between the concepts for sustainability are viability, bearability, and equability. Passat compared the concepts

of social and environmental development, since these were similar and because they were bearable ideas. These ideals are easily able to be endured without much effort or without astronomical resources. The comparison between environmental and economic development is viable, which means these ideas are feasible. Then, comparing social to economic development creates equitable because these ideas are fair, impartial, and easily quantified .

Education is an example of a sustainable resource; this example is both equitable and viable. An excellent education can build the human resources that are needed to be productive, continue to learn, solve problems, and live together in harmony. But then to contrast the concepts, an individual can have one without the other two concepts. Economy directly relates to wealth, but social development relates to human interaction; one is not needed by the other to thrive .

With livability, there are a few ideas that deal with the effects of ill-treatment of the environment because of gaining wealth from the earth. It seems as if livability is defined from the survival of the earth within certain locations; however, in contrast to all the three concepts, drilling oil (i.e., global warming), extended summers (i.e., climate change), and increased levels of carbon monoxide (i.e., global warming) are not all directly related, they are all separate because one does not cause the other .

Sustainable Development Impact on the Groups.

Examination of stakeholders. According to Craft (2009), livability, which is usually determined by the people in a particular area and their personal determination of how pleasant the area is, the availability and affordability of housing in the area, access to

fresh foods, transportation, and all naturalistic needs. Sustainability builds on this idea of livability. With sustainability, the concept of livability becomes more open and becomes a right to more people than just the rich that can afford it .

The mission of Development Alternative Group is to eradicate poverty; they are an organization that works through research and action to deliver socially equitable, economically scalable, and environmentally sound outcomes in the most needed regions of India . One of Global Ecovillage Network's many goals is to advance citizen and community participation to accelerate the transition to sustainable living . One of their current projects is in Genoa where they are in the process of building a 320-lot residential development that is entirely self-sufficient and would be the first of its kind . Finally, Nuestra Raices are a group of farmers that initially wanted to build a greenhouse in Massachusetts, and their mission grew to farming when they replaced drug and high crime areas with community gardens . This replacement connected the city, created social equity and environmental protections, and allowed members of this area to save money by eating from the farm . Now they have over 12 gardens in the area with over 100 members helping to keep these areas safe .

Regardless of how great these organizations were, the way that they integrate the main themes of sustainability (i.e., the economy, social equity, and protecting the environment) are interesting. All three are changing areas in need to be more sustainable. For example, the Development Alternative Group provides homes and clean water to areas and also provides materials for them to build homes . This action is similar to both the Global Ecovillage Network and the Nuestra Raices in that they are both also changing

areas and uplifting them by providing additional resources that the area needs socially, environmentally, and economically. Developing more homes, reducing criminal activity, and increasing fresh food can lead to more money according to natural capitalism theory .

On the flip side, with the strengthening local economies theory, every little area of the nation would have to be uplifted for any of these organizations to truly be effective . With that said, Nuestra Raices is only focused on improving or creating sustainability or those in Holyoke, MA . This program is more for the Spanish-speaking residents of the area because a requirement to become a member is that a person must speak English and Spanish . On the other hand, the goal of the other two organizations is to create sustainability globally . By employing the strengthening local economies theory to create global sustainability, Nuestra Raices is on the right track because they have more limits to who can access their resources .

Sustainability creates access to environmental and economic resources and builds social equity . However, an area can be sustainable locally, while sustainability may only be benefitting those of a particular demographic but not others who do not have access to become part of it .

Policies and external stakeholder impact. Gaviotas, Columbia; IBA Emscher Park, Germany; and Austin, Texas, are all areas in poor condition regarding livability, with IBA Emscher Park being known as one of the most devastated regions in the world . However, after changes in policy and aid, these areas grew to become more sustainable . Gaviotas, Columbia is now an ecovillage; initially, it was a project that received funding from the United Nations to assemble scientists and engineers to create more sustainable

living in South America . In the 1990s, the financing of the project began to stop and the population ran low, but due to a health care policy in the United States, the population of locals of around the area flocked to the ecovillage because of the clean water there, which helped greatly with the gastrointestinal issues residents had been suffering from . After the funding depleted, the forest provided the area with a great economic base and made the village self-sustaining .

Then the IBA Emscher Park was known as one of the most devastated regions in the world. However, from 1989 to 1999, a program was moved for structural changed in the German area known as “Ruhr” for more sustainable ideas. The program was financed by developers, private companies, non-profits, and local town governments. The area contained about 2.5 million people in 1985 (about 17 cities) and the primary policy goal that helped the city was the regeneration of the river system .

Finally, Austin is a city in the United States that has a current population around 900,000. Their issue started in the early 1990s when a development almost resulted in the loss of Austin’s most beloved natural resource, and that is “Barton Springs Pool.” Due to this city becoming more sustainable and from their sustainable policies they developed the first municipal green building policies, which today is what LEED models itself after. They also have plans in place to lower greenhouse emissions by 2050, and they have a vast of healthy and local food system .

Around the world there has been a large push for sustainability. Especially since most urban systems have become stressed as a result of climate change and population growth. Since the 1970 to present day studies have shown that the dynamic change is due

to two things, culture shifts and commitments for change. The first is a that with the transitional foundation, these changes are possible. The second is that editing regulation so that policy goals do not waver. As a result, all parties should mutually benefit from sustainability practices (Ferguson, Brown, & Deletic, 2013; Werbeloff & Brown, 2016)

With the changes that these cities and regions have made it has led them to become much more sustainable cities where the money comes because of them improving themselves, there is more social equity, and the environment is more protected as a result. For all the cities and regions, there is one policy that seemed to affect them all equally is clean water. While they were, all influenced by the idea of no fresh water differently, the idea of no drinking water brought them all to the concept of sustainability. In Gaviotas, sharing their clean water created more social equity while saving lives and more people being their area created more jobs and therefore improving their economy which was a consistent thing with all the cities .

Flood Vulnerabilities around the world. In a few varying cities in Australia, that each have a population of about 5.8 million people, the event of a flood as a result of a storm cost the city about $175,000,000 a year in damages. These damages are both tangible and intangible, which mean they include infrastructure and loss of life. In urban areas, stormwater flooding is a result of the higher flow rates of the storm runoff, mostly from the impervious covers, which urban areas tend to have more of overall. These flow rates are much more than the system can handle in capacity (Bell et. al, 2016).

In Ireland, the extreme events started leading to an increased need for stormwater management policies since 2003. Since then they started changing and shaping

stormwater management policies to aid with the 100-year flood (extreme rainfall) events that regularly hit West Ireland. Under the direction of the European Union, Ireland uses what is called “risk management” as their approach to flooding. They eventually create policy after careful examination of where money would best be placed to aid in flooding. As a result, this causes areas near rivers to become off limits, which raises discontent with locals within those communities. With large flooding events in Ireland, there seem to be no solutions and according to the local authority in charge of carrying out the assessments in Ireland… “Our powers are limited…. With the new process they are improving but even with that there will be maybe % of properties at risk in…” an extreme event and “… there is no cost beneficial solutions… So there are limitation and can’t protect everybody.” (Revez et al, 2017, pg. 3)

Finally, in Turkey a study was done were families in flood vulnerable areas were examined using methods of a qualitative analysis. It was found that after a major flood event with several feet of flooding, only 18% of people that were interviewed said that they partook together, as a community in order to take precautions by building barriers. The method that they used were on the “roads in the direction of the flow of water, using bricks, stones and pavement border stones, to regulate the water flow.” The rest of the people that were interviewed were unable to join in the precautionary actions because they felt as if the water levels were too high and they needed to deal with their own families and homes. (Tas, et al, 2013, pg 455).

Sustainability and sustainable development in US

Overall sustainable development is best viewed or looked at when it uses two methods which include applying human rights to advance any environmental causes that may come up and secondly it is turning issues that may arise about freedoms into new rights and freedoms . Sustainable development should also include the right to clean and safe environment, ability to access information and be able to publicly participate in decision making and finally it should include the right to protect these rights.

The EPA has sustainable development as the foundation to the environmental justice and they define it as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws regulations, and policies” . With that said, according to the EPA there should be a conscious effort of making all areas sustainable. However, there is a widening of a gap between the rich and poor the poor tend to benefit the least from environmental justice of sustainable development .

Austin, TX is the 11th most populous city in the nation, population of about 931,840. Funding for many of its sustainable projects comes on three fronts from the federal, state and city. This city is 48.7% White non-Hispanic, 35.1% Hispanic, 8.1% Asian, and 3.4% other. In the 1990s when a development almost led to a loss in the cities most precious natural resources, this resulted in more sustainable policies that forged the way for what is today known as LEED. The Asian population is leading the income race, with an average salary of $61,037, then white with $50,923 and those that identified as

having two or more races made an average of $42,090. The median income is $62,250, and the median property value is about $282,700 and the poverty rate of 14.5% .

Based on the information gathered about this city, it seems as if some similarities can be assembled regarding sustainability. For example, this can include the fact that there seem to be differences in wages based on race. The next is that the poverty rate is relatively high, above 10% in this location. However, it seems as if sustainability and livability are more attainable in Austin, Texas than it is in Washington, DC. The cost to buy a home in Washington, DC is almost twice the amount it is to purchase a home in Austin, Texas, while the median income for both places, there is only a $12,000 difference (Data USA: Austin, TX, 2017; DataUSA:Washinton, DC, 2017; Wheeler & Beatley, 2009).

In both cities, there is a focus on sustainability and livability, which according to Dr. Kraft, should involve transportation or ease or transit services. In Austin and Washington, both cities have both bus and rail lines. However, the cost is quite different. In Washington, it cost $2 to board the bus but $1.25 in Austin, then is it is $5.90 for rail in Washington, DC but $3.50 in Austin, TX. This difference in the cost in mobility also effects greatly the ability for the area to be sustainable, if it is said that the definition of sustainability is as Dr. Kraft describes, which is the ability of an area to be livable to all, regardless of race, income, and gender. However, in Washington, DC it seems as if the city is more livable to Whites, making this city not sustainable by definition .

Overall in a more sustainable area, there is less of an income gap, the cost of living is lower and more affordable depending on the person's income. Another thing is

that the indicators show that my community, Washington, DC, does show some signs of both sustainability and livability.

National Definition. It is known that climate affects resources, as mention previously, and now the government, businesses and individuals are starting to take notice. With that said, the methods for which they approach sustainability are relatively new, since sustainable development is indeed still a new concept . Designing and implementing of more sustainable methods would require changes in behavior, resources and technologies, this will lead the stakeholders to make a more creditable and informed decisions when it comes to climate impacts. While this is the intent, very seldom is proper information sharing utilized and as a result this leaves the community of both stakeholders less informed on the best methods of sustainable development . A study was done where stakeholders were only considering their own economic self-interest with the stormwater management system they chose and then the second ground, knowledge via technical experts. In the first there was a higher temporal rate and in the second the systems tended to be larger, this shows that stakeholders (real estate developers) may have good intentions but may not size adequately without internal technical team member stakeholder influence (Montalto, et al., 2013).

Usually the sharing of information or how stakeholders receive information is by a trusted source. It can either be an internal stakeholder, governmental agency, magazine or a friend. The information that they received may also be received by groups or organizations that they are a part of, therefore the more limited the scope of interaction

that the stakeholder may have, they end up with a blind spot to activities of sustainable development .

EPA and Sustainability. The first major law to address water pollution in the United Stated was the federal water pollution act of 1948, where congress declared this to be of “national interest.” From this law, public awareness evolved for controlling the water pollution lead to many amendments in 1972. The amendments that were established in this law :

- Established the basic structure for regulating pollutant discharges into the waters of the United States.
- Gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry.
- Maintained existing requirements to set water quality standards for all contaminants in surface waters.
- Made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.
- Funded the construction of sewage treatment plants under the construction grants program.
- Recognized the need for planning to address the critical problems posed by nonpoint source pollution.

In 1975, after EPA declined to include stormwater runoff into their program and then was sued as a result by an environmental group. Then in 1977, the DC Courts ruled

that stormwater discharged must be covered by the permit program. The amendments made here, the clean water act of 1977. Then the CWA was amended again 1981 for the Municipal Wastewater Treatment Construction Grants Amendment passed by congress. Then again in 1987 with the Water Quality Act, this phased out the construction grant program and replaced it with a clean water state fund. The new funding strategy created a partnership between the states and the EPA .

During the development of the Water Quality Act of 1987, Congress decided to define discharge from rain that lands on industrial sites and that comes from MS4 as point sources. As a result, NPDES was impacted, under the CWA, this allowed the EPA to authorize the NPDES permit to states, tribal, territorial governments, administrations and etcetera by specific deadlines. Specifically, the NPDES allows for "discharge of pollutants within prescribed limits through a permit system and the EPA has delegated this authority to states to control their own NPDES programs. Currently forty-six states and one territory are authorized to implement the NPDES program, and EPA has oversight responsibilities in those states (Laws and Regulations, 2017, pg. 1; Manupipatong, 2016; Standards for Water Body Health, 2018).

Sustainable development impact on stakeholders and policy makers. In 2017, the *Washington Post* published an article that discussed some jobs that would be lost in the United States, if the United States decided to become less sustainable. According to the U.S. Energy and Employment report, if more sustainable jobs were no longer needed, this would constitute about 75% of the energy industry. This in total is about 1.5 million jobs. This issue also affects the ability for someone to live day to day and go for a midday run.

During the midday when the sun is the highest, due to carbon emission and the heat, the carbon expands, and this is dangerous in the long run to inhale day to day .

The most difficult part for any organization, where organization would be the District's government, in creating sustainable policies is the financial ability to carry out the goal. Having the financial backing is key to creating effective sustainable policy as discussed, many literatures about capacity building where the emphasizes are political support, financial resources, technologies and execution. There is an association between financial capacity and policy implementation at the governmental level. Financial capacity also has significance in local climate change policies. There are about four levels of financial capacity and they include availability and usage, financial resources reserve, stakeholder willingness to pay and maintaining the funds since it is not guaranteed.

These considerations have gained much attention in the attempt to engage stakeholders for sustainable support. There is an influential factor when it comes to the stakeholder because they can leverage this power to fund or defund policies (Wang, Hawkins, & Berman, 2014).

A study was done to find the involvement between governments and stakeholders in many U.S. cities with a population over 50,000, and it established that there indeed and is an association between the financial capacity for sustainability and stakeholder engagement. So basically, if the local government somehow creates permanent or long-term methods for the stakeholder to remain engaged, this creates a more financial capacity to that local government because the funds are being spent more so by the

stakeholder. Of course, this is a multistep process which includes community engagement, liability and bringing in the technical experts (Wang et al, 2014).

Community engagement, which basically means allowing the stakeholders the opportunity to network internally influences their view on policies. That way they are always informed and always have the ability to stay informed (Wang et al, 2014).

The government should always be open about financial liability of sustainability. There should be meetings or discussions had in order to engage the public of the cost and benefits of sustainability, especially since it is taxpayers who bear the cost of sustainability and are therefore also stakeholders. Therefore, making the public informed about the choices in sustainability helps greatly (Wang et al, 2014).

Bringing in technical experts. These are known as internal stakeholders because they often come as a result of the main/financial stakeholder. Also, because the sustainable practices are most likely technical, like stormwater management, these professionals must also become engaged. The technical expertise of a professional, like the civil engineer, can bring more confidence to the stakeholder and policy makers that are deciding on if the resources should be allocated for the sustainability projects (Wang et al, 2014).

Sustainable stormwater management practices. Overall, the flooding that takes place in these urban areas can be alleviated and mitigated in a few ways. One method includes stormwater infrastructure augmentation or duplication. This is replacing the existing pipes (grey infrastructure) with larger ones due to the increased impervious area that may cause increase flow to a system and as a result, flooding. Larger pipes may also

cost a disruption to the public during construction, this may also cost the city hundreds of millions of dollars (Bell et al, 2016).

Another method is low impact developments (LID), which is also a great landscape amenity or a way to receive and store water for other practical uses. With the LID the goal is to restore the post conditions development to the meadow conditions or how the area is or would be if it were never disturbed by ways of infiltration, retention, and detention. For them to achieve their goal, all the runoff from the contributing drainage area is managed at a Best Management Practice (BMP) system, which are stormwater facilities, which include cisterns, bioretention, and green roofs. As a result, these methods reduce the flow of runoff, bringing the flow closer to natural conditions (Bell et al, 2016).

Six major cities in the United States (Atlanta, Chicago, Denver, Houston, Los Angeles, and New York) were studied to see the sustainability index of rainwater harvesting systems. A rainwater harvesting system can be a rain barrel or a cistern that is used to collect rainwater, usually from the roofs or other surfaces (Petrucci et al., 2012, p. 45). The resulting water after undergoing pretreatment of some sort can be used for flushing, irrigation, laundry and overall to reduce stormwater runoff (Petrucci et al., 2012). Regardless, after a study was done to investigate the size of the system to the water demand using a sustainability index that looked at reliability, resilience and vulnerability, with vulnerability measuring the extent of the failure of the system greatest to lowest. This study found that when reliability increase, resilience increases but vulnerability decreases, it can also be found that the rainwater harvesting system size has

increased with a decrease in water demand. This means that the more efficient (has room for availability) and flexible (can easily adapt to changes) the less likely the system will fail and the higher the sustainability index is; this means that the larger the rainwater harvesting system, the less need for a rainwater demand to meet the internal demands of the building or site .

Overall in areas with less rainfall like Los Angeles, where there are frequent drought seasons, would not benefit from a rainwater harvesting system and would do better with another system, like a green roof. Green roofs are multilayered vegetated systems are constructed or placed on new or existing buildings. The green roof can increase and usually goes along with the cities sustainability policies by not only aiding in reducing runoff (stormwater management) but also with reducing noise pollution, reducing heat island effect in cities, and helping to keep the building at a cool temperature . Also, since in most cities, the footprint is covered by buildings that increase runoff with the impervious surfaces, the green roof would aid this . It was also found that if the system has and expected moisture content of at least 10% it should fully retain the first inch of a storm (meaning store on a more permeant basis) but it should be able to detain the storm event it was designed for completely (meaning it should be able to hold the water and slowly allow it to leave to the respective channels) .

While a green roof may benefit greatly for the design of a building, there are a few mechanisms that can be used on the site and the widest range is the bioretention system. Bioretentions have multiple names which include but not limited to rain gardens, micro-bioretention, bioretention cells, etc. They are a depressed section of landscape that

consist of ponding layer (this is above surface), vegetation/mulch, soil/media layer, storage area (these are usually evenly sized stones), overflow structures (like cleanouts and drain basins), and optional drain basin (depending on the soil infiltration)(Yang & Chui, 2018). These systems are primarily used to treat, retain and detain stormwater from their designed rain events from a maximum drainage area of two hectacre or 2.47 acres or 107,639 square feet of impervious area. However, due to increase in impervious areas in city areas where there is also an increase of pollutants that would end up in the streams and then back in the drinking water, these systems, when properly managed and maintained are highly effective.

Using rain gardens have increased the visual stock of many buildings and have reduced runoff at both small and large scale. In Baltimore Maryland, Gilroy and McCuen10 developed and microshed model and found that cisterns were able to capture rooftop runoffs from small systems, then this water can be reused for toilet consumption, laundry washer, and cooling towers. Then at a larger scale, some studies show that there is a small reduction in flows using cisterns and the more extreme the rain event, the less effective without many upstream devices to capture the runoff. Overall as topography, climate, and land cover changes, this continues to affect stormwater calculations and the amount of water that can be captured .

Overall while these few practices are great examples of urban sustainable drainage systems, they are often installed and then after their installation there is little to no follow up in maintenance that results in a decrease in the efficiency since many of the owners assume they are self-reliant systems and this leads to mistrust in sustainability by

the public . Overall, when a study was done to where the top 3 inches were removed from a bioretention, the system became over 90% more efficient. Also, studies indicate that LIDs like these on real estate developments, even with a high initial cost for installation, they are very positive long term for sustainability. These systems are sustainable, but many times may not be as sustainable if the education is missing or known to maintain the system .

Sustainability in Washington, DC

Washington, DC is the nation's capital, located between the state of Maryland and Virginia. This city has a unique way of running since it operates similarly to a state. The Mayor (Muriel Bowser) that is elected every four years has the duties of the governor, and her current platform is to decrease homelessness in the city while best managing the city's transit system. The city is currently 50% Black and 38% White, where the average salary for Whites in this area is about $97,052, and the average wage for Blacks is $60,000. However, the White and other races are more likely to have more degrees than the Black race. The overall population of DC is about 672,228 the median income is $75,628, and the average cost of a home is $551,300, with a poverty rate of 17.3%. There is also an issue of flooding in many lower income parts of the city. Finally, the financing comes from taxes and the federal government, however, due to this being a city and just that, people are taxed without representation from Congress. There are many proposed projects in DC to aid with stormwater management, to be designed by civil engineers

What it means in DC. Washington, DC is not only the home to the residents of the eight wards throughout the city, but it is also the nation's capital. These residents expect

high quality from their representatives and because federal and local governments are operating within the small city, so do they. Also, on a daily basis, Washington, DC should expect to have commuters coming into work from Maryland, Virginia, West Virginia, Delaware, Philadelphia and because it is the nation's capital, it should expect daily tourism . With that said, there is high expectations for sustainability for city.

According to Wheeler and Beatley one of the definitions of a sustainability indicator is that it is a test of sustainability "and reflects something basic and fundamental to the long-term economic, social or environmental health of a community over generations." With this definition in mind, a few sustainability and a few livability indicators that can be noticed from Washington, DC must have to do with social, economic and environmental. As mentioned above sustainability means that it is equal living opportunities for all, in DC a few of those indicators would include street cleaning, reduced priced for public transit for section of population, construction of new underground transit rail lines, stormwater management in priority areas, gross domestic product and participatory process in action .

These sustainability indicators show that there is room for growth to make the city more socially equitable, with designing and construction of more stormwater measurements and more economically healthy, by not giving discounts to stakeholders, which reduced prices. Then the livability indicators that exist in certain areas of DC include, the current ease of transportation, lower crime rate, stormwater management measures being installed within new developments, invites to town hall using news and

posters, ease in sustainable development for developers, an increase in public transit, cleaner streets, and larger amount of stormwater management facilities .

While DC is a larger city that has many eyes on it, it also has more indicators of livability than sustainability. In more affluent areas in DC, engineers have designed more best management practices for stormwater management as a result of more construction. Another livability indicator is that there is a less likely chance of flooding as a result of increase in development (Department of Consumer and Regulatory Affairs, 2017; Wang, Hawkins, & Berman, 2014; Wheeler & Beatley, 2009).

Awards won. On August 31st, 2017, Washington DC was named the first LEED Platinum City in the World. LEED (Leadership in Energy and Environmental Design) is an international third-party green rating system that launched in 1998 under the US Green Building Council. This program allows an environmental measurement to compare different levels of sustainability, addresses energy use, water use, construction material and the indoor environment. The rating system covers many different levels of projects and the rating system has four rankings and five categories. The ranking is Platinum, Gold, Silver and Certified, respectively. The categories are, sustainable sites, Water Efficiency, Energy and Atmosphere, Material and Resources and Indoor Environmental Quality. Each category is weighted in the order in which is contributes to climate change, for example energy efficiency (17 points), Sustainable Sites (14 points), Water Efficiency (5 points), Innovation Design (5 points)(Thilakaratne & Lew, 2011).

In the United States water efficiency refers to the reduction of water use in irrigation and sustainable sites refers to habitat restoration, stormwater management or

achieving a sustainable site. Overall meaning that most points in the LEED program can be achieved from sustainability .

As mentioned before, the highest ranking for LEED is platinum and DC was ranked the first Platinum city in the world. In all new construction and renovation, including the nineteen new schools that are all LEED platinum, there is a priority with sustainability on all forms .

Common and best Sustainable SWM practices. Given climate change and the increased amounts of rainfall depths, increased impervious areas caused increased runoff and flooding, in theory it would be easy to just replace and resize all the storm collection lines in the city and adequately size them. While there is a project in DC that is creating tunnels for stormwater, known as the DC Clean Rivers project. This project alone has and will cost billions of dollars and will still need the total amount of storm runoff to be reduced. A study shows a multiple regression analysis being employed to see how higher runoff volumes were affected by stormwater management practices, like the ones shown below reduce runoff excessively. With that said, in Washington DC, given the amount of land for each individual project and according to the DOEE manual, the common stormwater management techniques include filtration, retention, and pretreatment systems in many forms. When a project is privately or publicly developed the common practices used are:

1. Group 1 (Green roofs)
2. Group 2 (Rainwater Harvesting)
3. Group 4 (Permeable Pavement)

4. Group 5 (Bioretention)
5. Group 7 (Infiltration)
6. Group 8 (Open Channel Systems)
7. Group 13 (Tree Planting and Preservation)

While there are many more systems, these are the most common systems and the systems that are used and allowed by the District. The systems are sized to only treat the first 1.7" of any rainfall event, at most, and fully detain the normal rainfall storm event, even though according to the manual summer storms are twice as intense and with twice the intensity as a storm in the winter which is about 2.7-inches on average (a normal storm event is about 3.2-inches deep on average within a 5-min duration). At minimum and depending on the type of project the person is doing, as long as over 5,000 square feet is being disturbed then at minimum the system should be sized to retain the first 0.8" of that storm event (Hoffman et al, 2013).

The 15-year storm event refers to the return period or the expected probability of the storm event occurring. If a storm is said to be a 10-year event this means that there is a 1/10 or 10% chance of that storm happening within any year. So, a 100-year event can happen two years in a row, but the chances of that type of storm event of that magnitude happening is 1% in any given year, while the chances of a 15-year event happening in any year is about 6.67%. Since the detention requirement is dependent on 15-year storm event, this means that the system designed should be able to fully hold the water for at least 72 hours before going back into the storm sewer while retention refers to holding

the water indefinitely or that water not ever going into the storm sewer (Hoffman, Stack, & Van Wye, 2013; Perlman, 2018).

As mentioned, the value that is required to be treated is based on the type of project that will take place. For a Major Land-Disturbing Activity (MLDA), this is a project were at least 5,000 square feet of land is being disturbance, this project is required to treat the first 1.2-inch of rainfall from any storm event and this is based on the amount of land disturbed. Then there is the Major Substantial Improvement, this is based on improvements to the value of the building by over 50%, if this project is within Anacostia Waterfront Environmental Zone (AWDZ) it is required to retain the first 1.0-inch of rainfall and if it is outside these limits than it is required to treat up to the first 0.8-inch of rainfall. The AWDZ are outlined by a boundary, certain government agencies and other specified lands. Typically, both types of projects are required to detain the normal flood event (Hoffman et al, 2013).

The point of the retention of water which would be considered the qualitative analysis would be to help reduce flooding by storing the water from the impervious area before they reach the sewer systems. The next part is the quality control analysis which is where it is required that the Curve Number of the site or area disturbed be below 70. Curve number is a calculation used to predict runoff or infiltration from any rain event. The storage volume from the stormwater management systems are used to calculate the curve number and since the curve number for impervious area is 95 and 74 for grass or pervious area, sometimes the storage may show the system sized larger than for the first 1.7-inch event which is at minimum required. Overall reducing the amount of runoff into

the storm collection pipes levies the need for immediate replacement or to upgrading millions of miles of sewer (Hoffman et al, 2013; Kim & Li, 2016).

Policy

There are several different definitions of what public policy is, broadly it is defined as what government does or does not do about a problem that comes before them. Within that definition, a government is defined as any public official who influences or determines public policy, which can include city council, school officials, county supervisors, police officers, any of the sort and higher .

There are plenty of reasons why policy may arise, the first may be that the policy is a result of some issue or problem that requires attention by that government agency. Therefore, a policy is what the government entity chooses to do (actual) or not do (implied) about the particular issue or problem .

The next particular reason for a policy can be that the "policy might take the form of law, or regulation, or the set of all the laws and regulations that govern a particular issue or problem." These can be formed in any arena and come or form as a result of many different factors, for example, while living in a roommate situation a policy of washing the dishes after a meal may became a law of the home after the development of an issue .

The next is that policy is created for the public and is focused on a goal or an anticipated state. The policies are overall created with the intentions to help the population that the policy was created under. Also, the goal of the policy is usually always to alleviate a problem, like with the roommate example .

In the end, a policy is created by the governments, even if the ideas originated from outside the government or through the interaction of government party and the public people. The idea of policymaking is continuous, especially since the decisions about who exactly will receive the benefits from granted policies and who will see the consequences as a result of the policy is continually reexamined .

As problems arise in the communities, many are solved with action taken in the private sector and by the society. However, the problems that need a public policy are those that require a law to create change, for example, the equal opportunity law, was a policy because it was necessary because it was once an issue that needed to be addressed by the government since they have a final rule .

Traditional method of creating policy in democracy. The two principles that fundamental and essential include a free and fair election. This is essential because if the people are to feel that they have equal or are not in a monarchy, they should be able to exercise who will carry political power on their behalf, instead of blindly following someone that does not necessarily need to or care to obey their needs. The next item that is an essential principle is free and open press. This principle to means that the people have the right and freedom to access alternate forms of press. The media should be able to criticize the government and, all the information should not only come from the government .

On the other hand, two principles that are related and desirable but not essential include “popular sovereignty” and “political equality.” While these two principles might relate to the first two mentioned they are not quite the same. Per Post (2006), popular

sovereignty is defined as “a state of affairs in which the people exercise ultimate control over their government.” In the united states, which is a democratic country, the people do not have ultimate say as to who will win or not. This was an idea or Aristotle who believed that the people could not be trusted to make a proper choice, so items like the electoral college were put in place to limit the popular sovereignty. The next one is Political equality, the means that there are many different affiliations, and everyone is represented, however in a two-party system like in the united states, this forces people to conform to an idea that may not necessarily fit or benefit them completely .

Internal and External Stakeholders.

Internal Stakeholder.

Define. Mitchell, Agle, and Wood had many definitions of what a stakeholder may be in different situations. Within their definitions they developed the *salience model* for stakeholders which was used to identify the stakeholder’s needs. Different from the power and influence grid were power/influence grow or decrease on a scale this instead uses a three leaf Venn diagram to compare power, legitimacy, and urgency.

According to Mitchell et al (1997), power one of the of the scales of a stakeholder is basically the stakeholder’s influence on the result of the project, organization or whatever the final outcome goal. While all three branches much be present whenever a problem is perceived because this is what defines the difference between the stakeholder. External stakeholders both have power, but it does not become power until that entity let it be known that they are willing to use that power .

The next tier to their model was legitimacy, this is the level of involvement and authority that a stakeholder has over a project (Mitchell et al, 1997). This is explained on many different levels by something known as the legitimacy perspective. This theory basically states that a company can only exist through a social contract where the company's value is equal or greater than the society in which that company exists. On the other hand, the perceived value can be removed if the company reduces in value by doing something that may cause a breach in the contract.

A breach in contract is basically when trust is lost in the company or stakeholder and this can be done in many ways, one way being that the stakeholders may lobby for legislation that somehow impacts cash flow. It was found that some company's legitimacy rose when they started to disclose their environmental information's (Gray et al, 1995). Overall legitimacy refers directly to the socially "expected and accepted behaviors" .

Per Mitchell et al (1997), power and legitimacy most likely will fluctuate however urgency, which is the last tier, provides attributes in an order than puts ideas in order of interest. Overall urgency is the timeline that is expected by the project stakeholders on each level and exists when there is an immediate call for action .

While Mitchell et al (1997), goal in creating the stakeholder theory was to have the managers of projects really understand what their goal was in completing a project and who to prioritize. However, this theory made everyone into a stakeholder as a result because it did not allow for the distinction between a stakeholder and non-stakeholder. It basically allowed for everyone to be a stakeholder and based it on varying degrees and

said that someone can only become less of a stakeholder due to certain tiers being reduced .

Regardless within each tier of the Venn diagram, there are about eight different levels of stakeholders, presented in levels of most important to least: definite/core stakeholder, dominant stakeholder, dependent stakeholder, dangerous stakeholder, discretionary stakeholder, demanding stakeholder, dormant stakeholder, and non-stakeholder. This organization allows for not only an understanding of the stakeholder but also allows for organization of important of stakeholder.

The most important of the stakeholders are the core/definite stakeholder. This is the critical stakeholder that the manager of any project would be paying most attention to. This stakeholder holds all three attributes of the stakeholder as in power, legitimacy and urgency. However, it is important that the Venn diagram hold a dynamic meaning, given this, the stakeholder may not always be definitive, but may decrease to an expectant stakeholder which holds two or more attributes like dominate, dependent or dangerous stakeholder. Or have just one attribute like discretionary, demanding or dormant stakeholder but non-stakeholder is rare (Mitchell et al, 1997).

Based on the information, and the amount of legitimacy that the engineer should hold, they should be mostly a discretionary stakeholder. The engineer holds power or status as a result of their licensing and education but lacks power as a result of the fact that they have no income rational . These stakeholders are also known or can be identified as internal stakeholders and internal stakeholders are inside the project

manager's organization, which will include supervisors, team members. All people directly involved are internal .

On the other hand, policymakers are external stakeholders since they are not working for the project but instead invested but they are not directly shaping it, they only influence the project when it comes to forming the policy . This stakeholder can be known as a dominant stakeholder since they have both legitimacy and power since they are indeed within a powerful organization .

A developer may hold many different levels of a stakeholder where they have the power, legitimacy and urgency depending on the moment. Janssen, Borgers, and Timmermans discuss the amount of influence that real estate developers, local governments and local land owners have over the urban planning in the Netherlands. Since 2004, the Dutch government has decided to lax their policies on retail planning and left the decisions to local governments, as a result developer became heavily involved in retail development leading to the decisions of the locations new facilities or renovations to be left to developers and the local government. While the developers were found to be the most "adaptive" or willing to change their viewpoints due to the opinions of the other stakeholders like the local owner or retailer who was found to be persistent in their views against the other two groups and the local government was in the middle. With that said, the most power is help by the developer and retailer. The developer holds power and legitimacy as a result of the money and their position as a developer, making them a dominate stakeholder overall, the retailer holds power, legitimacy and urgency, making them a definitive stakeholder because they will be purchasing or leasing the space, they

usually have a timeline for the construction and design to occur and they are likely a legitimate organization. Overall this makes the developer in this case the definitive stakeholder since the developer is in the middle and is required to also meet the deadline (Janssen, Borgers, & Timmermans, 2014; Magness, 2008).

Given the definitions per the model, it is clear that the stakeholders involved in stormwater management should fall within a few of the prototypes of a stakeholder regardless and depending on where the project stands. In the case of this topic, it is best to use this definition which is "driven by their own interests and goals are participants in a firm, and thus depending on it and whom for its sake the firm is depending" to define a stakeholder (Mitchell et al, 1997, p. 858). However, in order for a stakeholder to be a true stakeholder a risk or stake must be involved as well (Mitchell et al, 1997, p. 857).

Pros and cons.

Participatory Process. With the Metropolitan Planning Organization (MPO), they are utilizing the typology of or manipulation/non-participation and the people of Taipei and are using citizen power. The reason that MPO is using manipulation is that according to Arnstein, this is a method used by individuals that are "power holders." These people are the delegates or people that are in charge or running the committees and the MPO, from the article, their decisions are made by committee members, not by individuals .

Then there is Taipei, and I believe this is citizen power because they discuss protests and other things where people take power into their hand. This area has citizen control due to reasons explained in excerpt: "People are simply demanding that degree of power (or control) which guarantees that participants or residents can govern a program

or an institution, be in full charge of policy and managerial aspects, and be able to negotiate the conditions under…"

While both typologies are different, both lead to an ultimate decision that is being made. According to Arnstein (1969), usually in decision making all the types are used, to some extent. Like with the manipulation process, the other non-seat holding folks of the community and they help influence the seat-holders to make the ultimate decision.

External Stakeholder-Policymaker.

Define. After thrifting through many articles, it made the most sense to use the definition from the Cambridge Dictionary of what a policymaker is, it is a "… member of a government department, legislature, or other organization who is responsible for making new rules, laws, etc…." The reason I chose to use this definition was because after looking through about 10 articles, the definition of what a policy maker is so diverse from author to perspective. Also, from the articles that I read it was rarely focused on what could really define a policy maker, because any one or person really can be a policy maker and not just an elected official. What was needed to know was, even though they had an idea of what a policy maker was, I needed to know what made them so special and according to Sharkansky this is dependent on their politics.

Populism is where the person that is attempting to get elected, attempts to get the most votes for the upcoming election. The policymakers however will not have the most popular option that reflects the population, but the policymakers would opt to get together and instead vote for the option that serves who they choose to appeal to in order to get support in areas or places they prefer .

Another one is ideology, this may include populism but tends to be broader in that it instead puts the highest priority on doing what is best for the population. With this type of politic, forcing the commitments that were promised by the constitutes may lead the policymaker to implement policy that is opposite of another. For example, save money and improve services, both ideas are good, but both conflict with the other .

The professional & technical politics, these elected policymakers they know more about an issue than their advisors, and sometimes they do. However, with all the background that they know, they develop a blindness to new information of findings on the information they have become "experts" in because of their bias due to their "intimate" knowledge on the subject .

The bureaucratic politician are not necessarily the elected officials but are also people that are a part of the administrative team who use their position on order to get policy that serves their interest. These interests are not always just their own, it may also be of their organization, and they are likely to sacrifice the needs of the public in the process. They also may enlist other various groups to apply pressure to other policymakers in order to advance their self-interest .

While on the topic of self-interest, this is the final type of policymaker and this one acts on their own-self-interest, like the individuals in the population, they vote on what matters to them, not the majority. Overall this policymaker it would be best to assume by estimation of the policymaker's party, ideals, interest and expect them to vote that way .

In Washington, DC.

Traditional method of creating policy**.** Traditionally, a policy in the United States is carried out by the government in several stages from start to finish. These steps include agenda building, formulation, adoption, implementation, evaluation, and termination.

As previously stated, a policy comes from a problem that has been called out for attention to what was previously defined as the government. An example is the issue of immigration, for many years it was a great issue, but it was not until the 1990s when it became a serious issue for enough people, that it required governmental action. Another example would be crimes, it is tolerated to a certain extent but in this society, when crime either realistically or has the perception of rising dramatically, then policymakers then have to address this. These items, after receiving recognition, then they can get placed on the agenda. Another policy that was included on the agenda was after homes that were near a river flooded; this rose the question of if homes should be built near the floodplain, and if so, what stormwater management precautions should be taken .

The next step is policy formation, which is coming up with the best way to solve the problem. Here the executive branch of congress is usually involved as well as interest groups and the courts. In the process, people may come up with multiple arguments, like President Nixon had one opinion of forming the EPA after seeing a need, but then congress may see it another way. The formation of a policy's outcome is tangible, meaning that a bill goes before congress, then it becomes adopted if it passes legislation, becomes final and then the judicial branch makes the final decision .

The policy is then implied by institutions other than ones that initially adopted the law. A statute requires a board policy outline, for example, Congress might mandate for

water quality standards to become improved, but the EPA provides the details on those standards and procedures for measuring the water quality compliance through regulations. Here the supreme court has no say on how a policy shall be implemented or enforced. Coordination between those putting policy into effect and those that are complaining determine how successful implementation will be. In the Brown v Board of Education, the justices saw that desegregation of schools would be a sophisticated manner. The justices also did not provide any guidance after the judgement was passed in the 1960s or how fast; especially since some schools in the United States remain segregated in 2017 due to them not wanting to push social change. But implementation is more up to lower courts to decide and the executive branch .

Finally, there is an evaluation, which is determining how well it is working out as a policy, usually identified with a cost benefit analysis. For example, is a policy worth keeping if the government is spending billions of dollars to implement a policy? This data is collected and open to much interpretation. However, once implemented, these policies are difficult to terminate. However, if they are terminated, it is because it did not work at all, lost interest amongst stakeholders, elected officials and other supports. In 1987 Congress repealed the national speed limit of 55 miles per hour law of 1974, that was effective in reducing fatalities and gasoline consumptions, however, it hurt the trucking industry, and this was more of a state issue .

Stakeholder and policymaker effect in creating policy.

Stakeholder. In the United States, lobbying is when someone is hired to be a professional advocate on behalf of a special interest group. These interest groups can include small communities, large corporation, etc.; basically, any group of people can become a special interest group. However, most often lobbyists are seen in a very negative light due to few select lobbyist taking advantage of their position. They are supposed to focus their efforts of persuading decision makers like Congress, executive branch agencies like the Treasury Department, Securities, and Exchange Commission, supreme court and state governments .

While there are clear negatives to what a registered lobbyist is, there are quite a few positives, and without a lobbyist, the government would not be able to function efficiently. In 2016 11,143 people were registered as lobbyist, this is down from the 14,477 registered in 2006. And while within these time periods General Motors and Ford spent millions on lobbying, instead of repairing their company and having to be bailed out by the U.S. government, there is still a large positive to this process. The most important are that lobbyist are educators. Not literally, but they spend most their time educating members of Congress and their staff on new and old legislation and the effects that the laws may have on their special interest group. So, while the above-mentioned motor companies spent millions on lobbying, they were still employing hundreds of people, all of whom benefited greatly from the job that their lobbyist did .

In the past three years, the American Cancer Society spent over $20 million on special interest lobbying, during this they sent their advocates in to argue on behalf for further research, allowing individual research that’s banned by conservatives and so on.

Their advocates would go and speak to a particular lobbyist and make sure they clearly understand, why this law should be changed .

Three democratic principles that clearly apply when I think of what a lobbyist is 1) First Amendment, freedom of the press, 2) The fifth amendment, the right to due process and 3) the sixth amendment, the right to console .

Freedom of speech affects and shapes lobbying by making it harder for legislators just to be paid off. Recently, during the passing of a new law, somehow legislators added in make it legal to hunt bears and wolf in Alaska, during hibernation season. If it were not for the press, many people would never even know about this obscure law being passed due the affordable care act being repealed. The press and informing others allow for more special interest groups to be notified of corruption and can help stop obscure laws from being ratified as a result of the lobbyist .

Next is the right to due process, while this law does apply court and being imprisoned, this idea still applies to a special interest group. Within the fifth amendment, this is the legal requirement to the states to respect the legal rights that person has. Thinking about it, the special interest groups know their goal and they have beliefs they believe in. For example, the American Cancer Society believes that stem cell research should be further examined, while this may not be completely legal, this organization believes that deserve a chance to be heard without blockage .

Finally, while this amendment was also created with the intent to be used within criminal cases, it can apply here with intent. Everyone deserves to be heard; the sixth amendment guarantees that if anything happens then, you have the right to free counsel.

This is evident even more that this law may not just be for criminal proceedings because the government provided many legal clinics for all different sections of court proceedings. With that said, the special interest groups act as lawyers the same way for these special interest groups .

While this public policy has its positives and negatives, it is a democratic process that allows Congress to be efficient and it allowed people in small communities, that were previously voiceless, to be heard.

Summary

Both sustainability and the stakeholders' effect have the power to shape policy within an organization, and in this case as pointed out above and using the themes within this chapter, they have some sort of power to influence the government. However, what is not known is how stakeholders and policymakers influence policy regarding stormwater management policy in Washington, DC. The next chapter, the methodology, will provide an in-depth discussion of the research model, identifying participants, questions that will be asked, and organizing/analyzing the information.

Chapter 3: Research Method

Introduction

The city of Washington, DC is affected by flooding and water damage, which can lead to loss of property, loss of faith in respective government and their officials, and need for policy change . As a result, less-developed areas are more effected. Despite what was uncovered in the previous chapters, the effect that stakeholders have in influencing policy regarding stormwater management in relation to an extreme rainfall event in Washington, DC is still unknown. In this study, I explored the effect that these key players have in influencing stormwater water management policy regarding extreme rainfall events.

In this chapter, I will present the methods involved in the study to ensure that it was designed appropriately for the topic. The research questions will be presented in depth along with the methodology so the study can be replicated. Ethical issues with trustworthiness, which were used to protect the participants, will also be presented. In this chapter, I will present the strategies that were used to explore the influence that the groups have on influencing stormwater management policies.

Problem

Flooding and water damage is an issue in Washington, DC that can be solved by stormwater management; however, in Washington, DC, all the systems to aid in relieving the issue are all sized for a normal rainfall event . As a result, if an extreme event were to occur, this runoff would not be adequately mitigated. Tables 1 and 2 show the average difference in intensity in DC per ward using the centroid of the ward from the National

Oceanic and Atmospheric Administration database. The DOEE stormwater manual requires the use of a standard 7.56in/hr. for a normal storm event .

Table 1

Average Normal Intensity per Ward in DC

Ward	Average normal rainfall intensity (in/hr.)
1	7.21
2	7.23
3	7.23
4	7.16
5	7.16
6	7.19
7	7.18
8	7.24

Table 2

Average Extreme Intensity per Ward in DC

Ward	Average extreme rainfall Intensity (in/hr.)
1	8.98
2	9.00
3	9.01
4	8.92
5	8.92
6	8.96
7	8.94
8	9.01

Using the recorded information, including seasonal changes, rainfall measurements, etc., mathematicians and engineers are able to calculate the intensity of the rainfall events depending on the location. The difference in the intensities can be a result of urbanization and other technical factors but due to a lack of community support, creating policy to alleviate the stormwater conditions in the event of an extreme rainfall event may be difficult (Bell et al., 2016; Morison & Brown, 2010).

Purpose

The purpose of this qualitative study was to explore how internal and external stakeholders influence stormwater management policies related to extreme rainfall events in Washington, DC. To fulfill the purpose, I conducted a qualitative case study. The case study design allowed me to interview these groups to get a better understanding of each of the groups' understandings of the problem. Qualitative interviews allow for open-ended conversations that provide a first-hand account of the different group's understanding of the problem .

Flooding and water damage are issues that affect internal stakeholders, but the design policies do not reflect or dictate what would happen in the event of an extreme rainfall event . Tables 3 and 4 show the amount of runoff that would occur in each ward, considering the published coefficients and size of each ward (see Comey, Narucci, & Tatain, 2010).

Table 3

Average Runoff per Ward for Normal Event

Ward	Average normal runoff (cfs)
1	1084.59
2	3115.37
3	3376.64
4	2911.93
5	3567.83
6	2616.92
7	2784.29
8	3487.77

Source: .

Table 4

Average Runoff per Ward for Extreme Rainfall Event

Ward	Average extreme runoff
1	1350.84
2	3878.05
3	4207.96
4	3627.71
5	4444.84
6	3261.14
7	3469.21
8	4343.44

Source: .

As a result, in the event that an extreme event was to happen in Ward 8, for example, this would lead to about 855 cfs more of runoff or 9.5 in. more of rain after about 12 hours of rain from the extreme rainfall event. Even with stormwater management and excluding areas with large inlets or channels, there would still be a large amount of water overland as a result of the extreme rainfall event that the stormwater management systems are not designed to detain or retain.

Research Design and Rational

Research Questions

Using a qualitative analysis approach, I conducted a case study using interviews to answer the following research questions. The interviews allowed for participants to provide open-ended response so I could explore the influence that the internal and external stakeholders have on influencing stormwater management policy in relation to an extreme event and what benefits the stakeholders receive as a result of the influence they have obtained.

Research Question 1: What effect do real estate developers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Research Question 2: What effect do civil engineers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Research Question 3: What effect do policymakers (i.e., external stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Theory

I used the power and politics organization theory and the resource dependency theory to examine the balance of sustainability, which in this case was stormwater management, and political influence, which I assumed that each group had. The power and politics organization theory explains how people make many decisions based on emotion and not what is rational . The resource dependency theory explains how survival of an organization, in this case, the city of Washington, DC, is dependent on it being sustainable. These theories were aligned with the research questions because the goal of the research questions was to ultimately examine each groups' political influence over the sustainable policies regarding stormwater management (see Shafritz et al., 2016).

Role of Researcher

Population and Sampling

My initial goal was for the participants to consist of at least 10 internal stakeholders (i.e., real estate developers and civil engineers) and five external stakeholders in the Washington, DC area. I recruited participants from e-mailing and calling the prospects directly using the Washington, DC Development Report list of contributors , from e-mailing prospects from the contributor list from the DOEE stormwater management guidebook (Hoffman et al., 2013, p. iii), and from snowball sampling (having the existing participants recruit their acquaintances within the field to participate, see Appendix E). As many participants as possible were asked to participate in the study until the goal was met within a 6-week period. Once the goal was met, additional participants were no longer recruited; however, if more participants, ahead of the six weeks had been asked to be a part of the study, then the extra participant was interviewed.

Internal stakeholders are not only the primary person that is in charge of the money, they are also the technical experts (Wang et al., 2014). To meet the inclusion criteria for the internal stakeholders in this study, they had to be either be a real-estate developer or a licensed civil engineer in Washington DC. Policymakers were defined as an external stakeholder with legitimacy and power and someone that is also a member of a governmental organization that is responsible for lawmaking (Mazue & Pisarki, 2015; Policymaker, 2018). In this study, the external stakeholder, focusing on DOEE, had to have a direct affiliation with this government organization or stormwater management

policy creation/implementation in DC and at least 5 years of experience. A letter describing the study was sent to the potential volunteers (see Appendix A).

According to the district department of planning, as of 2017, it can be estimated that there were about 50 established real estate development firms and 15 established civil engineering firms in the city of DC . Examining the contributor's list in the DOEE manual, there were over 40 people involved. However, due to the difficulty in contacting the full population of anticipated participants, 10% of the population was analyzed. The original goal of the study was to have five to six real estate developers, five policymakers and about five civil engineers with over 20 years of experience in DC.

Methodology

Design

I conducted a qualitative case study using data triangulation. The data collection method of interviews remained the same with all the participants, so the triangulation of data only existed between the study participants, also known as participant or source triangulation. "The term 'triangulation' is used to refer to the observation of the research from at least two different points." One major critique of this method is that it leads to eclecticism; however, more studies have shown that triangulation can help to gain a deeper understanding and objective approach to the understanding of the issue .

I used phone interviews to broadly answer the research questions and gain information for the study. Phone interviews were used because there should be no significant difference between phone interviews and in-person for this type of study .

Also, interviews allow for the subject to share their unique experiences and perspectives on an issue within a conversational and comfortable manner.

Analysis

For this qualitative case study, interviews were performed with the internal and external stakeholders, which all together made up three groups that will be examined. All the interviews were over the phone, for consistency, and since there should not have been any significant issues with using either method (phone versus in person), in person interviews were planned to be conducted as requested. As a method to alleviate aggravation with a long interview, which can lead to short responses, interviews were attempted to remain between 45 minutes to an hour, however the time did adjust after a few interviews were performed with the different subjects . Nearly all the interview questions were formed with the intent to answer the research questions. Overall, these interview questions were approved by my chair to make sure that it indeed revolved around the main topic, which is, *Exploring stakeholder influence on stormwater management policy in Washington, DC*. The interview questions were also reviewed by one of the authors of the theory used, Appendix D.

Measures

The purpose of this study was to explore the stakeholder's influence on stormwater management policy in Washington, DC. As a result, stakeholders must have been in their roles for at least 5 years, to at least realized implementation of policy. Research questions for the research are as shown in above section, and more specific question that were asked during the interviews, are listed in Appendix B. The questions

that were asked are based on power and politics organization theory and resource dependency theory which both explore the power that internal stakeholders and external stakeholders can have on the survival of a system.

Procedures

The following served as instructions on the techniques that was involved in recruitment, informing, collection, analyzing the data and validating final finding.

For the interviews:

1. The research questions were validated by an expert reviewer in advance of the interviews taking place, Appendix D. This reviewer compared the topic, the research questions, and the theoretical frameworks to the interview questions.
2. Internal stakeholders and external were gathered using referenced list (Washington DC Economic Partnership, 2017; Hoffman, Stack, & Van Wye, 2013)
3. An informative letter detailing the nature of the study was sent out to the participants to ask them to participate, Appendix A.
4. Using the snowball method of sampling, the existing participants were asked to recruit other participants for the study.
5. After two weeks a letter was sent out asking for additional assistance in the recruitment of more stakeholders, and this letter also let the participants know the timeline of the project, from the date they receive the letter, as shown in Appendix E.

6. Request that the interested participants contact me, so that a date and time for the interview can be scheduled.
7. The participants were sent a consent form and a confidentiality form prior to the interview that they acknowledged the receipt of, as shown in Appendix C.
8. Each participant was called by me at the scheduled time, the participants were reminded about the proposed study and terms of the consent form. This interview also included asking the stakeholders the questions from Appendix B
9. If the minimum number of participants did not respond within the time period then the participants would have been re-engaged via e-mail and if there were still no responses within a week, then the participant pool will be open to engage a wider range of stakeholders involved in stormwater management into the study.
10. If the number of participants was met before the time period of the study, but additional participants continued to e-mail to participate, then they would have been allowed to participate as long as it is within the timeline of the study.

Data Analysis Plan

Data for this study was qualitative. The qualitative data analyzed both theoretical frameworks to analyze the effects had by stakeholders to influence stormwater management policies concerning extreme rainfall events.

The analysis consisted of three phases, the first phase consisted of reviewing all the transcripts of each interview to its entirety. This first phase allowed for a general understanding and to start to understand the type of information that was being conveyed. The next phase was to highlight and list all the statements that are specifically relevant to the study based on the notes and tapes. In this study, the proposed research was attempting to obtain information about how stakeholders influence stormwater management policies. This step involved reduction and elimination, if the information was deemed not relevant to the study, then it will be eliminated. The final step was to analyze the descriptions of the experiences of the stakeholders as individuals and within the three groups.

Limitations and Delimitations

From my understanding of a qualitative research study from Borman, LeCompte, and Goetz , a qualitative study can lead to bias as a result of the researcher being the primary research tool, given that all the data is filtered only through the researcher. So, the study is only examined via an internal lens. As a result, it was best for me to take several breaks from the study so that I would be able to regain perspective. Often times issues of bias resulted due to the qualitative researcher making themselves the only internal critic, but the breaks taken, allowed for the researcher to be an external critic. The breaks allowed for the researcher to detach from the study or not become obsessed, letting the researcher be more of an external lens (Borman et al, 1986). The following are a list of assumptions, limitations and delimitations that may have occurred during the study.

- Access to the stakeholders may be difficult to establish. Relationships with stakeholders will need to be coordinated using existing relationships
- Participants will answer all questions openly and honestly as presented.
- The responses to the questions, for the external stakeholders, are limited only to stormwater management and the DOEE agency and directly associated agencies as needed. Other agencies are not within the scope of this study.
- Results may not be able to be generalized due to the stakeholder's individual roles and how each stakeholder uses their individual influence.
- Quantitative studies can be identified through an external lens for this particular study; however, the findings from this study will be limited to interpretation via qualitative research, not quantitative analysis.
- In order to dilute the subjectivity of the study, there will be a "self-conscious and rigorous examination" of the questions, relationships, and interactions

Issues of Trustworthiness

Ethical Protection of Participants

The participants in this study were adult participants that had free choice as to whether or not to participate in this study. Before the start of the study, I secured Institutional Review Board (IRB) approval from Walden University, approval number is 10-17-18-0595680. No known issues were associated with participation in this study to the stakeholders, however, if a participant had trouble with participation while in the study, the participant was removed, and their information was discarded. Each person that participated in the interviews completed a consent and confidentiality form in order

to protect themselves as they saw fit. However, all the participants were given a pseudonym, and only I know the real identity of the participants—this was not shared upon request for study validation. All the e-mails, files, transcripts were scanned and stored on my personal and private server for 5 years. The server is only able to be accessed at my home, and access to the server is via password protection, that is only known by me. In case that password is lost or forgotten, the information was also uploaded to an external hard drive that will be kept in my safe for the same period. Only I and approved members of the researcher's team will have access to my server. After the study is published, upon request of fellow researchers, via e-mail, information will be provided to replicate the study within the 5 years. A copy of the consent form and Confidentiality form are in Appendix C.

Protecting the privacy of the participants was important during this study, especially since the study dealt with easily identifiable individuals. Traditionally it was ideal to give each person a code name or study name to mask their identity. During the participant's discussion they occasionally gave several demographic tags or different identifiers that may link the study to them in the end. As a result, during the review of the interviews, the interviews were closely reviewed for tags and their job titles to be removed. Then the participant, the original goal was to provide a number from 1-10 based on how that person ranked themselves and another from how I ranked that participant per the conversation had (Morse & Colehaun, 2014; Petrova, Dewing, & Camilleri, 2014).

Threats to validity

After an analysis of the research, I have found a few potential threats on both the internal and external level. Two ways that I can compromise my paper's validity on an external level is by my interactions with the participants and the reactive effects of experimental arrangements.

With the external validity, within my research, I believe I can cause issues with the validity as a result of the interactions I may have with the participants in my study. In this qualitative study, I may already have pre-existing relationships with a few of the participants. As a result, with the interviews, these interactions would be complicated to replicate from this study onto another, and this may also reflect in the answers received.

With the internal bias, this included the maturation and the overall design of the study. The way the study is designed, which is around the 2013 stormwater management regulation manual, and the fact that this information or this current policy, is bound to change after the completion of this study, this plays a more substantial factor in the study. While these factors are issues that cannot be changed, it is essential to acknowledge that they indeed exist.

Credibility

When it comes to how the data for the research was being collected, I believe that I can say that it was am credible. According to Shenton , credibility deals with "How congruent are the findings with reality?" Also, it was suggested to examine the topic of the research with a scale of scrutiny, by following a few of the provisions provided. From the study, the provisions I have followed include: "a) adoption of research methods well

established …" I believe that it is evident from the questions asked in my research and the format of the research that it is a qualitative research. Next is "the development of an early familiarity with the culture of participating organizations before the first data collection dialogues take place…" which again I have done considering these are relationships I have established due to my work. Finally, I also used the provision of "tactics to help ensure honesty in informants when contributing data." I have allowed each person that has participated the choice on whether they would like to take part in the study or not and if I cannot adequately provide consent, they will be left completely anomalous and be able to participate .

Transferability

Transferability finds out if the findings can have different applicable situations. With my study, will the results of the stakeholder's influence or the benefit to the stakeholder regarding sustainability be able to apply to other cities? Shenton (2004) writes, in qualitative research, the results must be understood within the context of a particular organization and a geographical area, therefore I encourage the study to be done in other cities. During this study, I chose Washington, DC to be specific because this area geographically, is different and overall would be challenging to maneuver. However, if many studies are conducted, in many different cities, the overall finding may lead to more inclusive data in different cities (Shenton, 2004).

Dependability

If the work were to be repeated under all the same conditions, then the same results should be obtained, when comparing dependability to reliability. As recommended three provisions should be taken for this part which includes (Shenton, 2004)

1. For the research design on the implementation level, I described what was planned and executed.
2. I explained what was done in the field, on the operational level of detail gathering.
3. While the study was underway, I continuously reflected on the effectiveness of the process that used in order to eliminate bias.

Confirmability

For the research that was done for this study, confirmability is for the reader to have the ability to be objective. This section is to ensure that the finding from the study is a direct result of the interviews and the experiences from the informants involved in the study and not just the ideas of the researcher. In my research, the interviews that were done, and the questions were inserted as well as what my reactions were to their responses .

So as a method to test the validity of the research, the methodology section and the interview questions were asked to be reviewed. All the authors of the referenced articles from the literature review section, Chapter 2, were e-mailed and only one responded, Dr. Steven Ott. He validated the questions, helped expounded several sections of the methodology section and acted as a technical expert. The “technical expert”

examined the interview questions on the different levels for validity. The validity markers were identified for qualitative analysis and it was concluded that the study would be valid.

Summary

In this chapter, I provided details about the methodology and the design for the study. I discussed the qualitative analysis design, the theoretical framework and the phenomenological methods used to answer the research questions. I also reviewed the recruitment strategy for study participation and the use of snowball recruitment. Finally, in this chapter, I reviewed the ethical considerations and the ways that anticipated to ensure trustworthiness in the study's findings. Chapter 4 details the data collection, trustworthiness during the study and the results based on research interpretation. Then Chapter 5 ends the study with a discussion on the findings, recommendations and a conclusion summarization.

Chapter 4: Results

Introduction

The purpose of this qualitative case study analysis was to explore the effect that the internal and external stakeholders have in influencing stormwater management policy in Washington, DC and the benefits that the stakeholders gain due to sustainable building. In order to develop a clear understanding of the self-reported experiences of the participants as stakeholders, I explored the responses of each participant using a theoretical framework based on Shafritz et al.'s resource dependency theory and power and politics organization theory. I developed the following research questions to guide this study:

Research Question 1: What effect do real estate developers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Research Question 2: What effect does the civil engineers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Research Question 3: What effect do policymakers (i.e., external stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

This chapter is organized into the following sections: Setting, Demographics, Data Collection, Evidence of Trustworthiness, Data Analysis, Results, and Summary.

Setting

The main issue I came across during the scheduling and conducting of the interviews was time and lack of responses (as seen in Appendix H). During the first week of the study, beginning on October 17, 2018, only the external stakeholders responded to my requests to participate in the study. When the participants and I were scheduling the time for the interviews, I let them know that the study ended November 28, 2018. After about a week (i.e., October 24th, 2018), I called an extensive list of prospective internal stakeholders (see Appendix H; i.e., over 80 internal stakeholders) to let them know about the study and ask if they would be willing to participate. I did not call external stakeholders because I already had received responses from at least 10% of the population from the guidebook's contributor's list. After calling the internal groups, I was able to get four internal-developer stakeholders and one civil engineer stakeholder to participate. I was unable to get any additional civil engineers, but while calling the internal stakeholders, I was able to get in contact with other members of the development team. In Chapter 1, the operational definition of internal stakeholder included all the team members, so I asked the one prospective to participate, then renamed the group with the civil engineers as team members. About a week later (i.e., October 29th), a participant that I initially e-mailed, but did not have the information to call, e-mailed me to say that they would participate. This provided three internal stakeholders on the team member side. I then asked the internal stakeholders that participated to provide me with any additional names of people who may be willing to participate using the e-mail for snowball recruitment found in Appendix E. One participant responded to that request due

to a special interest in the university I attend. The snowball method provided me with two additional internal-developer stakeholders. During the study, one of the internal-developers asked to be removed, so that left me with a total of four external stakeholders, five internal-developers and three internal-team members. Since the study had participants from all groups, the deadline was not extended past November 28th. The one snowball sampling derived internal-developer e-mailed me on November 29th to participate, and I let that person know that the study had ended, but I would still like to interview them if they could take a call by November 30th. They never responded to me.

I conducted all of the interviews over the phone. The phone interviews were conducted from my home office where I was free of disturbances and the interviews would not be overhead to ensure confidentiality. To make sure that each interview was accurately captured, I used an app on my phone to record the conversation and had a printed copy of the interview questions in front of me to take notes on. Taking notes aided in focusing on the participant responses and asking follow-up questions. At the end of each interview, I checked to make sure the recording was properly captured and audible.

Demographics

The external stakeholders all worked at DOEE, had at least 5 years of experience, and had worked on a number of projects that included the current stormwater management guidelines. Their experiences, skill levels, influence, and job titles all varied. They were all DC government employees and as stated in the IRB and consent

forms, I removed all of their identifying markers, including gender and race, from the transcripts.

For the internal stakeholders, they also had varying levels of experience and worked on at least 10 real estate development projects in the city of DC. While the internal stakeholders did discuss how demographics can influence their role, their personally identifying markers were removed. The technical stakeholders were renamed to TM for team member after conversations and because of the pool of participants I could recruit.

Both the internal and external stakeholders admitted that they have had experiences interacting with the other group. During the transcription period, I removed their real names and renaming the external stakeholders based on their level of influence from their perspective and mine (scaled from 1-10). For example, EX-9-10, would be an external stakeholder, they rated themselves a "9" and I rated them a "10" within their industry and from my research. However, after speaking to the developers, it was difficult for all of them to gauge their level of influence, so instead when their names were removed, they were just renamed based on the group and the order I originally called. For example, for the real estate developer stakeholder, they were renamed "I-RED##" and number in the order I contacted them, and the team member/technical stakeholders were renamed "I-TM##," with the same numbering context.

Data Collection

I collected data from the 12 participants in the study over the course of 6 weeks in the form of phone interviews. I obtained consent from each participant prior to the

interviews by sending them an e-mail with the consent form and letting them know they could agree to the terms of the consent form by accepting the e-mailed invitation with the consent form attached. In my initial phone conversation, I discussed and/or reviewed the consent form (see Appendices C and F) with the participant. I e-mailed a copy of the consent form to each participant to review and acknowledge by accepting the interview request event. One external stakeholder, one internal-developer, and two internal-team member stakeholders signed and e-mailed me a signed copy, while others simply acknowledged that they agreed to the terms of the consent form. One internal-developer admitted that they got the consent form but did not read it. After I explained the form during the interview, the developer consented. In the consent form, I told the participants that I would send them the interview questions beforehand; however, after neglecting to send the questions to the first person, I decided not to send the interview questions to any of the participants prior to the interviews. Only one participant, I-TM#7, brought it up, then said it was fine.

During the interviews, I used the interview questions from Appendix B and made notes in the margins, making careful annotations if I had any feelings or thoughts during the interview. During the interviews, based on what the participant would say, I would ask a different follow-up question or I would skip questions because they would become redundant after the elaboration of an earlier question and I did not want the participant to get the feeling I was not listening. After the first week of the study and after about three interviews, I decided to start the interview by asking “What do you do? Or what is your role?” During the interviews, it also seemed as if the external stakeholders had an issue

understanding the hypothetical question, “Currently all BMPs in DC should be designed to detain the normal storm event, how likely would you be to continue investing in DC if projects had to be designed to the 100-year storm event, about 6x larger system?” So, I had to really elaborate on this question for them, but my elaborations were not consistent, and it did not become apparent why the external stakeholders misunderstood this question. The main issue that internal stakeholders had was they did not know if they had any real influence. This was what my original naming convention was based on, which caused me to have to revise my naming convention methods for the internal stakeholders. The final issue that was of concern was how both DOEE and some of the internal stakeholders that I interviewed defined both internal and external stakeholder. The questions became confusing to some because they defined each stakeholder as the opposite of how I had previously defined them. During my first interview, EX-5-7 stated, “…as we define it, internal stakeholders is anyone involved in the project. And external stakeholders are everyone else.” This was confusing because this was essentially the same definition I had from Chapter 1, but from reviewing the interviews, I believe that the answer to who is the internal stakeholder is a matter of perspective. Regardless, after a few interviews, I started each interview by giving them definitions of terms in the study.

After each interview, I transferred the files from the recording to a password-protected computer and hard drive. Once the files were transferred, I spent a few days transcribing the 12 to 52-minute recordings to five to 16-page transcriptions (see Tables 6 and 7). After transcribing them, I was able to review, highlight, and make notes of

anything I had missed. While reviewing the transcripts, I was able to code it to gain a deeper understanding of the conversation with the participants.

Table 6

Date and Time of Interview With Participants

Name (Pseudonym)	Date of Interview
EX-8-7	10/31/2018 @ 10am
EX-5-6	10/25/2018 @ 3pm
EX-5-7	10/19/2018 @ 10am
EX-9-10	10/23/2018 @ 2:30pm
I-RED#9	11/1/2018 @ 4pm
I-TM#8	11/7/2018 @10am
I-TM#7	10/30/2018 @ 1pm
I-RED#20	11/6/2018 @ 10am
I-RED#21-A	10/31/2018 @ 11pm
I-TM#6	11/13/2018 @ 6:30pm
I-RED-SB#1	11/13/2018 @ 2:30pm
I-RED-SB#2	11/26/2018 @ 7pm

Table 7

Length of Interview and Number of Pages of Interview Transcript

Name (Pseudonym)	Pages of transcription	Length
EX-8-7	15	0:45:00
EX-5-6	9	0:27:10
EX-5-7	11	0:34:33
EX-9-10	12	0:30:17
I-RED#9	5	0:11:47
I-TM#8	6	0:13:38
I-TM#7	10	0:38:58
I-RED#20	7	0:20:56
I-RED#21-A	7	0:22:07
I-TM#6	12	0:29:47
I-RED-SB#1	13	0:42:14
I-RED-SB#2	16	0:51:41

During the calling process, I reached out to several different civil engineering firms and contacted dozens of civil engineers, but they were either not willing or able to participate in the study (see Appendix H). However, within the list of businesses that I reached out to a week after the study, two that I assumed were going to be developers, were not developers, but were internal team members (see Table 8). A summary of each team member's general background and contribution is shown in Table 8. Each participant answered the scheduled call except I-RED-SB#1, I-TM#6, and I-RED-SB#2. The first two participants missed the call and called back after within 5 minutes. I-RED-SB#2 called me 10 minutes before the interview and said, "I'm about to get something done at the office, I will call you when I am done." I-RED-SB#2 called me at 7:20pm. I started off each interview by reading the phone interview script located in Appendix F. Each participant had read the consent form but only I-TM#7 had questions about the

consent form, asking about the interview questions, and I-RED-SB#2 who admittedly did not read the consent form at all. During the interviews, not all the questions that were listed were asked because I did not want to be redundant or have the participants think I was not listening to them, especially since they would say “didn’t you ask that already?” However, I did ask many follow-up questions based on statements that they made. The interviews also had cross-talk because I was responding “yea” to let the participant know I was still on the phone. At the end of each interview, I asked the research question that was relevant to their group but changed it for the non-civil engineers and just replaced that title with internal stakeholders. I-RED-SB#2 did not contact me until after I had transcribed, coded, categorized, and analyzed the data. With only 11 participants and before the 12th interview, I felt as if I had obtained a level of redundancy and no new information would be obtained (see Patton, 1990). However, I proceeded with the interview and gained much new insight. One real estate developer e-mailed November 29th to participate, and I responded back that I would be willing to extend the study but received no response back and proceeded with the 12 participants I had.

Table 8

General Description of Participants

Name (Pseudonym)	Participant General Description
EX-8-7	- Technical expert and manager - Currently tasked with interpreting the SWM guidelines - Over five years of experience
EX-5-6	- Editor of 2013 guidelines - now manages many SWM programs at DOEE - Not technical expert - Over 12 years of experience
EX-5-7	- Manages implementation of guidelines - Sees designs in field firsthand - Over 20 years of experience
EX-9-10	- Appointed by major - Manages funding - Over 10 years of experience - Father was developer
I-RED#9	- Real estate developer - small to mid-size company - Over 10 years of experience
I-TM#8	- works at largest trade association in DC - represents developers in DC - In current position 5 years, previously in public - Recruited to position - Policy person for Clinton/Gore administration
I-TM#7	- Sustainability expert - worked on task force with policymakers - Design background - Over 20 years of experience
I-RED#20	- Real Estate Developer - Small to mid-sized company - Over 20 years of experience
I-RED#21-A	- Real Estate Developer - Self-employed currently - Over 10 years of experience
I-TM#6	- Civil Engineer - Over 20 years of experience - Manages mid-sized firm
I-RED-SB#1	- Real Estate Developer - Large company - 20+ years of experience
I-RED-SB#2	- Real Estate Developer - Small to mid-sized company - 20+ years of experience

Evidence of Trustworthiness

After each interview, I explored the interviews and read each transcription against their recording several times. I made it a point, for when I go into the next interview, with the new participants, to not to let my judgements or information that I had found, to be known to the next person I was interviewing. I-RED-SB#2 volunteered to participate after I had transcribed, coded, categorized and analyzed the data. However, when I asked questions, I attempted to be as ignorant to previous information as possible. All the stakeholders, based on what the participants would say, I would engage them in follow up questions that were not a part of the initial list of interview questions.

As stated before, credibility refers to "how congruent your findings are to reality?" . Per the rules, it is important to gain or have an "early familiarity" with the background on the participants. This allows me to properly access how "congruent" what the participant is saying in the interviews to what is happening in real life and to easily ask follow-up questions. From my conversations with the participants, while there was new information that I discovered, the new information made sense given my previous background of the culture. Finally, given that the participants acknowledged the consent form that promised confidentiality, I expected honesty from the participants, and I believe I received it, considering the consistency of their statements. Also, when a participant asked who else would be participating in the study, I reminded that person that I could not due to the terms of the consent form.

As stated in Chapter 3, if many studies are conducted then the overall findings may lead to inclusive information about differing cities . While looking at each

participant interview, I looked at the things that would possibly make it difficult for the study to have any form of transferability. For example, the external stakeholders discussed how the primary objective was the "MS4" or separate storm sewer permit by the EPA is to improve the water quality and discharge to the Anacostia River network. This specific issue may be specific to the northeastern part of the United States, but the issue of a need for improved water quality may be international as stated in chapter 2. Another discrepancy is that Washington, DC is a standalone city, while there are checks and balances, the highest level is the mayoral office and as stated by EX-8-7

> "…most municipalities get their MS4 permits from their states. The district gets ours from EPA, because we don't have a state government that has authority over it…"

However, the interview questions and methods involved in data collection would be transferrable since they open the doors to understand this difference.

All the interviews that were conducted were recorded using a phone app and then transcribed. To improve the dependability, I checked each recording with the completed transcript and corrected any mistakes, like sometimes the transcript would say "DOE" instead of "DOEE". I then labeled each transcript with the date the interview was done and the given participant pseudonym name. Then these items (transcriptions and recordings) were uploaded to my private password-protected server as stated in Chapter 3. Also stated in Chapter 3, there were three provisions that should be taken to ensure dependability and all three were used, especially the last which is to continuously reflect during the study to eliminate bias. During the study I reflected how to better ask

questions that I stuttered on or they did not understand. Most the time it was nerves, so I prepared thirty minutes before the interview and practiced breathing exercises prior to the interview to speak slower. I also had the participant reflect on their effect on policy by asking them what they do for a living which helped to better guide the questions, this helped me relax.

To establish confirmability, I noted my feelings, thoughts, mood and location in the margins during the interview and while I was coding the data. While I made a conscious effort to sound confident during the interviews, however, during the first few interviews I did find that I was stuttering, or I would hesitate. After the first interview, I looked over my notes and recordings at the times I had to restate the question, I used this process to improve interviews that followed. During future interviews, I noted that I admired the stakeholders that I was interviewing, with the work they do and what they have to do. I continuously reviewed my initial notes and the codes that were used, as themes emerged from the interview, I checked myself on the interpretation with each participant.

Data Analysis

In this study, the analysis was done by hand-coding the transcribed data. I analyzed the data using a general form of coding, followed by axial coding and selective coding, respectively. Per Saldana, a code is used in qualitative research as a word or phrase that represents a summative and essence capturing portion of language or visual data; the codes gathered in this study, were based on the research questions. After the coding of the transcripts, axial coding was used to create categories, see Appendix J.

Following this, axial coding was used in an interpretative method to see the similarities and differences and eliminate categories. Finally, selective coding was used to show the relationships that existed between the codes and categories to create themes .

Before coding even began, the transcripts were each read two to three times so that I could gain a familiarity and remove any errors during the reading. I used the process as described above with each transcript and leaned on a few published dissertations to help form my analysis process. In addition, in an effort to keep the research questions in mind during the hand coding process, I used five different highlighters during the first read of the transcripts, this allowed me to deconstructed the raw data into component parts. Within this highlighting process, I broke down the research questions, which were essentially "What effect do stakeholders have in influencing stormwater management policy related to extreme rainfall events?" I pulled out the words: effect, influence, stormwater management, policy and extreme rainfall event. Each of these words were assigned an individual color and the transcribed text was highlighted based on if I felt it spoke to any of the aforementioned key words. During the initial read, I highlighted effect-yellow, influence-blue, stormwater management-purple, policy-green, and extreme rainfall event-orange. Then on the second read of the transcripts, I coded only the highlighted text, but still read the unhighlighted to examine if they needed to be coded. An example of highlighted text from I-TM#8 was:

"…people actually pay a fee to be members of the organization."

The text above I highlighted blue, for influence, in the transcript, during the initial coding, and then on the second read I coded it as "pay to play." Then using excel I wrote

a list of all the codes next to the page number and then next to it placed it in a category, shortened table below (Table 9), the full table contains 39 codes, see Appendix J. The initial analysis generated over 550 codes, after the secondary review of the transcripts, I eliminated certain codes that seemed redundant, so then this number was lowered to 511 codes, see Appendix J.

Table 9: Example of coding to categorization

I-TM#8		
Pg.	Codes	Category
1	Role	Use of Role to Influence
1	Advocate	Use of Role to Influence
1	Pay to Play	Obtaining Influence
2	Best interest of development team	Use of Role to Influence

The next step in my process was axial coding. Axial coding was used to confirm that the theories and categories accurately represented the participants responses and in doing this, I was able to explore the relationships between them. For axial coding, I asked myself, as the researcher, a limited number of questions, which included: What social concepts affected the participants? If this is happening with this group, is it also happening with other groups? What factors played in having influence? How does this stakeholder influence policy? What effect does this stakeholder have on influencing policy? What qualities of stormwater management were used in this study? How and why are extreme rainfall events considered? These questions allowed me the opportunity to see the commonalities that were present across all the participant responses. Asking myself these questions and looking at the codes from Appendix J, I was able to break down the data into categories that narrated the content, Table 10 and Table 11.

From the first six transcription were reviewed, there were about twelve different categories emerged as a result. For the purposes of consistency, I placed the new codes, from the remaining transcripts, into the established categories, with plans to create new categories if needed, but no new categories were found. After reviewing all the transcripts and converting all codes into categories, I again went back and reviewed the transcripts to see if they were properly categorized, by continuing to ask myself the questions from above. After re-evaluating the transcripts, "Policy," a category that was previously established was eliminated, as shown in Table 10 below.

Table 10: Total codes to categories throughout all transcripts

Extreme Rainfall Event Considerations	79
Improved Policy	25
Influencing Policy	32
Lack of Influence	57
Negotiations with Stakeholder	19
Obtaining Influence	43
Policy	0
Stormwater Management	56
Sustainable Policies	35
Unique Policy	17
Use of Role to Influence	96
Use of Status to Influence	52
Total code appearances	511

Table 10 shows a spread of the codes amongst the categories. The top five most dominate categories were "use of role to influence," "extreme rainfall event considerations," "lack of influence," "stormwater management," and "use of status to influence," respectively. The codes from the categories came from the twelve applicable

interview transcripts and the categories that arose from the data as relevant to the research questions presented in the results section.

Table 11: Properties of the categories

Category	Properties
Extreme Rainfall Event Considerations	Mention of the extreme rainfall event or the consideration from the stakeholder on the extreme rainfall event, how much or how little
Improved Policy	How stakeholders are making strides to improve policy or how they have seen policies improve
Influencing Policy	Their role in directly influencing a policy
Lack of Influence	Stakeholder not having any control over policy related to real estate development
Negotiations with Stakeholder	Meetings that were had, how they aided or did not, ongoing bargaining to achieve goal
Obtaining Influence	How the stakeholders are able to obtain influence
Policy	Policy in general that was mention
Stormwater Management	Discussion or mention of facilities used to manage flooding or stormwater or any synonyms
Sustainable Policies	Policies that aid in Stormwater Management
Unique Policy	Policies that are unique to Washington, DC
Use of Role to Influence	The stakeholder using their specific role or job to influence
Use of Status to Influence	The stakeholder using the status that they have obtained within their group, to influence

As stated above, these categories were formed using axial coding. I looked at each code/phase, as seen in appendix J, and asked myself the questions above and based on the properties of the above categories, the codes were then placed into one of the abovementioned categories. Each of the categories should relate directly to the research questions, for example, “extreme rainfall event considerations,” this should relate directly to the stakeholder’s view of stormwater management related to the extreme rainfall event, so this category is basically how much or how little they consider it, per Table 11.

Previously it was mentioned that the research questions were broken down into five groups in order to keep them in mind, with that said, each category should be able to link directly to the research questions due to them being considered at the beginning of the coding analysis, see appendix J to see all the codes and phases from the interviews.

Following the categorization, axial coding was further used in an interpretative method. Qualitative research usually involves interpretation and different readers may disagree with these interpretations. During this stage I was able to make sense of and better understand the relevant text, coded data and subsequent categories because I was able to see the relationships that formed within these codes. I compared the codes and categories across all the transcripts to determine what was important to the study. This included looking for difference and similarities in the themes.

The final stage of the analysis was selective coding, this involved reconstructing the codes and themes in a way that showed the relationships and findings that were found during the interpretation stage. This process helped me better understand the process from a theoretical perspective. From the reconstruction process, three themes were found . These themes were: sustainability, influence, and policy, see Figure 1, Figure 2, and Figure 3.

Figure 1. Categories to themes using both selective coding and interpretation

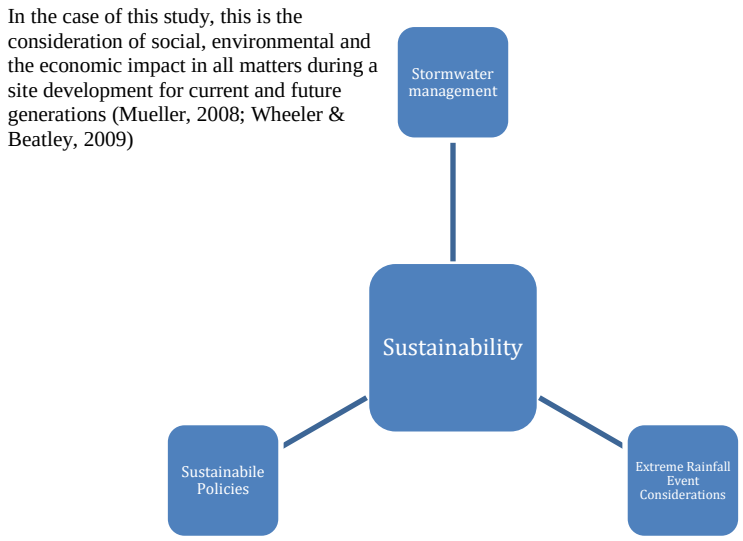


Figure 2. Categories to themes using both selective coding and interpretation

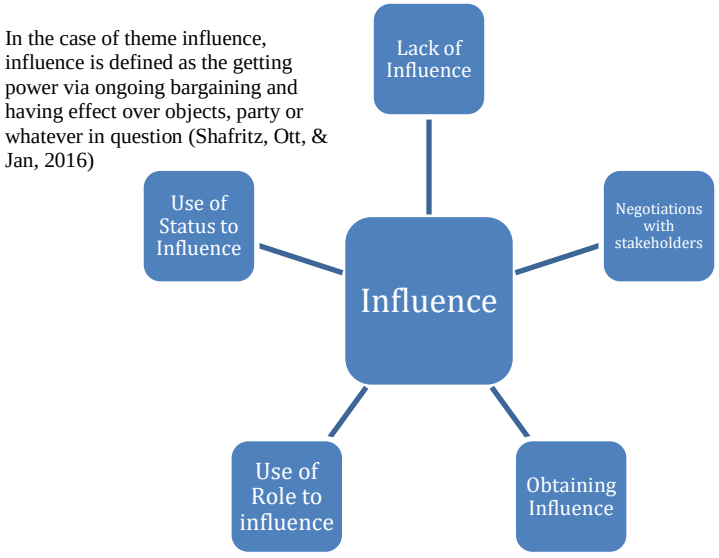
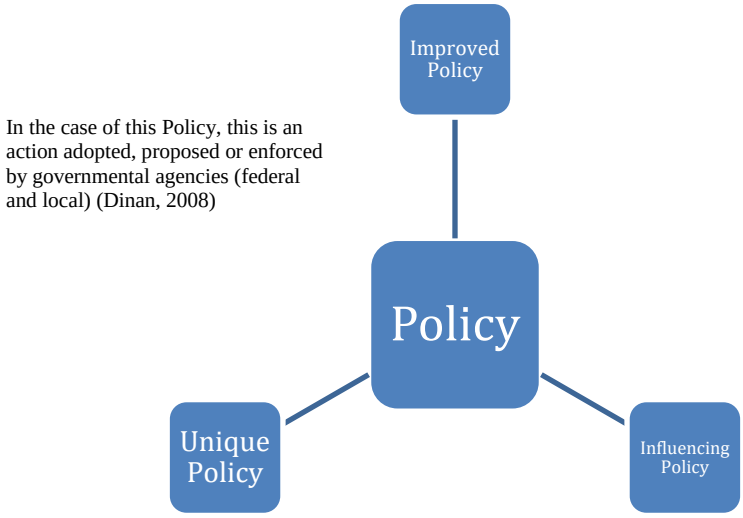


Figure 3. Categories to themes using both selective coding and interpretation



With the research questions in mind and using interpretation from the established properties of the categories, I found myself able to combine a few of the categories. Using the similarities and differences, the categories were places in 3 groups. From there the theme was on the similarities and the themes definitions were based established definitions from Chapter 1 and 2. For example, the theme in Figure 2 is "influence," one of the categories that was able to go into this theme was "negotiations with stakeholders" and based on its properties, it includes "… bargaining" and based on the definition of influence from this study, this category was subsequently placed in this theme.

As one researcher reviewing all the transcripts, the theme development process was complicated because I assumed that I needed to have major differences between all the groups, but when they were very consistent, this made it difficult to form subthemes. When subthemes were formed, they were then eliminated because they were then

reduced to a single overarching theme again. Also, considering that all the groups are so intertwined, it was difficult to interpret the findings individually or per group.

Results

All three research questions in general asked, "What effect do stakeholders have in influencing stormwater management policies related to extreme rainfall events?" The results will show how the groups use their role within their respective authority, determine how to obtain influence and the resulting challenges. The results will also explore how sustainability benefits the stakeholders. In addition, the problem that was proposed in chapter 1 and the purpose were explored in this section. Finally, the results section will review the title of the dissertation which is the "The effects that stakeholders have on shaping public policy in stormwater management."

Per Table 10 there were about eleven categories that were identified during the review of the transcripts, regardless of how small a category was mentioned, it will still be analyze as there may be some new information gained from category and to obtain saturation. As mentioned in the data analysis section, during the interpretation and coding process, all the transcripts were compared and contrasted in order to find themes and categories, as a result this section was organized using theme development, in order to best show the emergence of the themes .

Theme 1: Sustainability

All the stakeholders were able to identify the benefits of this theme and most said they would design to the extreme rainfall event, even though it is not feasible and more of a gray infrastructure issue. However, if there were no policy requirements to install

BMPs, most the stakeholders agreed and said they'd be "surprised" if most developers installed BMPs. The internal stakeholders identified that there would be a large cost associated with these sustainable installations that may drive minority firms to not be able to complete a project, and the cost would fall to the consumer to pay for these increased regulations regardless. However, there are other factors that push sustainability besides the requirements which they all agree was water quality, them being aesthetically pleasing and DOEE programs.

Category: Extreme Rainfall Event Considerations. As mentioned in Table 11, extreme rainfall event considerations is basically when the stakeholder mentioned or considered stormwater management for the extreme rainfall event. At times it was not mentioned in terms of stormwater management, but more so for feasibility or if they exist. Regardless, each participant was asked about their contributions to the extreme rainfall event and how they While only I-RED-SB#2 mostly answered the question in terms of policy by stating:

> "… either your saying that because of the increase in the requirements, DC housing gets more expensive because people have higher prices to pay because developers are trying to compensate for the added cost, or construction costs become more expensive. I think generally because we're talking about a district agency, DOEE with their stormwater management requirements, what would be necessary in, and this is where this whole our influencing of policy comes in with a DCBIA as well, the partnership. Is telling them, have you thought about the influence on, for example, another one of you goal, which is affordable housing in

> the district if you want you to do something like that. So, it doesn't necessarily mean we don't do stormwater water but maybe it says you loosen up certain requirements on the affordability requirement of development so that developers can actually still build. So that's how all these things kind of tie into each other…"

On the other hand, most of the participants answered the question in terms of how it would impact their ability to keep developing the city, the feasibility and basically how this endeavor would deplete resources without much impact. For example, the technical team member I-TM#7 stated:

> "I would say there's gonna be pushback for a system that's six times larger. Particularly in areas [inaudible 00:25:35] space constriction, which is of course in Downtown you really have that…" and followed that up by stating that the installation of these systems is "It's just gonna come down to money, and feasibility, and getting creative about it."

The technical internal member felt as if the BMPs that are installed to the extreme storm event would be "nominal" and other external stakeholders felt as if it was not needed due to other methods currently in place such as the city's storm conveyance system. EX-9-10 stated:

> "When we get these huge storms, they'll help a little bit, but they're not gonna reduce huge flooding issues or other problems created by these massive storm events that we've been getting. So, yeah, there's other things that need to be looked at to help address those things. I don't know how far you want me to go on

> that, but ... I think that a lot of big storm events that we've been having aren't really a BMP issue, it's really a gray infrastructure issue…"
>
> "Yeah, we're seeing those storms all the time now. So I think we have a gray infrastructure problem in addition to the BMPs that needs to be looked at."

Another factor to be considered by the technical internal stakeholder was that the DOEE may already have some considerations for an extreme storm by requiring the new developments to have green spaces, known of GAR. For example, I-TM#6 stated:

> "… by at least incorporating green space, you're affecting your runoff coefficient."

Later a developer discussed how the stormwater requirements may already be dealt with when the stormwater management systems are working in tandem to other DC Building codes. According to I-RED-SB#2:

> "… I actually think they are pretty effective in mitigating that, but I say that with this caveat, I think they are effective in tandem with plumbing requirements for buildings, general plumbing, international code plumbing requirements for building, so it's hard to talk about. If you asked me in a vacuum…"

The impact to the potential increase in the cost of development was an issue that was brought up on several occasions with different stakeholders on the internal side, while the external stakeholders of a higher position were looking into how to make it possible. The internal developers discussed how the cost of the higher development would be passed on and may affect the DC affordable housing program or they would ask for DC agencies to loosen up on this. Per I-RED#9:

> "This is because the added costs associated with increased stormwater management regulations increased stormwater management relations must be passed on to the end user, home buyer, renter, office tenant, etc. The developer can't simply absorb it."

Another thing that was agreed by both internal and external stakeholders was that issue of the extreme event is more of a gray infrastructure or city conveyance issue, so this would end up costing the city a lot of money if there was an increased requirement to the extreme storm event. Per EX-5-7:

> "certainly because a pretty colossal volume of water in order to treat and the district is an ultra-urban environment."

And EX-9-10 discussed how much effort would need to go into a new policy like this:

> "… so if we required everyone to do a 100 year detention, I think that would be a massive change, and we'd have to look at if that's really something that's implementable. And it would be very political, and we'd engage the development community, everyone else to see if that's something that doable before we would do it."

Overall, all the stakeholders agreed that having stormwater management requirements to the extreme rainfall event would certainly slow down development. EX-5-7 stated:

> "I would be surprised if the rate of development would continue. And I don't think that's feasible for us to meet that kind of design standard."

Category: Stormwater Management. The participants were all asked about their contribution to stormwater management in different ways. This was the fourth highest

coded category, (this category was about 10.8% of all the transcripts) and this was heavily due to my interpretation of stormwater management and its benefits to stormwater management. The views on stormwater management as a sustainability item were mixed and most of the stakeholders would be surprised if stormwater management facilities would be installed at the same rate as development if there were no requirements. Like I-RED-SB#2 stated:

> "I think you'd keep installing a version of them. It would be much more muted probably because I just think of the practice of trying to make things affordable. I think in reality people would take the opportunity not to be as extensive, but nonetheless, I think still you would have some minimum BMP structure, sorry not BMP structure, but some minimum green infrastructural strategy and I think even your engineers would want you to do just out of the fact that they don't want to be called back about leaking stuff and issues with construction. So, I'd still think you'd do a version of it."

However, they all agreed that there are benefits of the systems which includes improved water quality, increased property value and they are aesthetically pleasing.

Like EX-8-7 stated:

> "I would say that the benefits of green infrastructure, outside of the context of complying with the regulatory requirement, the benefit of this infrastructure could be cleaning up local waterways by reducing pollution that's carried by stormwater runoff, that's like the main objective that we're going for."

And then EX-9-10:

"I mean the benefit's always initiatives that improve the quality of our waters…" A few that understood the BMP systems thought that the BMPs as installed are indeed effective at the goal of reducing discharge to the Anacostia but needs long term maintenance to really work. Like EX-9-10 stated:

> "Well it all depends on how well it's maintained, and that's something we need to work on as a city. Some areas are being maintained better than others, and we've got many different agencies that have various responsibilities. You know, that's definitely an area for improvement for us I think is on long term maintenance, make sure that things continue to function well. There definitely BMPs that are installed now that worked really well on day one, but aren't being adequately maintained."

And I-TM#6 said:

> "They are effective in that they perform as designed to retain stormwater or to treat stormwater. So I think they are 85% or better effective when they are first installed, and then they are effectiveness can maybe sometimes be diminished over time if they're not fully maintained."

Most of the internal developers said that they would likely still install the BMP systems to "do the right thing" while another expounded and said they'd install a more affordable BMP instead.

Category: Sustainable Policies. About 6.8% of the total codes from all the transcripts fell under the category of sustainable policy. The stakeholders discussed the sustainable policies in terms of how a regulation or policy is passed, since they are

unilateral, this makes it easier for certain stakeholders to handle it. However, I-RED#9 stated:

> "… I believe that when more regulations and/or fees are imposed unilaterally (without respect to neighborhood economic conditions, regardless of the intent, the burden as a percentage is greater towards those in a lower socioeconomic class"

The stakeholders also discussed how the burden for these policies, new and old would end up falling onto the consumer for a few reasons since they "can't simply absorb it," the cost of development. However, the positive of the stormwater management regulations, is that it is under interpretation and this allows for innovative and alternate methods for compliance even after there was a shift in the standards before 2013 that were previously "lower quality," per EX-5-7:

> "…so, in 2013 we had a shift in our design criteria. We went from lower quality standard where we were trying to treat a 2 year or 15-year storm event, where we treat, filter it, whatever, to a new standard where we actually require the BMPs to retain that volume of water, so it's not detention it's formal retention of 1.7-inch storm."

Then the developers discussed how DOEE is rarely laxed when it comes to stormwater management and may have areas of the city that become more stringent. Additional policies and programs were also put in place to aid with the improvement with the water quality of the Anacostia river and its network, EX-5-7 stated, when asked about interactions with internal stakeholders:

> "…. So, we have a lot of interactions with them...we actually implement a lot of retrofits and other types of stormwater projects internally. For example, the RiverSmart at Home program and the RiverSmart communities…"

Theme 2: Influence

During the conversations with the stakeholders, most of the stakeholders discussed their influence and the influence that they felt other stakeholders had. All of the stakeholders were even asked to rank their level of influence over policy on a level from one to ten. Most were able to identify how influence is obtained, by being a part of an organization, or when they cannot have any form of influence at all from a lack of understanding. However, everyone agreed on one thing, that is that they do not have any influence on the federal regulations and if they want to build/develop buildings in DC, they need to comply.

Category: Use of Role to Influence. Use of role to influence, was the largest discussed category; this category was discussed over 18.9% of the total transcripts. All the participants discussed how they use their job, their role and position to aid in influencing policy. Like during the years, EX-8-7 role evolved and EX-8-7 described this change:

> "Over time, my role has changed and now I'm much more heavily shaping the policies."

One of the first things this stakeholder did in their new role was.

> "… develop the stormwater database and as part of that project…"

A few stakeholders both internal and external use their role to advocate, the external may advocate with the EPA on behalf of the city and the mayor's office while the internal stakeholder will advocate with DOEE and maybe EPA on behalf of the city developers. So, I-TM#8 stated:

> "We are sort of a facilitator between the government, and in this instance it's the D.C. Department Of Energy and Environment and sometimes the U.S. Environmental Protection Agency and the industries that the developers or the civil engineers."

While EX-9-10 stated:

> "Well we negotiate with EPA, who dictate a lot of our requirements."

In working in many projects in DC, the policymaker's role is to:

> "… help allocate funds to all kinds of different folks and groups. And you know, hundreds and thousands of individual projects over the last ten years."

Most of the stakeholders hold influence in their role by being able to bring people with the needed skills to the table (team members) to represent their interest and have the environmental agency understand their points of view and vice versa. I-TM#7 said:

> "Well it kind of depends on the charge that's given to you. In other words, for the Maryland Green Building Task ... You tend to try to dissect the problem into constituent pieces and bring a kind of reasonable level of expertise and understanding to it. So, the best one, and it's because you were looking at a very specific set of standards, was at the ... cause I sat in even though I wasn't an appointee."

Both the internal and external stakeholders in their respects can be seen as interpreters of the manual which may affect how they implement the current stormwater management regulations/ standards. EX-8-7 saw themselves as an interpreter:

> "… I knew more about the nuances within those regulations. So, whenever there was a question about how we should interpret the regulations I became the person who got looped in to weigh in on those issues…. And so, over time I've shifted from just implementing the policies to actually deciding what types of policies make sense and thinking about how our policies are lacking or could be improved in order to get better outcomes for the district. So, now my main focus is managing the stormwater credit trading program."

All of the stakeholders can use their roles to identify issues, however the external stakeholders can determine the credibility of outside concerns. EX-5-6 stated:

> "I would say that they're pretty influential. Depending on what it is and how credible the comment is….
>
> … I mean, there were, when I was going through the stormwater fee discount program rule making and we would get comments, public comments, made sense and we agreed with them or we understood where they were coming from and so that we could then alter the regulations to kind of accommodate that. And we did. But if it was something out of left field and we didn't agree with it or it had nothing to do with is, which happened a lot, or it was just something that was too difficult to implement, or not too difficult, too, there's just a variety of times when we wouldn't be able to take a public comment into. But we definitely, I know that

> for the regulations I've worked on, we've always put a lot of emphasis on our public comment period and incorporating feedback and if we can't incorporate the feedback, we have a justification for it…"

Lastly, the job of the internal stakeholders will be to help the external stakeholders achieve the bigger picture, which is to improve the quality of water, this allows for more sustainable designs, this role allows for more influence in implementing as well.

Category: Lack of Influence. The lack of influence category is about 11.0% of the total transcribed interviews. Within this category, the stakeholders identified many challenges to their respective lack of influence. One real estate developer, I-RED#20, discussed lack of information or education as a reason for a lack of influence, stating:

> "… they are not organized and informed enough to impact policy."

Another stakeholder, I-RED#21-A, cited the reason for this lack of information as a result of being a minority firm and not being a part of any organizations/associations, seems to cause someone to be even more of outsider in the development community.

> "On the general contracting side and then on the subcontracting side I mean still, the owners of the business are still kind of very conservative, Republican white guys, but their staff tend to be majority Latino. So, I just don't find that I add a ton of value there. In terms of relationships."

Then a lack of community as another reason, since the stakeholders are not involved in the process of challenging these newer regulations, this should cause them to rely on others, but that is difficult. I-RED#21-A stated:

> "I don't really, truly understand the purpose of the policies, but I recognize that they need to be complied with, so I look to my Civil Engineer to design systems…"

Then DOEE, EX-8-7, identified their lack of influence as not having a say as to where the green infrastructure systems can be installed.

> "For the most part, we don't get to decide where a regulated project occurs Right? When a project opts to comply offsite and wants to generate credits, we have a little bit more sway there, because we can help to incentivize credit certification from priority areas and that kind of helps to keep doing (green) infrastructure of BMP's in those areas. Even if they're not undergoing a regulative activity…. Other than that, it's up to the developers to decide where BMP's get built."

Also, DOEE, per EX-9-10, had to accept the 2013 MS4 permit requirement by the EPA.

> "… honestly, I don't think we would not have got the regulations passed, cause it's such a huge increase in burden for the reg development community. Plus, there was the fact that we had already accepted them in our MS4 permit for EPA issues."

However, many people on the development side, like I-RED#9, felt as if DC agencies can just impose regulations without any concern of the public input.

> "… DC Water is not a publicly regulated utility. There is a major problem because they can raise rates, impose new fees (like the new domestic tap fees) without regulation or restriction for the public of governing body."

One external stakeholder stated that for anyone to get a building permit, they must comply. All of this leaves the development community unhappy since the policies are now more stringent and costlier according to the external developer than before 2013. I-RED-SB#1 stated:

> "And I would say, while push back may have been a significant portion of what we were doing, there is actually a fairly nuanced set of analysis and reaction we were trying to come up with. Because, knowing that the retention standard had been set, which was pretty frustrating. Because we felt like there had really not been sufficient study done at the time for the cost implications, and the implications to design constraints that might come into play. For example, there's a real tension on urban projects for how the roof space is used on a building."

While DOEE's overall goal is to reduce the runoff to the river, developers stated there are no leniencies based on location. This leaves the development community in a place where they feel frustrated because while they may have some say with the local regulations, there seems to an inability to communicate with the EPA, federal level, on policy formation. I-RED-SB#1 stated:

> "At the federal level, would say that from a personal and the company level, I feel almost no ability to impact policy. And at the industry level, we have attempted, in the past, to have our voices be heard by the EPA when they're setting policy in the various ways. And my impression has been that there is extremely little influence, or at least very little listening that goes on, and not much of a feedback loop and interaction with federal regulators when it comes to different policies."

This lack leads them to believe their concerns are not heard nor are they being met.

Category: Use of Status to Influence. The category, use of status to influence, was mentioned about 11.0% of the entire interviews. There seems to be variety of ways that each stakeholder can influence policy using their status. From a few internal stakeholders, one must have some sort of standing to have influence. Like TM#7 stated:

> "So, it's the first I'm a leader in green building. And then you get ... especially when you're an appointee, you have to have some standing in the profession."

This status can be gained by being friendly with local policymakers and officials, being on boards of organizations and a part of councils, as paraphrased by I-RED#21-A. These people gain a seat at the table due to their knowledge. Another stakeholder, I-RED-SB#2, said that having this influence does not depend on the size of the company but more so on the nature of projects and types.

> "No, I'm not so sure I'd say it's the size of the firm that counts. I think it's the nature of your projects, size being one factor, but also type of projects, where they are, what are the stakeholders involved, that allows you to influence a lot of policy by simply being in the right kind of project with the right kind of argument to make based on your experience."

DOEE as an organization uses their status to push through regulations that may not have been approved. While a larger company or real estate developers use their status to fight the regulations. Larger organizations may have more influence because they speak for more people and do more to aid the community, then the smaller firms. I-RED-SB#1 stated:

> "…And then the step beyond that, we can be part of an industry association, which we are very active within the DC Building Association, we're also active in Apartment Office Building Owners Association. Once you then have a collection of companies, the people who are the leadership within those groups can say, "We have 300 companies who are members of our group, and we represent the overall industry." And then they can go meet on our behalf, or often I go, or have gone in the past as members of those groups, and said to a policy maker, "We speak for 300 companies who represent virtually all of the development that is occurring right now in a particular region, or neighborhood, or city."

However, the smaller firms can use their status depending on the project they are working on to gain influence. Overall nearly all the developers mentioned a group called DCBIA that aids in obtaining the status to influence.

Category: Obtaining Influence. The obtaining influence category was mentioned 8.3% of all the interviews. The main thing that can bring about influence is being a part of an organization. Being a part of a larger organization brings money and status. Being a part of a larger organization or association can also bring a larger backing, as stated by I-TM#8:

> "Most of the good projects are being led by the mainstream firms, the larger firms."

During the interviews, it was constantly suggested that the method to obtain influence was to have meetings and open lines of communications, because when both DOEE and internal stakeholders did without those methods on separate occasions, the projects failed.

Then the experts in the field or the person that has become the expert that person has obtained influence because of the intimacy with the knowledge according to I-TM#6:

> "… engineers and scientists determined that was actually detrimental to the environment. And the policy change took some time, but the engineers and technicians and scientists influenced that decision because they say, you know, it's best to capture run off where it, at the source rather than collect it and put it in one big facility and then manage it at one location. Calculate what it [inaudible 00:06:36] and then it mimics the environment…"

Also, being a part of associations allows the developers and team members to be the first to know about a new policy as a result, they can influence it. According to I-RED-SB#2:

> "… it's a symbiotic relationship. If you're in the building industry, you know when new policies are coming out of the council, so they advocate [inaudible 00:09:43] putting them forward, they tend to have worked into them generally just open public engagement efforts to try and to get people in the policies themselves. But beyond that the discussions, the connections the DCBIA has in terms of getting to the kind of meat of all those policies and trying to pursue and understanding them and getting us information that is a little bit beneath the [inaudible 00:10:11] of what the policy is and then on our part our involvement in those policies give us a general expertise as to what those policies mean in terms of the building industry in this district. So it's symbiotic in the terms that we'd probably have a pretty clear understanding of what those mean on many levels for development in the district as well as they have not only us as a resource, but

> many other resources that they bring into conversations that you have that also help us understand even deeper what we ... the kind of industry that we work in. It's very symbiotic."

Then at the end, meeting new people that may have more skills and being around people that are knowledgeable in their skill set can also aid in obtaining influence, I-RED#21-A states:

> "… You know I've done it over the year, an old Italian guy I used to work with at Clark who like kind of preached to me that you should never eat alone. And he had some book he read called Never Eat Alone and I kind of set that on as my mantra and so whether its breakfast, coffee, lunch, or happy hour. Typically, not dinner, I try to do like and least four to five meet-ups per-week, with people that I either kind of know or people that I've heard of. I just set them up, and I just talk to folks and just tell them what I'm interested in and listen to what they're interested in and over time it just creates like a rapport."

Category: Negotiations with Stakeholder. This category, negotiations with stakeholder, was discussed about 3.7% of the entire interviews. This category was very simple in that the stakeholders all agreed that the external stakeholders understand that the internal stakeholders want to have their concerns heard and eased. I-TM#8 discussed their experience in negotiations:

> "No. They are very open, particularly to director Wells, Tommy Wells is very open to listening to the industry experts and sitting down with the industry experts and government experts and talking through policies and making adjustments."

The whole goal in negotiating involved bargaining, educating and compromising with the other parties. Within the compromises, DOEE does not frame the negotiations as winners or losers, because during the compromise, everyone benefits. EX-5-7 describes the compromises:

> "… there certainly are compromise, give-and-take on both sides. For example, [inaudible 00:28:00] stormwater management plan was needed or just the speed at which it was reviewed or the speed at which is was inspected. Compromises in terms of the design standard...I wouldn't say compromise in the design standard, but it's compromise in what the review process would be and the extent of what practices would be needed to put in place and whether or not a full stormwater management plan is needed or not, or whether it was just erosion management control, or...But there are typically conflicts for internal stakeholders in light of collaboration and exchange of ideas.

Theme 3: Policies

Policies were discussed to a smaller degree and within this, what is policy and how the stormwater management manual is a regulation was derived from the clean water act. The title of this paper is "The effects that stakeholders have on shaping public policy in stormwater management," as a result formation of policy needed to be examined.

Category: Influencing Policy. This category, influencing policy, was mentioned 6.2% of all the transcribed interview. Many of the stakeholders, like I-TM#8, in this category identified meetings and discussions where the stakeholders could bring examples and educate, they external stakeholders about their concerns.

> "We actually bring parties to the table to talk about the policies and actually in many instances review draft regulations that provide feedback to the government so that they make adjustments or even educate them on unintended consequences and other things they may not be necessarily aware of when they're implementing some policy."

To influence policy, there needs to be an open line of communication between the different stakeholders, I-RED-SB#1 stated:

> "… I think just if there were to be a proposal like we talked about, I think we have the types of industry associations and the knowledge base, and also hopefully open lines of communication."

It seems as if influencing policy comes in a form of a hierarchy that is unfamiliar which is most important. DOEE is attempting to fulfill the needs of the city by representing against EPA.

The developers are attempting to fulfill the needs of their tenants and prospective buyers. Finally, the civil engineers are attempting to fulfill the needs of their clients, which are usually the developer. All these needs being satisfied requires meeting each stakeholder's needs and listening to comments from each. Everyone's needs being satisfied leads to policy being influenced, Per I-TM#7:

> "… so, he brought together internal stakeholders and a lot of external stakeholders. And because you really need ... When you're a government agency making policy, you need not only to have people on board from a political

> perspective, but you need that expertise that they have, and you don't. They have expertise. They're the ones designing these things, so you need designers."

DOEE and DC agencies allows the stakeholder the ability to influence policy by allowing them to submit revision to their codes before they are published. I-RED-SB#2 discussed sharing comments with DC agencies concerning new regulations.

> "… DCMR is their DC regulations for construction code. So, they just issued their errata or their basically language for their revisions for public comment. We've already issued them our first round of responses that was actually ironically and looking at the plumbing code section of it, but we had a full team that was looking at each one of the different sections of the building code. And of course, that includes the storm water management language that they had in there, which to be honest with you, they didn't really have much to say in this first round some politics about whether or not the issue that any changes to that, but that's neither here nor there."

Category: Improved Policy. This category, improved policy, was mentioned by the stakeholders as a code about 4.8% of the entire interviews. These are basically policies that aided in improving economic factors on a national scale. While this category could have been placed in sustainable policies, it was placed here since it was focused more on direct policies over sustainability. The main driver for all the different sustainable or improved policies regarding stormwater management is the clean water act from the 1970s according to EX-8-7.

> "The Clean Water Act is a huge driver of what we're doing as a municipal government…"
>
> "Because the Clean Water Act created ... And as its been implemented over time, created this permitting process for municipalities who have discharges from the sewer systems. In order for us to have a discharge of stormwater from our MS4 sewer system we need this MS4 (permit) from the EPA."

From that other policies were innovated and a focus on environmentally sensitive design occurred. One stakeholder, I-TM#8, mentioned how policies are necessary because no one would be sustainable if they were not around.

> "I don't think we could be an environment where there are no policies, so they have great benefits. We have a challenge which is why the regulations were put in place and the requirements were put in place to begin with. Whether they're overly burdensome or overly ambitious, that's where I'm trying to get the government to temper some of the expectations and realize the cost to the project. These fixes are necessary, it's just that we need to figure out how we do them in a way that is not overly burdensome and doesn't hinder development."

Overall the progressive policies seem effective and meeting with stakeholders can create progressive policies. EX-9-10 described:

> "Yeah, we have obligations to reduce pollution in the city. And we look at regulation and initiatives that help do that. And we engage with stakeholders and other professionals in the field and try to develop progressive policies to try to meet those goals."

However, the biggest positive of these improved policies is that they create jobs, like the 2013 manual created a new Division at DOEE according to EX-8-7.

> "… I am located in the DOEE's regulatory review division. A couple of years ago that division didn't exist. We had a stormwater management division and watershed protection division. Different elements of those were combined into what is now regulatory review division…"

Category: Unique Policy. This category, unique policy, was mentioned about 3.3% of the entire interviews. Within this category, these policies that were mentioned by the stakeholders were only unique to Washington, DC. For example, many real estate laws are not affected by federal policy, mostly local, per I-RED-SB#1.

> "And there aren't that many areas of real estate development law that are impacted by federal policies. The vast majority of policies and procedures that relate to how you develop property are local. And are determined at the state…"

However, for stormwater management and unlike other states, DC gets its permits directly from the EPA. EX-8-7 stated:

> "Now, most municipalities get their MS4 permits from their states. The district gets ours from EPA, because we don't have a state government that has authority over it."

In DC, the regulations are influenced by policy and the DC stormwater management manual is a regulation. In these polices, there are bigger pictures that are issued out unilaterally. I-TM#6 states:

> "… we identify certain weaknesses, because the policy is driven by, not just, I mean technical is a big part of it, but it's driven looking at the big picture of what they want to achieve. I mean that is set by policy decision makers, like, you know, government."

Finally, to help or to even DC out, DC has organizations that help smaller businesses in real estate that may not have much impact. I-TM#8 states:

> "… The District of Columbia has an office called the D.C. Department of Small and Local Business Development, also known as DSLBD, that works with the smaller developers who have to be Certified Business Enterprises, called a CBE, works to get them involved in many of these jobs. So, a percentage of the work that is done in the District of Columbia has to be done by some of these smaller businesses, these CBEs. While they are involved in many of these developments, it's very different for a very small minority firm."

Summary of Lessons Learned

An issue that appeared in the themes was that there are many challenges with both the resource dependency and power and politics. Most all the stakeholders agree that designing to the extreme rainfall event is not necessary even though all the internal-developer stakeholders would still do it, if they had to. At the same time of saying that designing to the extreme event was not needed, they all also agreed that there is indeed a stormwater management issue and that it is needed for water quality improvement. The major negative is that the burden if the developers had to design to these more extreme

events would be that the burden would fall on buyers, market renters and the lower class (affordable housing).

There were several categories that I noticed which were basically using the influence, getting influence or have no influence at all. Some people use their influence in order to advocate, prioritize policies, develop in higher income areas, bringing examples to the table during meetings and being innovative. The different groups get influence by being a part of organizations, having a larger backing, and having open lines of communication. Then no influence is usually from a lack of information, not being a part of larger development community, and being left unhappy because there seems to be a wall between affecting federal policy.

With actual policy and where is comes from, most of the stakeholders talk about how the progressive policies are indeed effective and then most explained what the difference between law and policy is. The large positive of a policy is that a policy can change and does not have to be followed exactly, which can add room for interpretation, as mentioned for using role to influence.

Research Question 1. What effect do real estate developers (internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Theme 1: Sustainability**.** From the aspect of the extreme rainfall event, most agreed that this method was not needed, and one developer stated that compliance with other building codes seems to aid in the detaining the extreme storm event. Then as far a stormwater management, most of the developers agree that it is indeed needed, since

there is indeed an issue. However, if there was no stormwater management requirement, that they would instead try for a least expensive option. Finally, the burden of the current stormwater management policies and the hypothetic extreme stormwater management policies as far as cost will fall on the consumer, post development. As a result, developers discussed either alternate methods of compliance of negotiating with DC agencies about DC Affordable housing program or solar power.

Theme 2: Influence. The developers effect policy by getting a seat at the table, their existing role provides them with credibility and the ability to develop mostly in higher income areas to make a profit. Then the status of the developer which can come from the size of their company, nature of their projects or organizations that they are a part of can increase status for more influence. One organization that nearly all the developers named was DCBIA (DC Building Industry Association) which advocates on behalf of the development community. This aids them in having the conversations with the policymakers and respond to the needs of their tenants.

The lack of influence that was determined by the developers were there is too much of a lack of community and information to really effect policy. The developers, depending on their status, can affect local policy, but when it comes to federal policy, their concerns fall on death ears. One developer discussed how being an outsider in the development community may affect their ability to influence policy.

Theme 3: Policy**.** Overall the polices are unilateral in DC, which was a reason one developer stated that they'd keep developing in DC regardless of increased regulations. The progressive policies seem effective. Also, the developer stated that most

of the real estate laws in DC are local, so it is easier to reach out to council members about issues.

Research Question 2. What effect does the civil engineers (internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

This category does not only include civil engineers but also team members that aid in the development of the project, as defined in the operational definition in Chapter 1.

Theme 1: Sustainability. The internal team members identified space constraints, that it was more of a gray infrastructure issue, the fact that it is handled by GAR as reasons there was no need to switching to detaining the extreme flood event. All the team members identified that there is indeed a need for stormwater management due to water quality. But most of the team members stated that most of the projects in DC would not have any sort of stormwater management facilities if there were no policies.

Theme 2: Influence. Overall the internal development team effects stormwater management policy by supporting the needs of the client. The team members act as the advocates for the developers, interpreters of the manual and use their roles to identify issues with the manual. In the identification of these issues, the team members are pointing out issues with the manual and possibly interpret it a way that DOEE had not realized, while still aiding DOEE in getting their bigger picture, which is compliance with the EPA's MS4 permit to meet the Clean Water act requirements. While influencing the polices the team members will bring examples to the table and act as a middle ground for the DOEE and the developers.

Overall the lack of influence comes as a result of the development community being unhappy with DOEE due to the it seeming as if they can implement policies without regard and overall inconsistencies. The civil engineer of the group stated that the increased regulations seem as if they are punishing the current developers for the sins of the past, given that the developers must add stormwater management regardless of the condition of the site and not considering the change in runoff, that also improves site conditions.

Research Question 3. What effect do policymakers (external stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

Theme 1: Sustainability. Most of the external stakeholders interviewed agreed that designing for the extreme rainfall event and two also said that it was more of a gray infrastructure issue. If there were no policy requirements, most the external said that the benefit to install these systems would be water quality, they are aesthetically pleasing, increase property value. DOEE also has additional programs in place to aid with stormwater management and to aid with improving the Anacostia watershed.

Theme 2: Influence. DOEE can affect policy by acting as an interpreter of the manual, encouraging feedback from credible sources and engaging stakeholders in their programs. Because of the status of DOEE they can prioritize projects, especially those that benefit the Anacostia river. DOEE tries to evaluate the needs of everyone and meet them as required while attempting open lines of communication. At the same time, DOEE also has a lack of influence. DOEE was required by EPA to approve the 2013 requirements which were more stringent then the requirements they were initially

proposing. DOEE also has no say as to where a BMP is installed on private property.

Theme 3: Policy**.** According to DOEE, a regulation is based on a policy. The policy that all the stormwater management is based on is the clean water act. Regulations have more sway for interpretation, which is why they are open to receiving feedback if the goal is met to meet EPA standards.

Summary

This chapter analyzed and articulated the results of the study. The setting, demographics, data collection, the transcription of interviews from the audio recordings and a thorough analysis of the interview transcripts was completed using hand-coding. The data analysis started by using key words from the research questions to highlight information that gave me an essence of that word, then coding, categorizing and placing those categories in the themes based on interpretation.

As stated in previous chapters, the theoretical models of "resource dependency theory" and "power and politics theory" helped in exploring the sustainability (stormwater management) portion of the study and the influence over policy, respectively. This combined with the three research questions helped to explain the effect that stakeholders have in influencing stormwater management policies related to extreme rainfall events.

Overall for Research Question 1 developer they affect policy by investing in the city and being able to educate themselves on the polices, sometimes by being a part of organizations. Most of the developers would still install stormwater management systems

if they were not required and they would install the extreme system if needed, depending on the cost, however the developers would pass on the increased cost to the consumer.

Then for Research Question 2, this was expanded and included the team members, they affect policy by acting as the advocate on behalf of the developer since most likely the developer is their client. The team member will facilitate meetings with DOEE and developer where they bring examples to the table, educate DOEE on the implications of the policies and change method of implementation of policy while still complying with the policy. Most of the team members would be surprised if developers would still do business in DC if they were required to design to the extreme storm event, however it was identified that the designing to this event would be nominal since this event is handled by the GAR and it should be more of a gray infrastructure issue.

For Research Question 3, the external stakeholders, they effect policy by advocating against the EPA on behalf of the city for stormwater management regulations. The regulations that they do accept does create jobs and have a great impact on the environment. DOEE also has alternate programs to supplement and aid in the improving the water quality of the Anacostia Watershed in DC. DOEE does agree that it may not be necessary to design to the extreme storm event since that is more of a gray infrastructure issue, however if it was a policy, the stakeholders would have to comply given that it is a federal requirement.

In the following chapter, a discussion of purpose of the study and implications of the finding are organized within the theoretical framework. Recommendations for further research, limitations of current study and implications for social change will be provided.

Chapter 5: Discussion, Conclusions and Recommendations

Introduction

The purpose of this qualitative study was to determine the effect that stakeholders have in influencing stormwater management policy related to extreme rainfall events. I designed the research questions around the themes of sustainability, influence, and policy. This study was conducted using the phone interviews of 12 policymakers, developers, and development team members in Washington, DC. Conducting these interviews via phone interviews was most appropriate considering the busy schedules of the participants because it allowed me to gather their first-hand, open-ended responses.

The results of this study indicated that the developer affects policy by investing in the city and being able to educate themselves on the policies, sometimes by being a part of organizations. The civil engineers, which I expanded to include the entire development team, affect policy by being able to advocate on behalf of the developer. External stakeholders affect policy by advocating against the EPA on behalf of the city for stormwater management regulations. All of the stakeholders agreed that designing to the extreme rainfall event with green infrastructure is unnecessary, but the developers stated that they would do so if required.

Interpretation of Findings

In this section, I will present a comparative discussion of the findings of the study along with the literature reviewed in the second chapter. Most of the literature that I reviewed in the second chapter focused on countries outside of the United States and states/cities other than Washington, DC. The following research questions were based on

my theoretical framework of the resource dependency theory and the power and politics organization theory:

> Research Question 1: What effect do real estate developers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?
>
> Research Question 2: What effect do civil engineers (i.e., internal stakeholders) have in influencing stormwater management policies related to extreme rainfall events?
>
> RQ3: What effect do policymakers (i.e., external stakeholders) have in influencing stormwater management policies related to extreme rainfall events?

I expanded Research Question 2 was expanded to include the development team members due to lack of responses from civil engineers.

The stakeholders in this study were defined as someone that is "driven by their own interests and goals are participants in a firm, and thus depending on it and whom for its sake the firm is depending" (Mitchell et al., 1997, p. 858; Montalto et al., 2013). However, in order for a stakeholder to be a true stakeholder, a risk or stake must be involved as well (Mitchell et al., 1997, p. 857). Each stakeholder that was involved in the study described instances where they gave something up. This thing that they gave up usually provided them with some sort of influence towards an overall goal of achieving sustainability. On a global scale, in order to have sustainability, it is imperative that there be investing in sustainable development for the future generations . Both internal and external stakeholders identified how they have invested in the city and would continue to

invest, even if the stakes of investing increased, the internal stakeholder stated, “I think developers will continue to do it even though it’s burdensome.” However, these internal developer stakeholders have financial backing, so they can leverage this power (Wang et al., 2014).

Resource Dependency Theory

In this study, I used resource dependency theory to discuss who benefits from sustainability and how the organizations are there in order to serve the individuals within that organizations. This theory gives power to both stakeholders and policymakers (Shafritz et al., 2016). According to Craft, livability (which is a subset of sustainability) is usually determined by the people in a particular area and their personal determination of how pleasant the area is, the availability/affordability of housing in the area, access to fresh foods, transportation, and all naturalistic needs .

According to the developers, building sustainability is indeed needed; however, if there was not a requirement to do so, they would not install the green infrastructure to the same magnitude as they currently are. One developer stated:

> I would say that back when there were no requirements for LEED compliance in DC, the private sector was very proactive in racing each other to be the first to build a LEED building to this level or that level. Or the first lead building of this type of use that reached a certain level. I would say that I’d be surprised if without regulation a high percentage of the stormwater management retention you see today if a large percentage of it would have been built the same way.

This goes along with Montalto et al.'s (2013) sentiment that stakeholders are under-sustainable at their own self-interest.

However, there is a consequence to sustainable development and that is that the developers cannot absorb the increased cost for stormwater management, either if it became required to do so for the extreme event or as it is now "… those costs are generally fixed, no in proportion to an end user's income..." As a result, the burden of the stormwater management policies falls on the consumer post-development. This goes against the research of Belak (2008), who stated that the discounts should not be given to developers as well as the fact that they can leverage power due to their finances (Wang et al., 2014). As a result of increased stormwater management regulations, this affects affordability of housing in the DC area. Affordability of housing is a subset of area being sustainable or livable, as I mentioned above. If the policymakers were to increase the costs/fees in development, this may lead the developers to find alternate methods of compliance for sustainability. Like one internal developer discussed using an alternate method of sustainability to aid:

> So green roof is the first plan of attack. There's also some competing goals for solar. More and more, there are developers interested in exploring the use of solar. And I know there's some technologies that are trying to combine solar and green roof to see if that's possible.

However, most likely these internal stakeholders would attempt to influence sustainable policies by negotiating with the DC agencies on the number of affordable housing units in a building so that they will be able to more easily recoup the cost of the

current and hypothetical increased sustainability regulations . One internal stakeholder stated,

> … telling them, have you thought about the influence on, for example, another one of you goal, which is affordable housing in the district if you want you to do something like that. So, it doesn't necessarily mean we don't do stormwater water but maybe it says you loosen up certain requirements on the affordability requirement of development so that developers can actually still build.

The role of the development team members, as defined above, is to support the developers. According to Wang et al., the technical members are needed to make both the developers and the policymakers feel comfortable about decisions made. While they all feel that there would be no green infrastructure installed if there were no policies, one external stakeholder stated, "I would be surprised if the rate of development would continue. And I don't think that's feasible for us to meet that kind of design standard."

At the same time, all of the stakeholders, both internal and external, felt as if there is a need for these policies based on their experiences. The internal stakeholder team members did not see that there is any need for increased green infrastructure demands because these needs are already met with alternate programs by DOEE. However, if a new requirement for the stormwater regulation was set, it would have to be met in order for the developer to get a building permit (Hoffman et al., 2013; Scavia et al., 2013)

Wheeler and Beatley identified three areas that grew to be more sustainable after increased policy. In DC, the policymakers also agreed that the water quality has also improved as a result of the increased policies. The external stakeholder also identified the

beautifying of space, reduced runoff, and reduced heat island effect as benefits to stormwater management. As a result of these policies, there are also more jobs in the area and there has been an increase in home values. DOEE also has implemented additional policies and stormwater management regulations to aid in their sustainability effort.

> I would say that the benefits of green infrastructure, outside of the context of complying with the regulatory requirement, the benefit of this infrastructure could be cleaning up local waterways by reducing pollution that's carried by stormwater runoff, that's like the main objective that we're going for.

In Gaviotas, sharing their clean water resulted in the creation of more social equity and new jobs . In 2017, the *Washington Post* discussed how the loss of sustainable programs will lead to less opportunities in an area . Similar to many other cities, the idea of clean water is a topic that will bring all stakeholders on all different levels together equally .

What seemed to be both a negative and a positive to the stakeholders during the study was the idea of new regulations being implemented to detain the extreme rainfall event. All the stakeholders said that this would be a serious issue since a lot of projects in the area have space constraints because they are being built in the downtown area where there are more buildings and less land. One internal real estate developer stated,

> Because we felt like there had really not been sufficient study done at the time for the cost implications, and the implications to design constraints that might come into play. For example, there's a real tension on urban projects for how the roof space is used on a building.

They also said, that if they were to go this hypothetical method, both the internal and external stakeholder would need to separately do some sort of assessment. The internal stakeholders felt they would need to do a financial assessment, the external stakeholders would need to do a feasibility study, and the team members would do both. Therefore, the more limited the scope of interaction that the stakeholder may have, the more likely they end up with a blind spot to activities of sustainable development (Scavia et al., 2013). In Ireland, policies were changed to aid in the 100-year flood event; using risk assessment techniques, they determined where to best put money into the city (Revez et al., 2017).

However, these policies being unilateral would aid in developers on all different levels financially feeling comfortable in doing more sustainable real estate development work. Even though designing to a more extreme event would be a major negative on a smaller development company, since according to the civil engineer, given the deadlines and the money involved in a project with a larger company, it will be easier for them to absorb the costs associated. Another internal team member stated, “Most of the good projects are being led by the mainstream firms, the larger firms…”

Designing to more extreme rainfall events on the green infrastructure will also cost DC water and other DC agencies (i.e., the city and tax payers) more money, since this will lead to the green infrastructure needing to be increased, “That would be, I mean the cost of the developer as well as DC water will have to contain all the [inaudible 00:19:27] and stuff but none of them are designed for 100 years. Not just ..” According to

Bell et al. , larger pipes may also cost a disruption to the public during construction and may cost the city hundreds of millions of dollars.

Power and Politics Theory

In this theory, the ultimate person with power are the stakeholders (Wang et al, 2014). Within the theory it was argued that influence is acquired and maintained not by the person with formal authority, but is a result of ongoing bargaining and then obtained (Shafritz et al, 2016). One of the main things that was brought up by all the stakeholders and was categorized as “using role to influence”, “using status to influence,” “obtaining influence,” and even “influencing policy” was in a way community engagement. According to Wang, Hawkins and Berman, this allows the stakeholders the opportunity to network internally, which influences their view on politics. That way they are always informed and have the ability to stay informed (Scavia, Bidwell, Dietz, & Scavia, 2013). There should be meetings or discussions had in order to engage the public of the cost and benefits of sustainability, especially since taxpayers who bear the cost of sustainability and are therefore also stakeholders. So, making the public informed about the choices in sustainability helps greatly. (Wang, Hawkins, & Berman, 2014)

According to Wang, Hawkins and Berman, the government should always be open about the financial liability of sustainability. This seems to be a point of contention with the internal and external stakeholders. The internal stakeholders feel as if the external stakeholders are blindly creating laws without knowing the financial implications of them, while the external stakeholders admit that the policies are indeed more expensive. The DOEE policymaker admitted that:

> "…a lot of people in the development community were extremely unhappy, but it wasn't really our choice at that point, we had to get it done."

Regardless, DOEE has policies and programs in place were they, themselves, install green infrastructure around the city, which internal stakeholders recognize. Due to this, they are fully aware of the costs associated with the implementation of the facilities. (Wang, Hawkins, & Berman, 2014)

DOEE also encourages feedback by having comment periods whenever they are proposing new regulations. During this time, DOEE would encourage feedback from credible sources and engage stakeholders in their program. As a result of their status, they can prioritize projects as they see fit, and in their case, they prioritize them near the Anacostia River. Also, as a result of the role of the developer and the team members they may be recruited to be the credible sources to aid in influencing policy. All the internal team members that participated in the study have been recruited during their career to participate in a governmental task force.

As mentioned in Chapter 2, the developer holds power and legitimacy as a result of their money and position/status as a developer, this makes them a dominate stakeholder (Janssen, Borgers, & Timmermans, 2014). Their position also allows them to get a seat at the table. During the development of the regulations, development organizations with some influence as a result of their credibility were invited to aid in the development of the manual.

> "…. You tend to try to dissect the problem into constituent pieces and bring a kind of reasonable level of expertise and understanding to it. So, the best one, and

> it's because you were looking at a very specific set of standards, was at the ... cause I sat in even though I wasn't an appointee."

This may also create bias with the external stakeholder since they are well versed in the subject manner . However, the internal stakeholders were provided the manual beforehand and they provided feedback based on their technical expertise. The developers stated that they bring in their team and these team members come as a result of the financial stakeholder because the sustainable practice most likely is very technical causes them to be engaged. (Wang, Hawkins, & Berman, 2014)

According to both internal stakeholder groups, the main reason a developer would buy in a certain area is because of profit. While sustainability will lead to profit, most factors, except transit) of sustainability may come as a result of a newer development . However, one team member stated that the consumer drives the markets and cited the GSA which is a tenant to about 40% of DC buildings drives the development in Washington, DC.

> "…A developer is gonna respond to the market. They're not gonna create a market, they are responders. And they're only just very few who have this. Well if we build something that nobody else has done before, people will come. Very few do that, they're responding more to either a direct request, like say a GSA proposal, or to what they see as the market trend which is not always reality, but it's kind of, in their research, what they believe a prospective tenant would want."

This goes back to the internal stakeholders having their influence. In a 2004 study of the Dutch government when their country's government decided to lax their policies

on retail planning and left those decisions to local governments, where the internal stakeholder would be able to have their say more. Regardless, in this case, the developers were willing to change their viewpoints depending on the opinions of the tenants or retailer who were more persistent (Janssen, Borgers, & Timmermans, 2014; Magness, 2008). With that said, the developers since before the regulations of 2013 would get RFP (Request for Proposals) that would ask for buildings for sustainability from large cliental like the GSA. As a result, this possibly led to developers being more willing to install some kind of green infrastructure on their sites, even if there were no policy requirements at the time. Since the market that they are developing in is asking for sustainability. Prior to the regulations and as a result of the RFPs, there was a competitive nature in the development world of DC, however, due to cost, this has decreased.

All the developers were able to cite that they may be close to a council member or the mayor via different levels, this was for developers big and small, as a result, this aided in them being able to influence local policy. One external was appointed by the mayor in their role and others are involved in city council in some form. One internal team member stated:

> "I mean, I'm on boards of other organizations, like the D.C. Chamber of Commerce, I'm a commissioner for the District of Columbia's Green Building Advisory Council."

And a real estate developer stating,

> "I live in our city where we work, I have a local council member whom I know and have gotten to know because of my work. And so, it allows me to a limited

> but somewhat material degree to be able to send an e-mail or pick up the phone or maybe run into at the grocery store the people who are setting policies. And I think also, we are a local company."

This coincides with Dinan , that as problems arise in a community, it is most likely solved by the private sector and private citizens. However, for federal policy most of the developers said that they had a little more influence, if at all, even when joining forces with their competitors to have a bigger voice. Even though they feel it is to no avail considering the EPA, that created the clean water act that is a law, when they make their policies that DOEE has to put into effect, they (EPA) do not seem to have any sort of community engagement to educate and explain their reasoning.

Both the internal developer (team members) and the external stakeholders stated that their role was to interpret the stormwater management manual. The one civil engineer that participated in the study ranked their effect on policy as a "6 out of 10" because while not able to change policy, the civil engineer can instead recommend alternate and credible methods to meet the regulations.

> "… We can work around it and come up [inaudible 00:04:28], but we can't change the policy. We can change the method of achieving that policy. Like for example stormwater management, we can probably implement a new type of BMP that may not be in their book. We can start that process, having them process a new type of BMP that we know about…"

The civil engineers also can recommend a magnitude of methods that can be used for the regulations to be met that can be cost savings to the client.

Limitations of Study

This qualitative study had some limitations. One limitation of this study was that there was a lack of responses from civil engineers, I was only able to get one civil engineer to participate in the study and two others that were placed in the group were members of the development team. Originally, I assumed that I would be able to use existing relationships with civil engineers to participate in my study, but most of these relationships never followed up. The original quota for this group was at least five civil engineers. However, the data that was received from this group showed much diversity and a broader picture of the contributors to stormwater management policy.

Another limitation was previously addressed in Chapter 3 in an attempt to mitigate it. This was to get rid of the bias as a result of me being the primary research tool in this qualitative study. During the coding process, I would code for four hours at a time and then take a one to two-hour break and then code again for another four hours. It is subjective whether four hours was too long of a period of time or too short in order to break from viewing the study from an internal lens or external, even though I felt detached from the study. (Borman et al, 1986)

During the phone interviews, I was inconsistent with the interview questions. There were times that the participant did not understand the question, most of the time it was the same question, but I did not consistently explain the question to the participants. Also, I would skip questions and I would ask different follow up questions with the participants depending on their previous responses or depending on what I felt like the mood of the participant was.

Recommendations

Given the method in which Washington, DC is governed, it would be interesting to know or see if the results of this study would be transferrable to other dense communities. The different groups in this study all identified that the stormwater management policies in DC are provided by the federal government. Also given that Washington, DC is unique to other cities in the United States, given that it has a single municipal government. However, in other cities in the United States, this is not the case and some of the participants complained that DC is treated as a "guinea pig" for federal policies. So, it would be interesting to know what the effect these groups would have on different cities of similar status (demographics, density, etc.).

In this study, I used a qualitative case study analysis to answer the research questions. Although this method does not provide any conclusive evidence about a phenomenon, they can generate findings for future inquires . Regardless, this study did uncover some findings. One of the findings of this study were the financial implications of designing and constructing for the extreme rainfall event. Currently as the stormwater management facilities are now, all the stakeholders identified that they are a financial burden. However, the burden of the current and hypothetically increased regulations would be passed on to the market or consumer, through rents, leases and cost of their condos. Research could be undertaken to see how the internal and external stakeholders and overall development affects affordable housing policies in DC.

Also, while I was unable to get more input from civil engineers, perhaps if this study was repeated, it would be good to get more input from licensed civil engineers, especially since the DOEE stormwater management guidebook specifically states :

> Each required submittal will bear the seal and signature of the professional engineer licensed to practice in the District who is responsible for that portion of the project.

Since they are directly responsible for a portion, in the future, if possible, they should have more input in a future study. Especially since the one engineer that participated ranked their role in affecting policy a six out of ten.

Implications

Positive Social Change

During this study, I found out the influence that these groups have in relation to the extreme rainfall events is important to social change. Each group contributes in their own way by helping the other groups. In Chapter 1, the implication for social change within this study was that stormwater management helps with flooding and these groups within the study, may have influence over the policies related to these events (Choondassery, 2017; Revez, Cortez-Vazquez, & Flood, 2017; Wheeler & Beatley, 2009). During this study, it became clearer that each group's effect had to do with them working within the best interest of each other and the city. The internal team member's effected policy by acting as an advocate between the internal developer and the external stakeholder; the internal team member can act as a mediator. On the other hand, internal developers and the external stakeholder's effects policy by creating community

engagement, create sustainable neighborhoods and communities and overall have a positive impact on the city. While the internal groups may have minimal say on major stormwater management policies, they do aid in passing smaller stormwater management programs and are able to leverage their finances to influence policy as well as the external stakeholders who effect policy by means of interpretation.

This study was to explore the effect that internal and external stakeholders involved in the influence over stormwater management policies, and in that explored the frustrations and lack of influence of each group, how planning for extreme storm events are not considered or may not be needed, the maturation of influence, and the innovation of policy regarding sustainability in Washington, DC. With that said, the internal stakeholders have stated that they do not feel as if the regulations are clear and that they need to constantly get the manual re-interpreted to them. While one of the external stakeholders discussed how this is what their division was created to do, interpret the manual, and the civil engineers help with that challenge. From this study, it seems as if the team members aid in connecting the real estate developers and the DC agencies during the development of a real estate development project in the city. They set up the meetings and allow for both parties to understand each other. All three groups need each other. This study helps identify those issues with those groups that they did not see as far as communication.

Theoretical Implications

During this paper, the different theories were explored extensively. Within power and politics theory, this discusses that human behavior is not always rational and

identifies the power players. Using this theory, I identified who I believed to have influence, during this study, it became clear that the theory was correct, that these policies are indeed created by humans and that they may not always be completely rational. For example, they are not rational to the internal stakeholder-developer, in that the cost of stormwater management to the internal developer cost way too much money. Both the external and internal stakeholders all admitted to how irrational the policies given the cost, regardless of how effective they are. However, they are all working together regardless to get effective policy. Also, the external stakeholders have created the policies in order to improve our water quality, the internal stakeholders do feel burdened by the cost involved in the implementation of these facilities. Then with resource dependency theory, this theory discusses how an organization, which in this case is the city of DC, needs the exchange of resources (i.e., ideas, intelligence, labor, etc.) to survive. When one group was missing from the meetings, this caused dysfunction and mistrust per the stakeholders and when more groups and different types of stakeholders were invited to attend meetings, the exchange of ideas created more community. In the study, the three groups all worked together and have meetings about how the they can aid the city with sustainability, which reflects this theory. (Shafritz, Ott, & Jan, 2016)

Recommendation for Practice

Per the external stakeholders, permits are issues by the EPA every 5 years to update their stormwater management regulations. In order to alleviate the perceived aggravation from the Internal stakeholder population, invite a representative from the EPA in order to hear and understand the concerns of the internal stakeholder community

in DC. Per the NPDES permit that the EPA issues to the states, issues the permits to the state, but allows that state continued oversight . As a result, the EPA should be more involved in this process when proposing it to the states. There should be meetings or discussions had in order to engage the public of the cost and benefits of sustainability, especially since taxpayers are the ones that bear the cost of sustainability as well (Wang, Hawkins, & Berman, 2014). This may aid in the groups having more of a connection and better exchanging resources in order to better understand the overall goal that resulted from the policy, which is the improving of the water quality.

Conclusion

The primary purpose of this study was to explore how internal and external stakeholders influence stormwater management policies. This whole study was surrounding the 2013 DOEE stormwater management manual that was established in order to improve the water quality coming from Washington, DC to the Anacostia river. Each participant that participated in this study discussed the positives and negatives of that regulation and the overall importance of it. Nearly each participant agreed that without this policy, the development in the city would not have as much green infrastructure as they do now.

This study and well as the results helped to uncover the understanding of each group in the study in a more impactful way. The DOEE advocates with against the EPA on behalf of the city, the real estate developer builds and in that advocates for the market and the civil engineer or team member acts within the best interest of their client. The civil engineer or team member, their client could be both DOEE (since they install

facilities around the city) and the real estate developer. This study revealed a sort of causation relationship between the internal and external stakeholders and the effect that the policies have on DC. Increased regulation causes an increase in development cost, these increase development cost can deter a smaller development firm, they can affect affordable housing and they can deter the overall development activity in the city. Regardless, most of the developers and the designers would still develop in DC regardless of regulations, if they can profit. Overall, cooperation between all three groups and their influence on one another, can lead to betterment of the city regarding sustainability.

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Appendix A: Interview Questions

Interview-Internal stakeholder (Money stakeholder)

Date:

Name of Interviewee:

1) From one to ten, how would you rank your role or position?
2) How did you get started with real estate development?
3) How many (what type of) projects have you worked in Washington, DC in the past five years?
4) To what extent are you involved in any third-party organization involved in developing? If so, which and why?
5) How involved are you in the site development projects? If not, then whom is or why not?
6) What is the extent of your understanding of stormwater management policies in Washington, DC?
7) Do you understand how to influence policy?
8) Do you believe you have any influence over stormwater management policy?
    a. What is the extent of the influence that you have on stormwater management policy?
9) How effective do you feel the BMP's are on your project or site that you have installed?
    a. How about when an extreme rainfall event occurs?

10) Currently all BMPs in DC should be designed to detain the normal storm event, how likely would you be to continue investing in DC if projects had to be designed to the 100-year storm event? About 6x larger system.
    a. If yes, why keep investing
    b. If no, what if the larger system provided a large tax break for that tax year?
11) Do you have any experience in creating new policies or revising existing policies?
    a. How many have you successfully revised or created?
        i. Was there how involved were policymakers?
12) If there were no policy requirements for sustainability/stormwater management, what benefit would be to you to install this system?
13) Have you ever interacted with a policymaker/external stakeholder, describe your experience?
    a. Where there ever a time that involved negotiations? Describe.

Interview- Internal stakeholder (design stakeholder)

Date:

Name of Interviewee:

1) From one to ten, how would you rank your role or position?
2) As an internal stakeholder, describe your first interactions with policymakers?
3) How many projects have you worked in Washington, DC?
4) What is the primary ward/neighborhood that you do projects in?
5) Are you involved in any third-party organization involved in developing? If so, which and why?
6) Do you believe you have an adequate understanding of stormwater management policies in Washington, DC?
7) Do you understand how to shape policy?
8) Do you believe you have any influence over stormwater management policy?
9) How effective do you feel the BMP's are on your designs?
    a. How about when a very large storm hits?
10) Currently all BMPs in DC should be designed to detain the normal storm event, how likely do you feel projects will continue to flow in DC if they were instead designed to the 100-year storm event? About 6x larger system.
    a. If yes, why?
    b. If no, what if the larger system provided a large tax break for that tax year?

11) If there were no policy requirements for sustainability/stormwater management, what benefit would be to you to install this system?
12) Have you ever interacted with a policymaker/external stakeholder, describe your experience?
    a. Where there ever a time that involved negotiations? Describe.

Interview-External stakeholder (policymakers)

Date:

Name of Interviewee:

1) From one to ten, how would you rank your role or position?
2) As a policymaker, describe your first time being able to effect policy and the processes that were taken.
3) How many projects have you worked in Washington, DC?
4) What is the primary ward/neighborhood that you do projects in?
5) Are you involved in any other organization involved in creating policy? If so which and why?
6) Do you believe you have an adequate understanding of stormwater management policies in Washington, DC?
7) How is policy created regarding stormwater management?
8) Do you believe you have any influence over stormwater management policy?
9) How effective are the BMP's as installed on the site?
10) What should be expected when a larger storm hits?
11) Currently all BMPs in DC should be designed to detain the normal storm event, how likely do you feel projects will continue to flow in DC as they currently are if they were instead designed to the 100-year storm event? About 6x larger system.
    a. If yes, why?

b. If no, what if the larger system provided a large tax break for that tax year?

12) Do you have any experience in creating new policies or revising existing policies?
    a. How many have you successfully revised or created?
        i. Was there how involved were stakeholders?
13) What activities are in place to create public support with stakeholders?
    a. How many are usually involved?
    b. Are there primarily organizations or individuals that are involved in activities?
14) If there were no policy requirements for sustainability/stormwater management, what benefit would be to you to install these systems?
15) Have you ever interacted with an internal stakeholder, describe your experience?
    a. Where there ever a time that involved negotiations? Describe.

Appendix B: Phone Interview Script

Firstly, my name is Galates Sera and I want to thank you for your participation! I am a Walden University Doctoral Candidate and as a part of my studies in public policy and administration, for my dissertation I am conducting a research study about the influence that stakeholders have in influencing stormwater management policy.

So, this interview should take no more than 30 minutes and I would really appreciate for you to try to elaborate when you answer the questions and if you do not understand let me know!

Again, your participation is completely voluntary, and you can skip any questions that you do not feel comfortable answering and no personally identifying information is being collected.

Did you have a chance to go over the consent form? (Review the consent form regardless of answer)

OK,

Ready?

…Questions…

… Research Question pertaining their group…

Thank you for your participation in this study! This study is anticipated to be over by November 28th, 2018. After that time all the research collected will be reviewed per the consent form and to my discretion and then I will send you a two-paragraph summary of how your participation aided in the research!

Thanks again!

Appendix C: Phone Requirement Script

To assistant (for development) …

Hello, my name is Galates Sera and I am a doctorate student at Walden University, I was wondering if I could speak to a development manager or someone that works closely with policy… so that I could ask them if they'd be willing to participate in my research study.

To assistant (for civil engineer)

Hello, my name is Galates Sera and I am a doctorate student at Walden University, I was wondering if I could speak to a higher level civil engineering manager that has had experience working with DOEE… so that I could ask them if they'd be willing to participate in my research study.

To prospect…

Hello, my name is Galates Sera and I am a doctorate student at Walden University and I would like to see if you'd be willing to participate in my research study about the influence that stakeholders have in influence stormwater management policy.

To voicemail…

Hello, my name is Galates Sera and I am a doctorate student at Walden University and I would like to see if you'd be willing to participate in my research study about the influence that stakeholders have in influence stormwater management policy in

Washington, DC. Please call me back at XXXXXXXXXX if you'd be willing to participate, thank you!

Appendix D: E-mail List of Stakeholders Contacted

Stakeholder Type	Company Alias/Name	Date invitation sent/ last call	Date Called	Response?
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	17-Oct		No
External	DOEE	17-Oct		No
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	17-Oct		No
External	DOEE	17-Oct		No
External	DOEE	17-Oct	19-Oct	Yes
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		No
External	DOEE	17-Oct		No
External	DOEE	17-Oct	31-Oct	Yes
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	17-Oct		No
External	DOEE	17-Oct		No
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	17-Oct		No
External	DOEE	17-Oct		No
External	DOEE	17-Oct		No
External	DOEE	17-Oct		No
External	DOEE	17-Oct	25-Oct	Yes

External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17	23-Oct	Yes
External	DOEE	Attempted 10/17		Email Sent back
External	DOEE	Attempted 10/17		Email Sent back
Internal (Developer)	I-RED#1	17-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#1	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#1	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#1	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#1	24-Oct		Emailed, no response
Internal (Developer)	I-RED#1	24-Oct		Emailed after week and left voicemail, no response
Internal (Developer)	I-RED#1	24-Oct		Emailed after week and left voicemail, no response
Internal (Developer)	I-RED#2	24-Oct		No information found on organization/person
Internal (Developer)	I-RED#3	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#3	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#4	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#4	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#4	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#4	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#5	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#5	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#5	24-Oct		Left Voicemail after week, no response

Internal (Developer)	I-RED#5	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#5	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#6	24-Oct		Emailed Day one, called after a week and was told "call tomorrow", called no response
Internal (Developer)	I-RED#7	24-Oct		Called after week, was provided email and the participate seemed engaged, then they stopped responding
Internal (Developer)	I-RED#8	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#8	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#8	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#8	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#9	24-Oct	29-Oct	Yes (After phone call)
Internal (Developer)	I-RED#10	24-Oct		Emailed Day one and called after week, was given a follow up email, no response
Internal (Developer)	I-RED#11	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#12	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#12	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#13	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#13	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#13	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#13	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#14	24-Oct		Left Voicemail after week, no response

Internal (Developer)	I-RED#14	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#14	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#15	24-Oct		Emailed Day one and called after week, the voicemail was full
Internal (Developer)	I-RED#15	24-Oct		Emailed Day one and called after week, the voicemail was full
Internal (Developer)	I-RED#15	24-Oct		Emailed Day one and called after week, the voicemail was full
Internal (Developer)	I-RED#15	24-Oct		Emailed Day one and called after week, the voicemail was full
Internal (Technical)	I-TM#1	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#16	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#17	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#18	24-Oct	7-Nov	Yes (Emailed day one, called main office after a week and was told "not interested by secretary" and then was given email by another staff)
Internal (Technical)	I-TM#2	24-Oct		Called after week, was told to call corporate office, which led me back to the DC office, provide phone number and interview… no response
Internal (Technical)	I-TM#3	24-Oct		Left Voicemail after week, no response
Internal (Technical)	I-TM#3	24-Oct		Left Voicemail after week, no response
Internal (Technical)	I-TM#3	24-Oct		Left Voicemail after week, no response
Internal (Technical)	I-TM#3	24-Oct		Left Voicemail after week, no response
Internal (Technical)	I-TM#4	24-Oct		Left Voicemail after week, no response
Internal (Developer)	I-RED#19	24-Oct	25-Oct	Yes (After phone call)
Internal (Developer)	I-RED#17	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response

Internal (Technical)	I-TM#7	23-Oct	30-Oct	Yes (Responded to Email 10/29)
Internal (Developer)	I-RED#20	24-Oct	22-Oct	Yes (After phone call)
Internal (Developer)	I-RED#21	24-Oct	31-Oct	Yes (After phone call)
Internal (Developer)	I-RED#22	24-Oct		Emailed Day one then called and was told "not interested"
Internal (Developer)	I-RED#15	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#23	24-Oct		Emailed Day one then called and was told "not interested"
Internal (Developer)	I-RED#24	24-Oct		Emailed Day one then called, phone was disconnected
Internal (Developer)	I-RED#15	24-Oct		Emailed Day one and Left Voicemail after 1 weeks, no response
Internal (Developer)	I-RED#25	24-Oct		Emailed Day one then called and was told "not interested"
Internal (Developer)	I-RED#26	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#27	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#28	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#8	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#29	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Technical)	I-TM#5	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#26	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#25	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#26	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#24	24-Oct		Called after week, no response
Internal (Developer)	I-RED#30	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#30	24-Oct		No information found on organization/person
Internal (Developer)	I-RED#25	24-Oct		Emailed after week, called, left voicemail, no response

Internal (Developer)	I-RED#21	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#31	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#32	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#33	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Developer)	I-RED#34	24-Oct		Emailed after week, called, left voicemail, no response
Internal (Technical)	I-TM#6	24-Oct	9-Nov	Yes (After phone call)

Appendix E: Category Occurrence From Phone Interviews

I-TM#8	
Category	% of appearance
Extreme Rainfall Event Considerations	2.6%
Improved Policy	5.1%
Influencing Policy	10.3%
Lack of Influence	7.7%
Negotiations with Stakeholder	15.4%
Obtaining Influence	10.3%
Stormwater Management	7.7%
Unique Policy	2.6%
Use of Role to Influence	28.2%
Use of Status to Influence	10.3%

I-RED#20	
Category	% of appearance
Influencing Policy	10.0%
Lack of Influence	30.0%
Negotiations with Stakeholder	10.0%
Obtaining Influence	20.0%
Sustainable Policies	20.0%
Use of Role to Influence	10.0%

EX-8-7	
Category	% of appearance
Extreme Rainfall Event Considerations	19.4%
Improved Policy	15.5%
Influencing Policy	1.9%
Lack of Influence	5.8%
Negotiations with Stakeholder	6.8%
Obtaining Influence	9.7%
Stormwater Management	7.8%
Sustainable Policies	5.8%
Unique Policy	2.9%
Use of Role to Influence	17.5%
Use of Status to Influence	6.8%

I-RED#9	
Category	% of appearance
Extreme Rainfall Event Considerations	33.3%
Lack of Influence	22.2%
Sustainable Policies	11.1%
Unique Policy	11.1%
Use of Role to Influence	11.1%
Use of Status to Influence	11.1%

EX-9-10	
Category	% of appearance
Extreme Rainfall Event Considerations	10.5%
Improved Policy	2.6%
Lack of Influence	7.9%
Negotiations with Stakeholder	5.3%
Obtaining Influence	6.6%
Stormwater Management	14.5%
Sustainable Policies	18.4%
Use of Role to Influence	22.4%
Use of Status to Influence	11.8%

I-RED#21-A	
Category	% of appearance
Extreme Rainfall Event Considerations	10.3%
Lack of Influence	27.6%
Obtaining Influence	6.9%
Stormwater Management	6.9%
Use of Role to Influence	37.9%
Use of Status to Influence	10.3%

EX-5-6	
Category	% of appearance
Extreme Rainfall Event Considerations	9.7%
Improved Policy	3.2%
Influencing Policy	12.9%
Lack of Influence	6.5%
Obtaining Influence	6.5%
Stormwater Management	22.6%
Unique Policy	9.7%
Use of Role to Influence	19.4%
Use of Status to Influence	9.7%

I-TM#7	
Category	% of appearance
Extreme Rainfall Event Considerations	9.1%
Influencing Policy	27.3%
Lack of Influence	12.1%
Obtaining Influence	15.2%
Stormwater Management	3.0%
Use of Role to Influence	18.2%
Use of Status to Influence	15.2%

I-TM#6	
Category	% of appearance
Extreme Rainfall Event Considerations	23.1%
Improved Policy	10.3%
Influencing Policy	7.7%
Lack of Influence	12.8%
Obtaining Influence	2.6%
Stormwater Management	10.3%
Sustainable Policies	10.3%
Unique Policy	2.6%
Use of Role to Influence	17.9%
Use of Status to Influence	2.6%

EX-5-7	
Category	% of appearance
Extreme Rainfall Event Considerations	30.3%
Lack of Influence	3.0%
Negotiations with Stakeholder	3.0%
Stormwater Management	9.1%
Sustainable Policies	15.2%
Unique Policy	21.2%
Use of Role to Influence	12.1%
Use of Status to Influence	6.1%

I-RED-SB#1	
Category	% of appearance
Extreme Rainfall Event Considerations	11.9%
Influencing Policy	10.4%
Lack of Influence	19.4%
Obtaining Influence	9.0%
Stormwater Management	14.9%
Unique Policy	1.5%
Use of Role to Influence	10.4%
Use of Status to Influence	22.4%

I-RED-SB#2	
Category	% of appearance
Extreme Rainfall Event Considerations	22.4%
Influencing Policy	4.1%
Lack of Influence	8.2%

Obtaining Influence	12.2%
Stormwater Management	14.3%
Sustainable Policies	6.1%
Use of Role to Influence	18.4%
Use of Status to Influence	14.3%

Appendix F: Codes/Phases From Interviews to Categories

I-TM#8		
Pg.	Codes	Category
5	Flooding is an issue	Extreme Rainfall Event Considerations
4	Necessary Evil	Improved Policy
5	Policies are beneficial	Improved Policy
2	Meetings	Influencing Policy
2	Bring Awareness	Influencing Policy
3	Bring Examples	Influencing Policy
3	Educate with Examples	Influencing Policy
4	Challenges	Lack of Influence
4	Inconsistencies	Lack of Influence
4	Investment will continue if requirements increase	Lack of Influence
4	Discussions/ Communication	Negotiations with Stakeholder
4	Meetings	Negotiations with Stakeholder
5	Need for Compromise	Negotiations with Stakeholder
5	Communicating to not stop development	Negotiations with Stakeholder
5	Bargaining	Negotiations with Stakeholder
5	Ignorance	Negotiations with Stakeholder
1	Pay to Play	Obtaining Influence
3	Larger Firms/Better Opportunities	Obtaining Influence
3	Size as a factor	Obtaining Influence
3	Money as a factor	Obtaining Influence
4	Need for SWM	Stormwater Management
4	Necessary Evil	Stormwater Management
5	Necessary Evil	Stormwater Management
3	Programs to provide Opportunities	Unique Policy
1	Role	Use of Role to Influence
1	Advocate	Use of Role to Influence
2	Best interest of development team	Use of Role to Influence
2	Facilitator/Mediator	Use of Role to Influence
2	Problem Solver	Use of Role to Influence
2	Discussions	Use of Role to Influence
2	Advocate	Use of Role to Influence
3	Discussions	Use of Role to Influence
3	Meetings	Use of Role to Influence
3	Offer Solutions	Use of Role to Influence
5	Skills	Use of Role to Influence
2	Experience	Use of Status to Influence
2	Specifically Selected	Use of Status to Influence
2	Experience	Use of Status to Influence
3	Leadership	Use of Status to Influence

I-RED#20		
Pg.	Codes	Category
2	Meetings	Influencing Policy
2	Pay to Play	Obtaining Influence
2	Committee Member	Use of Role to Influence

3	Lack of Community	Lack of Influence
3	Lack of Information	Lack of Influence
3	Discussions	Negotiations with Stakeholder
3	Advocate	Obtaining Influence
4	Create Change	Lack of Influence
4	Consistency	Sustainable Policies
5	Unilateral	Sustainable Policies

EX-8-7		
Pg.	Codes	Category
5	Less return for larger BMP	Extreme Rainfall Event Considerations
9	Overflow	Extreme Rainfall Event Considerations
9	overwhelmed to capacity	Extreme Rainfall Event Considerations
10	Evaluate Decision	Extreme Rainfall Event Considerations
10	Consider changes in whether patterns	Extreme Rainfall Event Considerations
10	Need to back up changes	Extreme Rainfall Event Considerations
10	work with internal stakeholder	Extreme Rainfall Event Considerations
10	increased Threshold	Extreme Rainfall Event Considerations
10	Research	Extreme Rainfall Event Considerations
10	Analysis of none SWM triggered sites	Extreme Rainfall Event Considerations
11	Consider extreme Events	Extreme Rainfall Event Considerations
11	BMP on small Sites	Extreme Rainfall Event Considerations
12	Evaluate new MS4	Extreme Rainfall Event Considerations
12	Considering options	Extreme Rainfall Event Considerations
12	Public Engagement	Extreme Rainfall Event Considerations
12	Support analysis with engagement	Extreme Rainfall Event Considerations
12	rationalize	Extreme Rainfall Event Considerations
12	educate	Extreme Rainfall Event Considerations
12	implement	Extreme Rainfall Event Considerations
12	openness in implementation	Extreme Rainfall Event Considerations
3	Policy created jobs	Improved Policy
3	policy allowed for advancement	Improved Policy
4	Possible new Regulation	Improved Policy
4	2011 Permit Requirement	Improved Policy
6	Updated regulation due to science	Improved Policy
6	CWA is driver	Improved Policy
6	CWA leads to MS4	Improved Policy
7	Treatment in 2003	Improved Policy
7	Created alternate method to comply	Improved Policy
7	Innovated and flexibility in method	Improved Policy
8	education	Improved Policy
8	2013 requirement was higher	Improved Policy
9	no data on the effect, regulation for stakeholders	Improved Policy
9	discussions	Improved Policy
13	Flexibility	Improved Policy
13	Compliance Flexibility	Improved Policy
4	High Responsibility	Influencing Policy
4	Actions	Influencing Policy
6	No say on location	Lack of Influence
6	change due to federal	Lack of Influence

7	Retention requirement failed in 2009/10	Lack of Influence
7	Push back	Lack of Influence
7	Rejected requirement 2009/2010	Lack of Influence
7	No proposal due to pushback	Lack of Influence
3	Conversations	Negotiations with Stakeholder
7	2011/2012 negotiations	Negotiations with Stakeholder
8	Addressed Concerns	Negotiations with Stakeholder
8	thorough stakeholder engagement	Negotiations with Stakeholder
8	meetings	Negotiations with Stakeholder
8	show it was possible	Negotiations with Stakeholder
13	discussions	Negotiations with Stakeholder
4	More responsibilities	Obtaining Influence
4	Analysis	Obtaining Influence
5	Increasing role	Obtaining Influence
5	Background	Obtaining Influence
5	Increased Responsibility	Obtaining Influence
5	Shaping Policy	Obtaining Influence
6	Development pushed SWM	Obtaining Influence
13	Address concerns	Obtaining Influence
13	Offsite compliance	Obtaining Influence
13	Conversations	Obtaining Influence
3	Regulation Compliance	Stormwater Management
6	published analytics	Stormwater Management
6	equal distribution of BMP in DC	Stormwater Management
9	Actual functionality, no data	Stormwater Management
9	data existing maintenance	Stormwater Management
13	Faster Outcomes	Stormwater Management
13	High priority areas	Stormwater Management
14	Benefit, reduce pollution, water quality	Stormwater Management
5	Differing Thresholds	Sustainable Policies
5	Formulas	Sustainable Policies
5	Analysis	Sustainable Policies
5	Incorporated Formulas, analysis	Sustainable Policies
8	Analysis	Sustainable Policies
13	Regulations build BMPs	Sustainable Policies
7	DC is different and unique	Unique Policy
7	DC gets standards from EPA	Unique Policy
7	Comply with EPA	Unique Policy
3	Shaping Policy	Use of Role to Influence
3	Developed Database	Use of Role to Influence
4	Technical Expert	Use of Role to Influence
4	Interpret Regulations	Use of Role to Influence
4	Validating policies	Use of Role to Influence
4	Managing database	Use of Role to Influence
4	Managing Staff	Use of Role to Influence
4	Guidebook Revision	Use of Role to Influence
5	Formula writing	Use of Role to Influence
5	Support	Use of Role to Influence
6	Have say in Public and voluntary projects	Use of Role to Influence
6	BMP location up to developer	Use of Role to Influence
7	alternate method to comply	Use of Role to Influence

8	Prepared BMP examples	Use of Role to Influence
8	levy concerns	Use of Role to Influence
8	public engagement aided in passing 2013	Use of Role to Influence
10	Exchange information and shape discussions	Use of Role to Influence
13	Shape Decisions	Use of Role to Influence
3	Seat at the table	Use of Status to Influence
5	Policy Shaping prioritize	Use of Status to Influence
7	Internal felt requirements were unfeasible	Use of Status to Influence
7	EPA required changes	Use of Status to Influence
8	accepted by design community	Use of Status to Influence
14	Price Floor	Use of Status to Influence
14	Stakeholder Input	Use of Status to Influence

I-RED#9		
Pg.	Codes	Category
2	Pass on fees	Extreme Rainfall Event Considerations
3	Higher regulations are bad for low income housing	Extreme Rainfall Event Considerations
3	Slow redevelopment	Extreme Rainfall Event Considerations
1	Little Role	Lack of Influence
1	Raise Rates w/o concern	Lack of Influence
2	Burden on lower class	Sustainable Policies
1	Unilateral Regulation	Unique Policy
3	Subsidy needed to succeed	Use of Role to Influence
2	Fixed costs	Use of Status to Influence

EX-9-10		
Pg.	Codes	Category
5	Should no handle Extreme	Extreme Rainfall Event Considerations
5	Gray infrastructure for extreme not green	Extreme Rainfall Event Considerations
6	Gray Infrastructure Issues	Extreme Rainfall Event Considerations
6	Review adequacy of gray infrastructure	Extreme Rainfall Event Considerations
7	Projects to Continue unless too costly	Extreme Rainfall Event Considerations
7	Review in house	Extreme Rainfall Event Considerations
12	Learn more about Extreme	Extreme Rainfall Event Considerations
12	Invest for extreme	Extreme Rainfall Event Considerations
4	Meet w/ internal stakeholders	Improved Policy
4	Use input	Improved Policy
10	More stringent got approved	Lack of Influence
10	Now more costly to internal stakeholders	Lack of Influence
10	Regulation already accepted	Lack of Influence
11	Already accepted federal requirement	Lack of Influence
11	Internal extremely Unhappy	Lack of Influence
11	Limited public Projects	Lack of Influence
7	meeting with internal	Negotiations with Stakeholder
8	Stakeholder meeting/discussions	Negotiations with Stakeholder
8	transparency	Negotiations with Stakeholder
9	Continual Interaction	Negotiations with Stakeholder
3	Evaluating Stakeholder needs	Obtaining Influence
3	Evaluating EPA needs	Obtaining Influence
3	Communicating to Extend	Obtaining Influence
3	Support	Obtaining Influence

4	Appointed by Mayor	Obtaining Influence
3	Restore Anacostia	Stormwater Management
3	Focus	Stormwater Management
5	BMP Maintenance	Stormwater Management
5	Some BMP better by area	Stormwater Management
5	Decrease in BMP Efficiency	Stormwater Management
9	Livability	Stormwater Management
9	Property Value	Stormwater Management
9	water quality	Stormwater Management
11	higher Standard on public Buildings	Stormwater Management
11	WQTVs regs	Stormwater Management
11	All water goes same place	Stormwater Management
3	Innovation	Sustainable Policies
3	Sponsors	Sustainable Policies
3	Implement Projects	Sustainable Policies
3	Restore Anacostia	Sustainable Policies
4	Crossover Involved	Sustainable Policies
4	Reduce Pollution	Sustainable Policies
4	Regulations that aid	Sustainable Policies
5	Long term commitments and maintenance	Sustainable Policies
5	Water quality and quantity	Sustainable Policies
6	Only normal event for BMP	Sustainable Policies
7	No incentives	Sustainable Policies
8	Voluntary Opportunities	Sustainable Policies
8	Pollution Management	Sustainable Policies
9	No requirement no BMP	Sustainable Policies
2	Represent District	Use of Role to Influence
2	Negotiate with EPA	Use of Role to Influence
2	Allocate all funds	Use of Role to Influence
3	Advocate city SWM requirements	Use of Role to Influence
3	Renegotiate	Use of Role to Influence
3	Achievable	Use of Role to Influence
5	Advising external	Use of Role to Influence
8	Revised Regulations	Use of Role to Influence
8	administrative Procedure	Use of Role to Influence
9	Aid Community	Use of Role to Influence
9	100-1000 stakeholders involved	Use of Role to Influence
10	Negotiate with EPA	Use of Role to Influence
10	Understanding their Needs	Use of Role to Influence
10	Meeting / discussions	Use of Role to Influence
10	Discuss both sides ideas	Use of Role to Influence
12	Educate	Use of Role to Influence
12	Advocate	Use of Role to Influence
4	Engineer	Use of Status to Influence
4	Experience	Use of Status to Influence
5	Make commitments	Use of Status to Influence
7	Simply Do it	Use of Status to Influence
9	Partnering	Use of Status to Influence
9	Educate	Use of Status to Influence
9	Fund projects	Use of Status to Influence
10	doubt current regulation would have passed	Use of Status to Influence

12	Provide information to Mayor to invest	Use of Status to Influence

I-RED#21-A		
Pg.	Codes	Category
6	Cost to build affects sell price inversely	Extreme Rainfall Event Considerations
6	Regulation is after thought	Extreme Rainfall Event Considerations
5	Net neutral preferred	Extreme Rainfall Event Considerations
2	Outsider in development community	Lack of Influence
2	Differing demographic community	Lack of Influence
2	Don't Add value	Lack of Influence
4	No organizations	Lack of Influence
4	Sees benefit, but no time	Lack of Influence
5	Don't understand policy	Lack of Influence
6	general understanding	Lack of Influence
6	who influences policy	Lack of Influence
4	Never Eat alone	Obtaining Influence
4	Outsource SWM understanding	Obtaining Influence
2	Familiar with environmental policies	Stormwater Management
6	water quality	Stormwater Management
1	Experience in CM, Prefer finance	Use of Role to Influence
1	Strategic mind	Use of Role to Influence
2	Policy Self-knowledge to projects	Use of Role to Influence
3	Law background	Use of Role to Influence
3	Business Background	Use of Role to Influence
3	Environmentally conscious and profitable	Use of Role to Influence
3	Experience	Use of Role to Influence
3	Currently working mid-sized projects	Use of Role to Influence
5	Rely on team	Use of Role to Influence
5	profitable	Use of Role to Influence
5	Suburbs are not responsible	Use of Role to Influence
2	Meets with policy makers	Use of Status to Influence
2	Friendly with local agencies	Use of Status to Influence
3	Worked large projects	Use of Status to Influence

EX-5-6		
Pg.	Codes	Category
6	Lack of Space	Extreme Rainfall Event Considerations
6	Must meet regulations	Extreme Rainfall Event Considerations
9	Looking into it	Extreme Rainfall Event Considerations
5	Less trash due to policy	Improved Policy
3	law-regulation-policy	Influencing Policy
4	Prioritize projects	Influencing Policy
7	Meet for Discussion	Influencing Policy
7	Public Comment period	Influencing Policy
3	Edited Manual	Lack of Influence
3	Not technical	Lack of Influence
3	Policy based on common goal	Obtaining Influence
7	Meeting with External	Obtaining Influence
3	Multiple programs for SWM	Stormwater Management
4	Trash in rivers	Stormwater Management
5	Effective due to cost	Stormwater Management

5	Design Properly increase efficiency	Stormwater Management
5	Lack of Maintenance decrease efficiency	Stormwater Management
8	Environmental Benefit	Stormwater Management
8	Voluntary Installations	Stormwater Management
2	Definition of policy differs	Unique Policy
2	Regulations by DC	Unique Policy
2	Voluntary Projects	Unique Policy
4	Policy came from EPA	Use of Role to Influence
4	External collaboration	Use of Role to Influence
5	Identify problem, back up	Use of Role to Influence
5	Program start by problem identification	Use of Role to Influence
7	Comments that made sense	Use of Role to Influence
8	Educate before comment period	Use of Role to Influence
7	Credible comments only	Use of Status to Influence
8	Incorporated Feedback	Use of Status to Influence
8	Meeting at location of internal	Use of Status to Influence

I-TM#7		
Pg.	Codes	Category
7	space constraints, push back	Extreme Rainfall Event Considerations
8	Extreme needs feasibility and money	Extreme Rainfall Event Considerations
8	Market and large tenant is driver	Extreme Rainfall Event Considerations
2	transparency in process	Influencing Policy
2	city open invited development discussion	Influencing Policy
4	DOEE brought groups together	Influencing Policy
4	Expertise and market knowledge needed	Influencing Policy
7	leaders help to push change	Influencing Policy
9	Responding to possible tenant request	Influencing Policy
9	RFP w/ sustainable request	Influencing Policy
10	Developers respond to Market	Influencing Policy
11	Getting stakeholders together	Influencing Policy
3	Need permit officials	Lack of Influence
3	DCRA and internal needed	Lack of Influence
7	Development unhappy with DOEE	Lack of Influence
7	Less engaged	Lack of Influence
2	Appointed to govt task force	Obtaining Influence
4	DOEE, Internal seat at table	Obtaining Influence
7	Internal on board	Obtaining Influence
8	Problem between development and DOEE	Obtaining Influence
8	Convo 1st, discussion on goal	Obtaining Influence
8	Developer understands SWM if needed	Stormwater Management
1	promotes SWM programs	Use of Role to Influence
3	Stakeholders provide perspectives	Use of Role to Influence
5	Experience	Use of Role to Influence
6	Policy Experts	Use of Role to Influence
6	Break the problem up	Use of Role to Influence
6	section by section with all I-TM	Use of Role to Influence
1	Not recent TM experience	Use of Status to Influence
1	chaired committees	Use of Status to Influence
1	Involved in conversation	Use of Status to Influence
2	govt reached out	Use of Status to Influence

5	Status helps with influence	Use of Status to Influence

I-TM#6		
Pg.	Codes	Category
7	BMP nominal advantage	Extreme Rainfall Event Considerations
7	GAR helps extreme	Extreme Rainfall Event Considerations
7	GAR lower runoff	Extreme Rainfall Event Considerations
8	Significantly higher for developer	Extreme Rainfall Event Considerations
8	holding tank needed	Extreme Rainfall Event Considerations
9	Developer and govt impact	Extreme Rainfall Event Considerations
9	Double cost in installation and design	Extreme Rainfall Event Considerations
12	cost of SWM for larger company minimal	Extreme Rainfall Event Considerations
12	Cost can kill small company	Extreme Rainfall Event Considerations
3	SWM initiatives change	Improved Policy
4	regs brought more GR than building	Improved Policy
5	ESD became standard	Improved Policy
5	BMP structural to non-structural	Improved Policy
2	Serve clients' purpose at hand	Influencing Policy
3	preliminary review	Influencing Policy
3	can change implementation method	Influencing Policy
3	cant change policy	Lack of Influence
6	Policy more stringent	Lack of Influence
6	penalizing current owner for past sins	Lack of Influence
6	must provide	Lack of Influence
6	cost pass to new developer	Lack of Influence
3	technical staff determined issue	Obtaining Influence
7	SWM/BMP, effective	Stormwater Management
10	Environmentally conscious	Stormwater Management
10	No one will do without requirements	Stormwater Management
11	Only done in case by case	Stormwater Management
10	Burden will be on city	Sustainable Policies
11	Exceptions to rules	Sustainable Policies
11	allowed innovated methods of SWM	Sustainable Policies
12	Maximum extent practical	Sustainable Policies
2	policy set by government	Unique Policy
1	Management & Design	Use of Role to Influence
2	Implement Standards	Use of Role to Influence
2	call out issues	Use of Role to Influence
2	Identify weaknesses	Use of Role to Influence
3	innovative and guide permitting	Use of Role to Influence
3	to change guidelines, there must be issue	Use of Role to Influence
5	calculations	Use of Role to Influence
5	made comments and returned	Use of Status to Influence

EX-5-7		
Pg.	Codes	Category
5	BMP not for 100-year	Extreme Rainfall Event Considerations
6	Larger events bypass	Extreme Rainfall Event Considerations
6	Not practical	Extreme Rainfall Event Considerations
6	colossal volume stored	Extreme Rainfall Event Considerations
6	surprised if continues	Extreme Rainfall Event Considerations

6	Combined sewer	Extreme Rainfall Event Considerations
7	DC renew gray infrastructure	Extreme Rainfall Event Considerations
10	Floodplain monitoring	Extreme Rainfall Event Considerations
11	Part of Design	Extreme Rainfall Event Considerations
11	Conveyance	Extreme Rainfall Event Considerations
9	Comply for permit	Lack of Influence
10	Compromises	Negotiations with Stakeholder
5	BMP 85% effective	Stormwater Management
8	Programs to aid SWM	Stormwater Management
9	water quality	Stormwater Management
9	initiatives with stakeholders	Sustainable Policies
3	effects development and regulation	Sustainable Policies
3	improved water quality	Sustainable Policies
6	Design Shift in 2013	Sustainable Policies
9	voluntary implementation to aid with process	Sustainable Policies
2	Policy shift, recommendation from council	Unique Policy
4	Law differs from regulation/policy	Unique Policy
4	Policy can change	Unique Policy
4	regulation voted by council	Unique Policy
4	Policy by EPA	Unique Policy
3	Policy has origin	Unique Policy
4	Chesapeake Bay Restoration	Unique Policy
2	Ensure implementation before building permit	Use of Role to Influence
3	Enforcement	Use of Role to Influence
5	Managers provide input	Use of Role to Influence
8	Online community	Use of Role to Influence
2	Experience	Use of Status to Influence
5	Influence over department	Use of Status to Influence

I-RED-SB#1		
Pg.	Codes	Category
8	Incremental	Extreme Rainfall Event Considerations
8	Knee-jerk reaction response "no"	Extreme Rainfall Event Considerations
8	Extreme requirements must be translated to $	Extreme Rainfall Event Considerations
8	Depends on project type	Extreme Rainfall Event Considerations
9	Alarm Bell	Extreme Rainfall Event Considerations
9	Simple fee, no need analysis	Extreme Rainfall Event Considerations
9	Fees pass to consumers	Extreme Rainfall Event Considerations
9	Compare to interest rates, should not deter	Extreme Rainfall Event Considerations
3	Speak for competitors with collective voice	Influencing Policy
4	Review with TM	Influencing Policy
5	RED pushing solar as alt	Influencing Policy
6	DOEE regulated themselves	Influencing Policy
6	credit trading	Influencing Policy
12	Communication and Discussion w/ parties	Influencing Policy
12	proposal with thought	Influencing Policy
3	No impact at federal	Lack of Influence
3	attempted at industry level	Lack of Influence
4	Federal oversees work	Lack of Influence
4	EPA provides MS4 permit	Lack of Influence

4	Must comply with EPA standards	Lack of Influence
5	frustrated	Lack of Influence
5	lack of study/implication	Lack of Influence
5	No studies, EPA just did it	Lack of Influence
6	More stringent in DC than MD and VA	Lack of Influence
10	Regulations need to calibrate with MD and VA	Lack of Influence
10	re-write regulations	Lack of Influence
11	GR not always practical	Lack of Influence
11	lack of financial responsibility	Lack of Influence
2	Join associations for influence	Obtaining Influence
4	12-18 month review and negotiations	Obtaining Influence
5	Nuance analysis	Obtaining Influence
7	Joined committees and developed knowledge	Obtaining Influence
7	DC BIA influences	Obtaining Influence
10	Compare cost of all states, feasibility	Obtaining Influence
5	roof space in urban limited	Stormwater Management
5	GR usually in downtown	Stormwater Management
6	SWM obligations met onsite	Stormwater Management
7	BMP performs well	Stormwater Management
10	Competition	Stormwater Management
10	be surprised	Stormwater Management
11	Right thing to do	Stormwater Management
11	GR benefits	Stormwater Management
11	Livability	Stormwater Management
13	self tax for improvement	Stormwater Management
3	real estate law not effect by federal	Unique Policy
1	knowledgeable of all and master of none	Use of Role to Influence
6	RED TM attorney created contract	Use of Role to Influence
6	TM reviewed manual and proposed changes	Use of Role to Influence
12	10 point list	Use of Role to Influence
12	comment period	Use of Role to Influence
1	Management of buy and hold	Use of Status to Influence
2	Larger, more power	Use of Status to Influence
2	Speak for more people	Use of Status to Influence
3	Close to counsel members	Use of Status to Influence
3	large local company	Use of Status to Influence
3	established in DC and provide jobs	Use of Status to Influence
6	approached by DOEE	Use of Status to Influence
10	Involved with city council	Use of Status to Influence
12	Competition	Use of Status to Influence
12	developers combine forces	Use of Status to Influence

I-RED-SB#2		
Pg.	Codes	Category
10	Redundancies from other agencies help	Extreme Rainfall Event Considerations
10	Other Codes work in tandem	Extreme Rainfall Event Considerations
10	Current Standard for 100 year too	Extreme Rainfall Event Considerations
11	Construct feasibility study	Extreme Rainfall Event Considerations
11	Factor/incur cost of problematic cost	Extreme Rainfall Event Considerations
11	costs get transferred	Extreme Rainfall Event Considerations
11	housing gets more expensive	Extreme Rainfall Event Considerations

11	ask to loosen up on affordable housing program	Extreme Rainfall Event Considerations
13	added pressure on city infrastructure	Extreme Rainfall Event Considerations
13	Waterproofing issue	Extreme Rainfall Event Considerations
15	Something marketable	Extreme Rainfall Event Considerations
4	Participation in dialogue	Influencing Policy
12	Rewriting codes now/issues round of comments	Influencing Policy
6	No leniency based on location, more stringent in some	Lack of Influence
7	DOEE does no loosen up	Lack of Influence
8	View of SWM	Lack of Influence
13	Can only control onsite SWM	Lack of Influence
3	types of work	Obtaining Influence
3	Involved in associations	Obtaining Influence
4	DCBIA offers symbiotic relationship	Obtaining Influence
5	very familiar with SWM policy	Obtaining Influence
6	Always increasing understanding	Obtaining Influence
7	Understanding of Issue	Obtaining Influence
4	Very dense city	Stormwater Management
8	Effectiveness of BMPs may vary	Stormwater Management
9	Hard to quantify	Stormwater Management
9	helps reduce backflow	Stormwater Management
14	Installed "muted" BMP	Stormwater Management
14	Install for engineering accountability	Stormwater Management
15	Profitability	Stormwater Management
6	Upgrade of policies strike convo	Sustainable Policies
7	Might be able to get out of DT requirement	Sustainable Policies
8	Conversations	Sustainable Policies
1	Involved in all phased	Use of Role to Influence
2	Works at midsized firm	Use of Role to Influence
3	Background aids in development	Use of Role to Influence
5	Background aids current	Use of Role to Influence
5	Expertise in urban planning	Use of Role to Influence
5	Very involved as developer	Use of Role to Influence
12	Clarifying Regulations	Use of Role to Influence
14	Developers understand SWM	Use of Role to Influence
15	Developer good buildings	Use of Role to Influence
1	Partnerships w associations influence	Use of Status to Influence
2	High Influence	Use of Status to Influence
2	Small firm	Use of Status to Influence
2	Nature and type of projects'	Use of Status to Influence
2	Profitable firm	Use of Status to Influence
3	DCBIA aids development of community	Use of Status to Influence
12	Combine with other DC Developers to influence	Use of Status to Influence