

Whose Knowledge counts in Climate Change? A Procedural Justice perspective on Flooding in East Harlem

Veronica Olivotto¹

¹Milano School of Policy, Management and the Environment, The New School

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1. Introduction

At the summit organized by the New York Panel on Climate Change (NYPCC) in March 2019, during the Q&A, a woman stood from the audience and told to a panel made of predominantly city officers, that she was using the online Flood Hazard Mapper to identify an area in Manhattan where she and her husband could move to from Princeton. She was interested in understanding whether buying a property located within a 100-year floodplain was a good decision and, if so, she asked authorities to add information about where the location of evacuation zones in the Flood Hazard Mapper, so she could be sure that in a flooding event, the evacuation centers were within reach. Whether or not this was a real question or a provocation, I immediately made a connection with the slowly growing literature linking coastal flood risk and environmental justice, specifically the debates around living in a floodplain by choice, which the woman was an example of, or because of historical planning decisions that placed some homes and people in areas more at risk than others.

The issue of social justice in relation climate change induced flooding is not new and research on the topic has been growing in many directions where justice dilemmas emerge. In this paper I briefly review the long history of Environmental Justice (EJ) movement in the US, including its meanings, scope and relationship to nature with the aim of contextualizing how, more recently, the movement expanded to concerns related to climate change. Then, I review how questions of distributional and procedural justice are used in EJ literature as well as climate change, specifically in relationship to coastal flooding. I tease out the concepts of procedural justice that can complement a distributional justice understanding of coastal flooding and I apply those in the context of East Harlem, in Northwestern Manhattan, a community district where issues of climate change and gentrification act like a double edge sword towards it's already burdened share of low-income black and brown communities.

1. 1 The Evolving Environmental Justice Movement in the United States

Since the environmental reforms of the 1970s, according to , the movement in the U.S. has not been effective because it has been dominated by single issue approaches, affecting the quality of environmental laws that have been approved (for instance privileging control of pollution rather than prevention). The authors attribute this crisis largely to, on the one hand, environmental organizations of the time being composed of white, middle-class professionals who were unable to draw linkages between racism, abuse and economic inequality. On the other, in an effort to draft legislation and make environmentally friendly initiatives, the movement had become increasingly detached to those it was supposed to serve. The movement was not oriented towards public participation but established corporate-like organizational models that inhibited

citizen involvement. From the mid-eighties, however, a subaltern movement grew emphasizing the need to re-establish a connection with constituents who were predominantly black and brown communities of color victim of toxic pollution in cities, connecting them across a variety of issues and allowing for their own voices to emerge. According to Faber and McCarthy, key moments in the subaltern movement were the African American protests against PCBs in North Carolina in 1982, building on other protests such as the Love Canal Homeowners Association in 1978 who were able to successfully relocate 900 families away from the toxic dump on which their homes were built in Niagara (NY).

From the late-nineties, following the First National People of Color Environmental Leadership Summit of 1991, we see the emergence of regional and national campaigning networks striving to create stronger institutional linkages between the local groups that emerged in earlier years. By the late nineties local groups began to connect environmental issues of exposure to and impacts of pollutants, to broader issues (e.g. gun violence, occupational health and safety, immigration rights, human rights, anti-globalization, indigenous rights to land and community empowerment), moving from single-issue reforms to addressing the systemic causes of injustice by bringing together a diverse group of impacted communities (Faber and McCarthy, 2001). A landmark moment was when in 1994 when the networks pressured the Environmental Protection Agency (EPA) to issue the Executive Order 12898 titled “Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations” prohibiting discriminatory practices in federal programs and the creation of the National Environmental Justice Advisory Committee (NEJAC) to provide independent advice to the EPA and integrate EJ within its programs (Bullard, 2001).

The crisis of the U.S. environmental movement in the 70s and the emergence of a counter movement in the 1980-1990 is underscored by a fundamentally different ontology of the environment between these two periods. For Di Chirico (1995) the meaning of the environment for the historically white, predominately male, and middle-class movement, imbued with Euro-American colonist thinking, was largely associated with the preservation of an uncontaminated wilderness, outside of society and human culture. On the contrary, the definition of environment by EJ activists relates to where one works, plays and lives. This definition fits the urban dimension of EJ activism, where the victims of industrial pollution reside, but it also accounts for the presence of people which was taken for granted in previous understandings. Since many prominent EJ activists see themselves emerging from the social movements of the sixties, it makes sense to see activists as civil society rights activists pursuing forms of grassroots political organization.

The EJ movement is fundamentally urban and it became quickly embedded into struggles over gentrification and affordable housing as American cities were growing increasingly unequal. A 2015 survey of Registered Environmental Justice Organization (REJOs) revealed that organizations have become more diverse in mission and focus, including land use planning, climate and food justice, energy poverty into their priorities, and calling for intersectional approaches between geography, sociology, medicine and health. They are also seeking further connections between environmental health, reproductive health and environmental exposure and linking these with concerns of economic policy (Larsen *et al.* , 2015).

In summary today’s EJ movement in the U.S. may be seen as the result of the organizing of local black and brown communities of color fighting for dignified living conditions in the presence of legacies of environmental racism, at first, linking race to the location of commercial hazard facilities and health outcomes. From the late nineties onwards, as the national presence of localized networks pressured national agencies to prohibit discriminatory actions on the basis of race, the movement expanded their agenda, advocacy and on the ground action to other issues, such as climate change. For decades the environmental justice literature has studied the connection between race/ethnicity and proximity to toxic facilities in cities, and the work is now being leveraged to understand how justice and flood risk combine in coastal areas.

1.2 From Traditional Flood Risk Assessments to a Flood Justice Framing

As people across a variety of cities experience the increasing effects of climate change, researchers' interests in understanding the multi-dimensional nature of coastal areas - simultaneously attractive, biophysically dynamic, while subject to political decision making - has increased. In comparison to research from other environmental hazards, the literature regarding EJ implications of flood hazards is smaller and more recent. A whole issue of *Regional Environmental Change* was recently dedicated to research that takes inspiration from findings within the EJ literature, extending the field to find applicability to Flood Risk Management (FRM) (Thaler *et al.* , 2018).

The research collected in the volume borrows notions of distributive and procedural justice and applies it to urban flood risk in both the U.S and European cities. Although notions of sensitivity and vulnerability have gained growing consideration in traditional FRM (Cutter *et al.* , 2009), as well as the notion that vulnerability to flooding may be only one of the issues among many others faced by low-income communities (Lopez-Marrero and Tschakert, 2011), assessments are often only able to convey an abstract snapshot with significant assumptions and uncertainties about risks and possible mitigation measures, simplified into variables easily measurable through cost-benefit analysis (Bos and Zwaneveld, 2017). Flood risk assessments and maps are frequently updated by authorities, as they incorporate new knowledge from modeling, however these alternations tend to take place closed doors and in largely opaque manner so that what was previously considered 'safe' under one model, now becomes 'at risk' with little opportunity for discussion with those who will be affected by this change (O'Hare and White, 2018).

An example of both the opaqueness of maps and models is the ongoing debate between the City of New York, FEMA's flood zones and their ongoing update. In PLANYC, Bloomberg's 2007 vision for New York, authorities recognized that FEMA's flood maps were severely outdated (the last revisions were carried out in 1983) and warned "in areas where insurers feel the risk is too great, or their ability to raise premiums is hampered by political or regulatory limitations, the risk burden will be shifted to the public as well as to banks and investors" (p.139). The stakes are so high that when in 2015, the federal government issued a preliminary draft of its updated 100-year flood maps, which greatly expanded New York City's flood zones, the city rejected the maps. An additional 35,000 buildings, for a total of 72,000 buildings and 400,000 New York City residents were now in the 100-year floodplain, according to the update, which meant thousands of additional residents now had to purchase flood insurance (The New York Times, 2013). The city appealed by saying that as a result of technical errors, FEMA overestimated the size of the floodplain, with a resulting huge cost burden for homeowners and more so for low-income renters in public housing units built on the waterfront. FEMA agreed there were errors and that the maps should be revised, but for some planners, the fact that FEMA maps are often subject to such dispute is a cause for concern. Citizens are left in a limbo. Even though new maps allow property owners to check their address to determine whether they are in a flood zone, and how severe the flooding could be, there are considerable uncertainties around whether a home falling into a floodplain map will actually be affected by the next big storm.

The distributive dimensions of injustice, like costs and benefits of measures to adapt to flooding through insurance, are influenced by broader, often intangible, process-based inequities. Vulnerability research shows that people living in poverty and/or socially marginalized have reduced capacity for self-protection in terms of mitigating flood hazards at home pre-event, evacuating in response to flooding, or returning home or to employment in the aftermath of a flooding event, accessing social protection such as flood insurance, hazard mitigation infrastructure, emergency response information and assistance (Green, Bates and Smyth, 2007; Collins, Grineski and Chakraborty, 2018). The distribution of emergency response may also be unequal. Based on physical damage calculations after superstorm Sandy, populations living in some NYCHA towers suffered disproportionately from delays in emergency response, living with no running water, heat or lack of repair work until long after the storm (Sellers, 2017).

In conclusion flood risk researchers realized that the abstract and aggregate information of FRM need richer accounts provided by a justice framing in order "to capture fine-grained differences between affected populations, particularly those that are rooted in more complex societal disadvantage stemming from outside

the flood risk arena” (O’Hare and White, 2018:385).

2. Distributional and Procedural Justice in the context of Coastal Flooding and Resilience

2.1. Distributional Justice Studies of Flooding Vulnerability

EJ scholars recognized that the early waves of EJ literature largely focused on spatial proximity, as a variable of distributional justice, seeking evidence of disproportionate bias of location of particular types of infrastructure to minority groups. The bias is more often confirmed than not. For instance, Pastor, Sadd and Hipp (2001), using multi-variate analysis found that in Los Angeles County, toxic facilities are disproportionately more sited in minority communities, debunking the belief that low-income minorities may move in after the siting as land values drop. The EJ field has shifted from studying purely spatial proximity to toxics, to incorporate more nuanced understandings of injustice. Recent studies claimed the importance of undertaking cumulative assessments of risk in order to understand how social and environmental stressors can work in combination to produce health disparities (Morello-Frosch *et al.*, 2011; Sadd *et al.*, 2011).

Examples of the application of distributional justice in coastal flooding, instead, have focused on investigating the distribution of water-based amenities and the way they structure patterns of settlements adjacent to the coast (Collins, Grineski and Chakraborty, 2018), the spatial and social inequities between coastal and inland flooding (Montgomery and Chakraborty, 2015), as well as the differences in distribution of costs and benefits of FRM (Kaufmann, Priest and Leroy, 2018).

These studies begin to unravel a landscape of uneven risk between residents living on the waterfront of U.S. and E.U cities. This unevenness is brought about by a combination of factors such as: the historical patterns of coastal urbanization driving what is built on the coast; the institutional mediation of risks through a variety of structural (flood control structures) and non-structural (flood insurance) measures that privilege areas with higher amounts of water-based amenities and property values exposed; the social disparities and intra-ethnic diversity between people living inland and on the coast; and different understandings of distributional equity in the distribution of pre-flood defense measures and post-flood recovery. This brief overview points to the important ways in which scholars of distributional justice of flood risk are starting to move passed understandings of spatial proximity to hazards, which was a key aspect of early EJ scholarly work. Flooding, Walker (2009a) claims, shares similar contextual complexity as green space and pollution. Green space is more than just an issue of ‘availability’: there can be important cultural, gender and other differences in how particular forms of green space are viewed and the functions and services that these perform (Walker, 2009b; Wolch, Byrne and Newell, 2014; Anguelovski *et al.*, 2018). Pollution is also socially contextualized, intersecting with life courses, class and poverty so that impacts of “equal doses” are not equally experienced or coped with—an observation that extends to the unevenness of the psycho-social as well as the physiological impacts of living with sources of risk.

To this end, EJ theorists like Walker and Bullard, also advocated that meaningful stakeholder involvement in decision making, in the development, implementation and enforcement of environmental laws, regulations and policies is key for realizing justice. Notions of society decides to regulate and governs spaces, resources, and processes of stakeholder involvement happen in the context of politics. Indeed, the way in which climate change responses are deployed, re-organizes materials and spaces in the pursuit of alternative urban futures (Castán Broto, 2017). The exposure to, prevention of and recovery from climate change impacts are defined and implemented in the context of politics, or what I refer to ‘resilience politics’.

Responses to climate change impacts, like flooding, are generally framed as wanting to achieve urban resilience – resilience as end goal – or more broadly take resilience as an ongoing process (Davoudi *et al.*, 2012). Urban

Resilience as an end goal is often associated with the ‘short term’ aim of (re) building a more robust, resistant city to increasing rates of climate change induced disasters. The broader perspective, transcends recovery by embracing change, self-organization, and eventually transformation of the possible configurations of its socio, political economic and ecological features (Chelleri, 2012). I define resilience politics by using the formulation by Holland (2017), as the relations and interactions shaping decisions about how particular communities will adapt to climate change, such as decisions to retreat because of climate change, to develop local adaptation plans, or to develop particular strategies and actions that implement those plans.

Like the arrival of unwanted land uses (Swyngedouw, Moulaert and Arantxa, 2002), climate resilience, requires that vulnerable communities respond to an imminent threat over which they have little or no control. Because climate resilience interventions will alter people’s relationships to the natural environment, scholars called for giving communities some control over their destinies, identities, and responses to real or imminent changes to the environments in which they live (Adger *et al.*, 2011). It will not suffice for governments to do a better re-distribution of environmental bads, in the context of resilience politics, a procedural justice approach to flooding is required.

2.2 What is Procedural Environmental Justice and how can it inform Climate Resilience Politics

Procedural justice is interested in the context and the processes that brings about distributional justice disparities. In general, research interested in procedural justice moves beyond traditional understandings of where and who is exposed to flooding to broader and layered factors of why and how certain segments of society are more exposed or show different abilities to recover from disasters (O’Hare and White, 2018). In order to do so, studies of procedural justice in the EJ literature largely focus on qualitative methods, drawing from ethnography and anthropology in order to capture the fairness of the institutional processes through which decisions are made. Studies looked at how residents and activists are organized and what their counter-claims are and how they mobilize against industrial contamination (Maantay, 2002; Checker, 2007; Sze *et al.*, 2009) and more recently, public health risks exacerbated by climate change in Special Maritime and Industrial Areas (Bautista, Osorio and Dwyer, 2015) or groups capabilities to forge alliances with powerful actors in the climate resilience arena (Allen, 2007; Holland, 2017).

Procedural justice scholars have suggested studying different aspects of procedural justice, including **recognition** as the ‘processes of disrespect, insult and degradation that devalue some people and some place identities in comparison to others’ (Walker, 2009:615) or, in other words the lack of recognition about group difference in a society where some groups are privileged while others are oppressed (Schlosberg, 2003). Recognition or lack thereof, is embedded in cultural norms and in discourses that frame the ways in which problems and their solutions are conceived by both groups in power and those who are less so.

How does the embedding of misrecognition in cultural norm occur? In her research across the U.S., Pulido (2017) theorized the linkage between capitalism and race, where differential value has been reproduced in struggles over appropriation and access to land as well as labor system, and capital when, for instance, industry and manufactures create sinks, places where pollution can be disposed of, in the form of air, water and land but also racially devaluating bodies, as well as the neighborhoods where they reside. Place stigmatization arises from such institutionalized understandings of misrecognition, where “marked people in marked places become expected to live with incivilities and blamed for not looking after their environment” (Walker, 2009:627). Importantly, when disasters strike, these sites can become entangled with ongoing processes of organized abandonment in already racialized or marginal sites (Allen, 2007).

Participation and procedure are also seen as integral components of how injustice is produced, they are the tools for addressing injustices because they relate to how people are allowed to take part in processes of decision making. Schlosberg, quoting Gould, says that taking differences in public life seriously means a radical increase in opportunity for participation, for individuals to have an equal right in determining their

own actions. This is a central demand in EJ movements, but it is also very much linked with both recognition and distribution, for as Schlosberg says “one must have recognition in order to have real participation; one must have participation in order to have real equity; further equity would make more participation possible, which would bring more recognition, and so on” (96).

Justice as procedure is about enabling access to spaces, and flows between spaces, that have previously been restricted (Barnett and Low, 2004 in Walker, 2009). This means for communities to have access to accurate information and unbiased hearing of claims in material terms, where time and space constraints of everyday life limit abilities to be present in participatory spaces, from local meetings at community boards and EJ groups led public deliberations. I refer to public deliberation as “meetings where citizens collectively discuss local problems and possible solutions” (Fagotto and Archon, 2014:7) about coastal flooding exposure and resilience and connected concerns around housing, health and planning more broadly. Again, we see the circularity of the relationship between participation and recognition. Access to spaces where the claims of groups affected by environmental decisions can be voiced, requires bringing people who are mis-recognized into a political process with people that treat them as full partners in social life – as worthy of equal respect and esteem in decision processes and procedures. Recognizing the experience of lay-people as valid as those of experts who are informed by science is a contentious point that unites both EJ and Society Technology Studies (STS).

Just like the politics of EJ is fraught with expert lay-people conflicts that often pit communities exposed to environmental harms against well-funded government or industry experts, so are the politics of resilience, where there is often a notable lack of consensus about the meaning and priority of competing claims over what climate resilience plans should look like at the local level (Allen, 2007; Bulkeley, Edwards and Fuller, 2014; Eriksen, Nightingale and Eakin, 2015). This can be compounded by the use of standard comparison techniques or techniques to determine loss and damage, that miss out on important differences between black and white populations, or low-income residents. In the EJ literature, Checker (2007) studied the biases that shaped an Environmental Protection Agency (EPA) risk assessment report on the level of contamination of air, soil and groundwater contamination around a declining urban area in Augusta (Georgia), showing that the way in which risks are problematized serve science but not environmental justice necessarily. Bryant (1995) posited, that issues of certainty and causality, or lack thereof, can be used to justify inaction or misrepresent the complexity of the communities that agencies like EPA, are supposed to help.

Issues of uncertainty in exposure to environmental harm can, quite literally, split communities in two, between those who believe in the accuracy of the scientific establishment and those who don’t. In line with this, Ottinger, Barandiarán and Kimura (2017) recently argued for **epistemic justice** as a separate category of justice, along with distributional and procedural. With this term the authors identify “people’s right to be respected in their capacities as knowers” (2017:1032) which means that, in demanding for their experience to be weighted as much as that of vetted experts, EJ activists are also demanding recognition for their cultural identities as well as their identity as knowers. One of the ways in which different knowledge claims find their expression is through community-based environmental justice research and planning to help remediate particular environmental and pollution threats in communities of color and generate new knowledge about the relationship of race, poverty, health, and the urban environment (Sze, 2007) and, more recently, climate change induced flooding and energy poverty (see section 1.1).

In the pursuit of alternative forms of community research and planning, EJ groups ask different questions, looking for ways to represent ongoing systematic hazards rather than assessing regulatory compliance. For instance, Sze (2007) documented how since the mid-nineties, WeAct and other environmental justice groups active in Brooklyn and Manhattan (NYC) have transformed their activism around environmental justice and clean air issues into research programs that emphasize community empowerment in study design and data collection. Using the principle of “speaking for ourselves”, WeAct developed the position that communities of color “are not objects of study but rather must be active collaborators with researchers and institutions to assess and eliminate the causes of poor health” (157). Community-based planning often allows the expression of alternative ideas to mainstream planning for the use of open spaces, especially along politicized spaces

such as NYC's waterfronts.

2.3. Research Questions

Recognition, participation and epistemic dimensions of justice are a crucial component of understanding what is normally glossed over in official resilience and adaptation policy documents and is not captured by distributional studies of flooding: the why and how specific social groups may be more or less affected by coastal flooding. This pilot study advances a set of research questions aimed at capturing procedural dimensions as they unfold on the ground and in alternative community planning documents in East Harlem, New York City. The overall study question is:

- How can public deliberation around coastal flooding in East Harlem be conceived of from a procedural justice perspective?

In order to answer this question I ask:

- How are local conceptions of environmental justice tied to coastal flooding in the way community groups describe vulnerability and resilience responses?
- What are the instruments of policy deliberation in place around issues of coastal flooding?
- What are community groups' perceived hindrances in accessing these instruments?
- What types of knowledges are produced, used and shared around coastal flooding among community groups?

3. Methods and Analysis

In line with the tradition of procedural justice studies, I utilized qualitative methods in this research. Qualitative research is often used when one seeks to understand a given problem from the perspective of the local population it involves. It is especially useful in collecting values, opinions, behaviors and the social contexts of particular populations (Cataldo, Kielmann and Seeley, 2011). This approach suits the aim of this pilot study that is to understand from community groups themselves how they address the relationship between flooding and environmental justice, what they think about the public opportunities available to deliberate about issues of flooding and finally whether and how they produce, use, share knowledge and information about flooding.

Interviews

In terms of methods I decided to use an open-ended format, which unlike close-ended ones (surveys, questionnaires), allows the interviewees to speak at length about how they perceive coastal flooding in East Harlem and understand the variation in their understandings. Semi-structured interviews were conducted to capture the following:

1. General overview of the interviewee and the community group interviewees work for
2. How coastal flooding is understood/described, whether it is a major issue in the district
3. How inland flooding is understood/described, whether it is a major issue in the district
4. How sensitivity to coastal flooding is understood/described in terms of characteristics of groups and areas affected
5. How climate resiliency is understood/described and whether city efforts address the sensitivities previously discussed in point 5
6. Climate-induced flooding knowledge production, access and sharing

The initial target was set for nine interviews across a variety of groups working in East Harlem. The purposive sampling was based on the broad criteria that the community groups needed to be sensitive to flooding, meaning that flooding needed to be a concern in the work they carried out. I needed help identify such groups so I asked to Hope Inc. and Ascendant, two community development corporations of East Harlem with whom I was working with at the time of this study. The list included housing association, schools, EJ and advocacy groups, the community board, NGOs, emergency preparedness groups. But, despite repeated follow up emails, only three were secured, largely due to the amount of time I had (1 month) and the busy schedules of the EJ groups such as WeAct, who were out in the field for campaigning month. I include the whole list below with those I actually interviewed highlighted in yellow below. The names of the interviewees were deleted to ensure privacy.

ORGANIZATION NAME	TYOLOGY (NGO, VOLUNTEERING, ETC)	WEBSITE
WeACT	NGO	https://www.weact.org/wh
Civitas	NGO	http://civitasnyc.org/live/e
East Harlem CERT	NGO	
East Harlem CB 11	community board	https://www.cb11m.org/54
George Washington Houses	tenant association	http://www.east-harlem.com
DREAM School	charter school	https://www.wearedream.org
Friends of the East River Esplanade	community org	https://www.esplanadefriend

All interviews were recorded with the consent of the interviewee and were transcribed on a word document. Considering the small number of interviews, no analysis software was use but themes were identified through keyword search.

On the use of quotes in the analysis

The use of quotes or verbatim from participants is a typical and necessary component to any qualitative research report. It is by revealing participants' exact language that the researcher helps the user of the research to understand the key takeaways by clarifying through illustration the essential points of the researcher's interpretations. The idea is not to display an extensive list of what people said but rather provide quotes that have been carefully selected for being the most descriptive or explanatory of the researcher's conceptual interpretation of the data. By embedding carefully chosen extracts from participants' words in the final document, the researcher uniquely gives participants a voice in the outcomes while contributing to the credibility – *and transparency* – of the research (Morrow, 2005).

Observations at Public Meetings

To make up for the interviews that I was not able to attend I increased the number of public meetings I observed, from two to four. These community group meetings were called around a variety of issues directly or indirectly connected to coastal and inland flooding and specifically. The first meeting was organized by Hope Inc. and in this occasion, I presented the findings from a coastal flooding mapping project I carried out as part of my GIS course at the New School. The project was a cooperation with Hope and Ascendant. The conversation that ensued between the two managers at Hope and Ascendant revealed some important aspects and concerns of matters CDCs when it comes to flooding. During this and the other 3 meetings I attended I took notes in a notebook about the themes naturally addressed by the meetings' organizers and those brought up by attendees. The meetings attended with topics and attendees are listed below. The choice about what to attend was driven by the topic addressed in the meeting, I didn't have a lot of choice given the short amount of time I had for field work; it had to be an issue that was directly – climate resilience

- or indirectly connected to flooding – such as land use and planning. The full list of meetings I attended is shown below with date of attendance, topic and number of attendees.

1. Meeting topic: exposure to coastal flooding in publicly funded, privately owned housing. HOPE Inc HQs (March 29, 2019) > number of attendees: 6
2. Meeting topic: land use and planning. Community Board 11 (April 3, 2019) > number of attendees: 10 community board members; 8 people in audience
3. Meeting topic: full Community Board 11 meeting (April 16, 2019) > number of attendees: 10 community board members; 30 people in audience
4. Meeting topic: climate change resilience working group. WeAct HQs (April 24, 2019) > number of attendees: 3 WeAct members; 15 people in the audience

I practiced participant observations during both one-to-one interviews and meetings. They helped me to collect information on naturally occurring behaviors in their usual contexts, such as how interviewees addressed other staff members in my presence, but also their working spaces and the room set up at community meeting.

Secondary content Analysis

Finally, I reviewed official policy documents about East Harlem, focusing on the recently published Rezoning Plan (2017) for the district and two community-based plans. One produced in 2015 called the Northern Manhattan Climate Change Action Plan (NMCA) led by WeAct and the East Harlem Neighborhood Plan, the 2016 plan that was brought to life by community groups at the news of a possible rezoning of the district. In each document I searched for keywords related to exposure and interventions, such as: climate change, vulnerability, resilience, adaptation, flooding, storm surge, extreme events, elevation, building design, berm, sea-wall, green infrastructure.

4. East Harlem Outlook

4.1 East Harlem's Exposure to Extreme Events

In this study flood risk is conceived of exposure and social vulnerability. Exposure is referred to as the susceptibility of people, properties and systems to being affected by environmental related hazards (Każmierczak and Cavan, 2011). East Harlem offers an interesting set of flood risk characteristics in that 92% of the housing units are rentals and NYCHA owns the largest number of public housing apartments in any of the City's 59 community districts (DiNapoli and Bleiwas, 2017). According to the 2010 Census, 40,000 people lived within the neighborhood's 10-foot floodplain. East Harlem is made up of two zip codes 10029 and 10035. Both zip codes rank second out of all Manhattan zip codes for the number of homes that will be exposed to a six-foot-flood, according to statistics extrapolated from Climate Central's Surging Seas Risk Finder platform (2019). Together the two zip codes total 637 buildings exposed to a six-foot-flood with a total property value of \$ 169 Million (Ibid). This includes also 89 public schools (66 the Manhattan median; U.S. 2010 Census Data), 139 NYCHA buildings (21 the Manhattan median; U.S. 2010 Census Data) and 54 between hospital and clinics (25 the Manhattan median; U.S. 2010 Census Data) (Ibid). The entire East Harlem floodplain currently contains \$2.14 billion in physical assets (Ibid)., this is without considering the expansion of the Second Avenue subway that will extend the Q line till 125th St, adding 16 new stations and

approximately 300,000 daily riders (MTA, 2019). East Harlem’s elevation is also, on average, the second lowest in Manhattan, with 17 feet (DCP, 2018).

4.2. East Harlem’s Sensitivity to Extreme Events

Social vulnerability explicitly focuses on those demographic and socioeconomic factors that increase or attenuate the impacts of hazard events on local populations (Cutter *et al.*, 2009). There are 147 people with medium social vulnerability and 862 people with high social vulnerability in 10035 and 10029 respectively (Ibid), with “high” and “low” indicating the 20% most and least vulnerable in coastal areas of each U.S. state. A recent study (Albetski *et al.*, 2017) categorized East Harlem’s vulnerability in three dimensions: socioeconomic status, household composition and disability, minority status and language, housing and transportation access.

In terms of socioeconomic status, although the median household income in East Harlem increased by 23% since the end of the recession in 2009 to \$34,400 in 2016, it was the seventh-lowest among the 55 Census-defined neighborhoods in New York City and much lower than the citywide median (\$58,900) (DiNapoli and Bleiwas, 2017). In order to afford current median market rents one would need to earn at least \$85,000 for a one person household and \$100,000 for a three-person household (NYC DHP&D, 2018). In 2016, 43% of area households devoted 30% or more of their income on rent and nearly 18% faced severe health burden dedicating at least half of their income to rent (Ibid.).

From a household composition and disability standpoint, of all seniors, 40% are living alone of which 32% have difficulty with their mobility (Mark-Viverito *et al.*, 2016). Research show that people living in poverty and who are socially marginalized have reduced capacity for self-protection in terms of mitigating flood hazards or extreme heat at home pre-event, evacuating in response to flooding, or returning home or to employment in the aftermath of a flooding event, accessing social protection such as flood insurance, hazard mitigation infrastructure, emergency response information and assistance (Watts *et al.*, 2015; Maldonado, Collins and Grineski, 2016).

Also, certain vulnerable age groups are rising faster in East Harlem. For example, the population under the age of 18 grew by 21% between 2010 and 2016, which is 10 times faster than the citywide rate. The population over the age of 55 rose twice as fast (27%) as the citywide growth. Children and elderly have special needs in preparation for and in response to a disaster. Education levels are on the rise, but largely due to the educational attainment of new people arriving to the neighborhood. Of the long-term residents who lived in the area for at least 10 years, 18% earned a bachelor degree, whereas 56% of the residents who had moved in within the past four years had earned at least a bachelor’s degree (DiNapoli and Bleiwas, 2017).

In terms of minority and language status East Harlem’s ethnic make up has always been eclectic and historically more culturally segregated than it is today (Goldstein, 2017). Today this ethnic diversity continues. According to recent statistics East Harlem is 44% Puerto Rican, 30% African American, both populations have decreased over time, while the white population increased by 172% to 21,300 residents, representing 16% of the population. The Asian population grew sevenfold to 11,100 residents, making up 8% of the total. Other types of vulnerability include undocumented populations, non-English speaking people and formerly incarcerated people, all of whom are frequently excluded from political decision making, and hence also less control over the distribution of resources after a disaster event (Green, Bates and Smyth, 2007; Watkins, 2013).

From a housing perspective, East Harlem is a community of renters, with rent-regulated apartments totaling 17,450 units, or 40% of all rental units. The East Harlem Rezoning Plan approved by the New York City Council in 2017, is expected to result in a net increase of approximately 3,500 dwelling units, a substantial proportion of which are expected to be affordable. The Community Board 11, initially voted against the rezoning, and since has been negotiating that between 20% of the housing remain available for households

making less than \$25,770 for a family of three and 30% for families making between \$25,770 and \$103,080 (The New York Times, 2019). But there is reason to believe that the East Harlem Rezoning may hand over more of the affordable housing stock into the hands of property developers, reframing what affordability means by potentially increasing the density of market rate housing or changing the ways in which local people can afford the amenities in their neighborhood. This is troubling for, over the past decade or so, New York city housing has been shifting in favor of more middle and high priced rentals, in a glaring erosion to the inventory of rent regulated housing (Stringer, 2018). This situation compounds future climate-related crisis in that, when housing is destroyed or damaged people in neighborhoods with high percentages of poverty and rent burden, it is financially very difficult to recover, especially if they have to relocate. One of the interviewees also pointed out something that may be quite well known to organizations working on the ground in East Harlem but not so much to city officials:

“[.] Those folks cannot go to their summer house or friends’ apartments or go across town and rent a hotel. Similarly to seniors, there are some who would live with a fire, they would deal with the smoke. If you’re lower income where do you go? The evacuation center is your only shot. You also need to have the confidence to leave your place, you may ask yourself whether someone is going to break into your place while you’re gone. you have to protect your stuff, that’s the other thing people won’t budge. people are going to weigh it. I know I can replace my record collection if I lose it, right, I don’t know if I can replace it and identify so strongly with that, I’m not budging. Because I know once I leave (my apartment) then knucklehead over here will start breaking down doors and taking stuff. It’s not something that people in other areas have at the front of their mind. if you don’t have you identify with what you have. ” (Interviewee, 1)

Following from this argument, is not only that people do not have anywhere else to go to in case of an emergency, they may not want to leave all together because of the fear of loathing and attachment to the little that is possessed. This can be the source of potential conflict and put people more at risk in the context of evacuations but it also means that issues of recognition, such as long-term institutional abandonment and disenfranchisement are easy to be tied with the differential vulnerability experienced by some sections of the East Harlem population in aftermath of climate disasters (more on this in par 5.3).

4.3 Community Group’s Understandings of Coastal and Inland Flooding Exposure and Vulnerability

The perceptions of the current saliency of coastal flooding among those interviewed and from the discussions at public meetings ranges from very important to not so important, for several reasons: 1) the time since Sandy makes respondents perceive flooding as an issue of secondary importance today; 2) citizens may not necessarily complain about flooding events with the organizations I spoke to; 3) only one of the three organizations I spoke to was more directly involved in resilience advocacy or planning; 4) EJ groups were busy campaigning on other issues, such as heat; and 4) there are many more important issues that NGOs, housing associations and EJ groups deal with on a day to day basis in a neighborhood like East Harlem. I will briefly expand upon these reasons below but will also refer to the perceptions of flooding that did arise during the interviews and meetings.

Firstly, Sandy was a 1 in a 100-year event that happened six years ago, but since then coastal flooding events of even lesser magnitude have seemingly not occurred. For the Community Board (CB) the issue is not a priority topic at the moment nor it was in the past years, but, as it typically happens, it was much more talked about in the aftermath of Sandy. But prior to Sandy, resilience or climate change were also not topics of discussion at the CB. Since the storm conversations about the climate and flooding “came to us” the interviewee said, and by that he referred to the engagement that the Parks Department and the Mayor’s

Office of Resilience had with the East Harlem's CB and other local groups in the making of the East Harlem Resiliency Study, due out this Spring.

Secondly, even when asked about inland flooding, it's clear that citizens make use of the CB for issues that are not related to flooding because they probably believe that fire department may be a more appropriate call. That citizens are not resorting to the CB makes sense, after all its primary objectives are different. CBs were set up by the New York City Charter in 1963 as advisory boards to the city planning commission. In 1976 the Uniform Land Use Review Procedure (ULURP) was adopted, mandating that community boards review and vote on all land use applications affecting the community (Sze *et al.* , 2009), but later CBs began to play a role also in the municipal budgeting process and be responsible for service delivery in the district. CBs oversee how agencies are addressing the needs of constituents and how requests submitted by constituents are being addressed by agencies. CBs, for instance, approve motions to extend or grant new liquor licenses, changes in property ownership of commercial establishments and changes to opening and closing hours. ULURP, however, is only an advisory process, so the city can ignore the board's vote.

Thirdly, only one of the three organizations that I was able to interview in this pilot study is directly connected to climate resilience and flooding prevention agendas. CIVITAS, a small NGO initiated by citizens fighting to preserve the character of Carnegie Hill from oversized developments, is largely dedicated to space improvements such as *"new developments that are degrading the quality of spaces, the proportion, the character of the streets[...] we care for how the neighborhood is going to change and how it is going to retain previous generations ."* (Interviewee 2). But their remit has enlarged from neighborhood presentations and land use planning to the advocating for resilient designs, such as living shorelines on the waterfront's edge. *"We were the ones that created the master plan that was the implemented alone the East River Esplanade. At least portions of it. While FERE are often focused on the maintenance, we plan, do community participation, we put together ideas/solutions but we don't usually implement them. That's private money of the parks department. we're usually the ones that study it first and find out what can be done "* (Interviewee 2).

Fourthly, the timing of my interview or observations at meetings may have also played a role. As the summer is approaching, WeAct, for instance, has been campaigning all month long on issues related to heat and heat related impacts in their focus neighborhoods. Flooding is not a top priority in East Harlem at the moment, yet the meeting I attended at the WeAct headquarters was called upon by the Department of City Planning (DCP), currently working on the new Comprehensive Waterfront Development Plan, issued every 10 years. The plan is required by legislation (by a 2008 Law concerned with the loss of the Maritime Industry, especially in Brooklyn districts like Red Hook, Greenpoint, Sunset Park) but does not hold legal weight in and of itself. It was in the last plan issued in 2011 (called Vision 2020), the DCP officer explained, that climate change and resilience concerns along the waterfront became an important consideration along with existing concerns, such as the need for waterfront properties to provide waterfront public access as part of their developments. Although the plan has no legal weight it, Vision 2020 had a strong influence on the strategies for recovery and resiliency after Hurricane Sandy. During this meeting attendees raised a host of problems throughout waterfront areas of Manhattan, one of the most important ones was related to how the development of waterfront amenities, which may include green infrastructure, can lead to further gentrification.

Finally, with the community outlook I detailed in 5.1 and 5.2, coastal flooding in East Harlem is perceived as one issue among many, some of which are much more persistent in the lives of, especially, its poor and poorest inhabitants (those living below income levels of \$30,000 per year). In the words of the director of the NGO: *"We have a hard time talking to people in a lot of these neighborhoods about flooding, about the environment, about even health and wellbeing, transit and bike lanes. They don't even have heating in their apartments or have led paint that's peeling on the walls, or mice running around the counter tops. how can we be worried about a park or a flood, we don't even own the house, we are living day to day...so they're living a life of survival, not a life of quality "* (Interviewee 2). These issues will be expanded upon in 5.3.

Nevertheless, it was possible to discern perceptions of exposure and sensitivity to coastal flooding by what interviewees recalled about Hurricane Sandy. Some referred to the extent of the flooding as a monitor of

exposure “flooding came all the way back to the viaduct at Park Avenue. You are not talking about only a block or two”. (Interviewee 2). Civitas also recognized the biophysical exposure that specific areas right below 110th St. have, due to the natural ecosystem and topography of Central Park and the rivers that used to flow out to the East River. This becomes obvious when one compares a map of Northern Manhattan in 1600 Century, with FEMA 2015 flood projections (Figure 1), where the flooding extent in the FEMA map follows a similar inland path as the one of the river just below where 110th St is today on the 1600 map.



Figure 1: Couldn't find a caption, edit here to supply one.

Staff at Washington Houses, instead, which is facing Second Avenue and is partially affected by the 2015 FEMA floodplain, connected Sandy and sensitivity to the high level of emergency (un)preparedness they experienced, as they initially did not know where to go in the aftermath of Sandy, since there continues to be no evacuation shelter in East Harlem (the only one is PS 92 on 222 W 134 Street, in Central Harlem). The East Harlem Community Emergency Response Team (CERT) instructed Washington Houses Tenants, to go to the Dream Charter School, formerly Harlem RBI, which was rebuilt in 2008 on NYCHA property, just next to Washington Houses. Washington Houses was largely spared by Sandy, but narrowly. Yet there

are 22,000 people living in this development, some of which have lived all their lives in these units, many with mobility problems and unable to use smart phones. Poor emergency preparedness is tied to a culture of neglect that unfortunately NYCHA is famous for. The interviewee referred to a “*lack of sense of belonging*” and to NYCHA inhabitants as having a “*culture of disenfranchisement*” which is both influenced by the physical degradation of the properties – some of the basements at Washington Houses have been closed off because of the amounts of rats in them – the severe unreliability of services like heating in winter, the unavailability of NYCHA staff – which deal with complaints through a phone app that many elderly are not trained to use. Faced with issues of such magnitude coastal flooding just fades in the background. Yet mistrust in institutions, stigmatization may all play a detrimental role in the event of a flooding as people prefer to hunker down rather than leaving the premises.

The stigmatizing of NYCHA renters versus homeowners by some NYC authorities is well documented in the study by Graham (2018). Graham attended local community board meetings and other Sandy recovery planning meetings interviewing 50 local residents. Graham talks of there being ‘an invisible divide’ between the homeowners and the public housing tenants, the latter being stigmatized as black people of color, an ‘inferior status’ which rationalized their unequal treatment. One of the reasons for the alienation felt by tenants is clearly of an institutional nature and it here that we observe how issues of recognition are tied with institutional practices: the U.S. Housing and Urban Development (HUD) has its own resident councils, which lead tenants to focus their efforts on HUD only rather than on community-wide efforts that interest NYCHA tenants. Moreover NYCHA’s “para-governmental” status, allows it to operate with very little managerial and budgetary oversight at the state and local level.

Both coastal and inland flooding exposure are seen as important issues by Community Development Corporations (CDCs), where CDC managers and some of their young staff play a key role in raising the need for evidence of exposure and damages but also for actions to be better prepared for the next big storm and rainfall. CDCs like Hope Inc. and Ascendant, perceived their properties to be vulnerable to ‘blue sky flooding’. This is the type of flooding occurring without stormy weather and influenced by high tides at seas, high ground water table and surface elevation. There is anecdotal evidence that this type of flooding affects basements of properties owned by Hope Inc, which are recurrently flooded, but for which Hope has very little funding for left over after what goes towards regular building maintenance. Moreover, coastal flooding will increasingly become an issue, as a recent study showed that 84% of Hope properties and 35% of Ascendants’ may be affected by coastal flooding by 2050 (Olivotto and Almonte, 2019).

Hope has been receiving a number of violations from ConEd – NYC’s energy company - because as flooding affects basements, officers cannot access gas and water readings stored there. Because of these violations, Hope has been unable to close housing retrofitting deals with for-profit-banks they partner with. Yet there is no way to prove that a violation was issued as the result of flooding in the basement. For both Hope and Ascendant collecting and systematizing evidence – even if anecdotal – of flooding in basements, is an important step towards trying to address even greater issues facing affordable housing in the context of flooding. Hope, for instance, voiced concerns at the new developments built since Sandy in the Hurricane Flood Zone. Although these are going up with new mitigation measures, would their foundations affect the flow of underground water aquifers, causing worse flooding elsewhere, perhaps in CDC homes?

In summary, although the pilot relies on a handful of interviews, perceptions of exposure and sensitivity to coastal and inland flooding in East Harlem vary due to some of the factors I explained above. Coastal flooding exposure was understood in terms of extent of water reach in the aftermath of Sandy, as a legacy of the natural biophysical properties of the land, while inland flooding exposure was connected to rainfall and high-water tables, leading to ‘blue sky flooding’, or as the consequence of newly built developments which may shift aquifer waters elsewhere and worsen flooding when it happens. Some interviewees did not seem to be aware of the jargon ‘inland flooding’ but called flooding anything that had to do with high levels of water affecting people’s ability to carry out their daily lives.

Vulnerability was understood as poor emergency preparedness, aggravated by the existing living conditions of the poor and poorest public housing dwellers. This condition is systemic because it largely results from

the under funding of and lack of oversight over NYCHA but is also the result of past planning decisions that in 1957 built these properties in the only place where cheap land was still available, the floodplain, at a time when flooding issues were not on the table. CDCs, instead, understood vulnerability as basement flooding in CDC apartments. Perceptions of vulnerability also varied according to location and perceived area affluence. For instance, interviewee 1 referred to “pockets” of vulnerability in El Barrio, Riverton and on the public housing developments on the shore, but less so are in areas around 5th Avenue, Riverbend to the North, and other housing cooperatives where “economically stable and politically active people” especially in the latter, reside (Interviewee 1).

4.4 Perceptions of Climate Resilience Interventions and of City Efforts

Climate resilience against flooding was perceived as: 1) an issue of land use and building design; 2) an opportunity for ecological designs; 3) a need for better emergency preparedness and emergency funds; 4) an issue of building materials; 5) an opportunity for tax credits and more comprehensive assessment of housing retrofitting costs; 6) as ‘the impossibility’ of relocating lower income households that are most at risk’. All points are discussed in more detail below.

The issue of land use and building design was brought up by both the Community Board and the CDCs. As part of its land use review duties, the Community Board has had discussions with DCP during the review of the Zoning Quality and Affordability Overview, where mitigation measures for new buildings were being drafted, such as giving floor area back if the building was built higher or designating only certain uses on the ground floors (e.g. commercial, rather than residential). Since then, the CB has added specific check marks on a list it keeps to remind CB members what are the most recurrent questions they should be asking to all developers seeking the Boards’ approval, illustrated by this quote *“there is a new project that we are considering issuing recommendations for and because of its proximity to the river, on 120th St, it’s going to have to consider what do you with the first couple of floors, what are you putting there, is it going to be a parking space or commercial space or something else. So, this is a dialogue we have at the land use committee”*.

Both organizations felt that dealing largely with new building designs wasn’t enough. Although there’s now a requirement for existing buildings to remove boilers from basements and ground floors, the costs of this and other mitigation measures are entirely, for instance, on CDCs property owners, who perceive the necessity of a long-term commitment with the government. For instance, one CDC expressed the need for “underwriting a deal where low income housing are given tax credits to be able to do the necessary mitigation measures”. Another CDC manager mentioned the need for “district wide assessment of the costs of retrofitting existing buildings, as it doesn’t make financial sense that each development does its own”. Housing materials that are more resistant to mold, like sheet rock, were also discussed, but so far neither CDC began any rehabilitation process. Neither CDCs had given significant thought about vacating the ground floor from residential units, there seemed to be too many impossible logistics: “where would people go? What to do with the vacant units? Why would HPD eliminate affordable housing units, when there’s actually more need for them?”

The CB interviewee acknowledged the issue as well: *“we had informal conversations about new buildings on a NYCHA Estate as it relates to infill development. If you’re going to have a new building on a NYCHA Estate, the new people living there will be benefiting about the new way of thinking about possible flooding, versus people that are right next to it who won’t. Do you start thinking about well if I have 10 empty apartments in a building do I fix those apartments, move everyone from the ground/first floor into these apartments and then just stop using the first floor for residential, and make a community space or a commercial space”*. This is a crucial issue that a procedural justice can daylight, which relates to the potential for unequal distribution of resilience benefits between new and existing developments. NYCHA should be replicating good practices in new buildings also in old ones, but executing works in old buildings is perceived as a problem: *“we’ll make a formal recommendation (to the land use committee) at some point but it’s a huge ask because it’s a lot of developments, the executing may be a difficult part ”* (Interviewee 1).

Both the CDC and Washington Houses expressed the need for better emergency preparedness, specifically in terms of needing a new evacuation shelter that is outside the floodplain and closer to the hearth of East Harlem. Discussions on this have happened within the frame of the Rezoning Plan but no final decision had been made. Yet shelters are not the only need when housing tenants have mobility issues, something more is needed. The Washington Houses and Dream Charter School teachers cooperated in 2018 to design and distribute an emergency preparedness survey that was answered by 35 households to understand how vulnerable their tenants were: “we discovered that 70% of the respondents had one person with disabilities in their homes” (Interviewee 3). Even though a booklet with the survey results was distributed in different languages with information on what to do in case of evacuation, there still remains a logistical issue to move people with disabilities outside and have sufficient support on the way to the shelter.

Finally, CIVITAS sees flooding as an opportunity to re-think the waterfront, lawns, drainage systems and the whole emergency apparatus. This view, on one hand, stands in contrast to the hard infrastructure, like sea walls, proposed in the Rezoning Plan (Planning, 2016), but is quite aligned with the ongoing Resilience Study by the Parks Dept. (NYC Parks and NYC Planning, 2018) CIVITAS has been doing preliminary background work, with the DEC at State level, to implement the idea of living shorelines in a comprehensive fashion. Living shorelines are a softer solution than bulkheads, preferring natural materials that slow down wave motion or absorb water while providing ecological benefits. The Resilience Study by the Parks Dept, quoted by CIVITAS, highlighted many potential areas, including lawns in front of or within many public housing, that represent “largely unused space and could be repurposed for bios-wales to slow down and absorb storm water”. The interviewee’s experience working as a planner in Miami, played an important role in shaping ideas around what should be done in New York City, where for instance, he maintains that all buildings containing first emergency vehicles should be elevated about floodplain level, at least the garages, so that as soon as flood waters recede, vehicles can reach those in need.

In an earlier email exchange with CIVITAS, I also understand something more fundamental about resilience or that there is a perception that the city acknowledges the need for alternative designs/solutions on paper but the reality is far from it. The Parks department is going to spend over \$100 million in East Harlem to connect 125th St and 132nd St. along the Harlem River, where currently there is a wall. CIVITAS has been advocating for a living shoreline instead of bulkheads. This would entail authorities to ‘lose’ 5-10 feet of land but Parks and the administration have refused the idea to lose land, they will not ask for permits for a living shoreline “*because it may slow down the project*”. This decision is at odds with state regulatory agencies, who instead believe that this can be done. The frustration was clear: “*We could be building environmental resiliency and ecological benefits into this new project, but the “value” of an extra 5-10 feet of grass or benches is determined by Parks to be more valuable than the environment, even though, if you ask the Mayor, Parks, anyone if they support climate change, sea level rise adaptation, the environment, improving water quality, or adding more oysters that would filter more pollutants, they will all answer yes, we are in favor of environmental justice, environmental adaptation. . . The actions do not support the policies, laws, or public views.*”

WeAct, adds an important justice perspective to the considerations above. DEP has spent over \$40 million to-date on wetlands restoration and other coastal protections but what remains to be seen is the extent to which developments will encompass community-based plans or be leveraged to gentrify waterfront areas (Santiago *et al.* , 2015). In my brief conversation with a WeAct community organizer, I found out that none of the ideas proposed in the Northern Manhattan Climate Action Plan, which included, wetland restoration amongst a host of other resiliency objectives, had been seriously taken in consideration by the city.

4.5 Climate Knowledge Production, Access, Use and Sharing

In this part of the study the focus was to collect information about how community groups engage with information about the location and timing of future flooding, what do they use it for, how it is accessed and shared. In general findings suggest that organizations rely on the weather forecast, online websites and tv or

on the information given by sister agencies, such as DEP and Parks. This after all makes sense, in big cities the tendency may be to rely on lesser sources of information already packaged for you by organizations that have the means to produce knowledge on climate. This is accompanied by less formal or standardized effort to gather knowledge, such as using weather apps on smart phones but not as far as asking a neighbor on the street, or just knowing the direction the wind is blowing or other natural clues. In some sense knowledge is coming from multiple sites and may be produced quite far away from people's homes. Yet these knowledge sites come from largely centralized sources, begging the question of whether areas in the 'countryside' upstate may rely on less modern forms, or whether cultural differences among New Yorkers may lead to culturally different ways to understand when a hurricane is about to strike.

The information is used to make practical emergency management decisions about the days ahead, illustrated in this statement "I do the same as in a big snow storm: are you going to come into the office, then maybe you check what the Mayor is saying, stay off the streets, or schools are closed. Same thing applies to a hurricane". (Interviewee 2) The CB plays a more complex role, one that is more integrated with the web of agencies that provided services to New Yorkers, while at the same time being 'closer' to the citizen. When asked what they would do in the event someone would call the CB alerting about a flood, they would seek to understand whether other people are having the same problem, by making phone calls, and if there's a pattern and depending on its gravity they would either call the police or fire fighters. If the problem seems not life threatening they would convene a public hearing, communicate what they learned about the issue and what other authorities can do to help them: "do we have to talk to the property owner? or multiple property owners? is it a matter of local, federal or state policy?" (Interviewee 1). The atmosphere experienced at the few CB meetings I attended speaks to these words. It's a space of dialogue, where nobody is turned down but also where board members have answers to your questions, or even if they don't, they will help you to find it out on your own. At the same time the CB is not so informed as to where should citizens go in case of a hurricane, they rely entirely on COAD's or CERT's information and expressed the need for "information to be available to constituents directly, so that they know without needing to contact us. those properties that are in flood zones should have numbers to call to help people deal with the situation presented" (Interviewee 1).

In terms of access to events where knowledge about flooding may be made available three out of four organizations, including WeAct, host events related to climate resilience. CIVITAS organizes hands-on events along the East River Esplanade that engage citizens in waterfront wetland restoration and clean ups. These events indirectly touch upon issues of stormwater drainage and the benefits of living shorelines. WeAct hosts monthly public meetings as well as going out in the community to do advocacy on issues connected to both flooding, energy efficiency and broad environmental and neighborhood justice. Although they largely operate on the Upper West Side, they have engaged with East Harlem's Rezoning Plan process, for instance, by drafting a map of different land uses and public services with overlaid hurricane zones and the incoming subway line. This view puts the city rezoning map into a different light, it makes one question whether all these vital public facilities should be there since they are within Hurricane Zones 2 and 3. The city rezoning map carefully omits the hurricane zone overlay (Figure 2)

Figure WeAct East Harlem Climate Map (to the left) and new East Harlem Rezoning Map (to the right)

Since its early days, WeAct used participatory techniques in an attempt to quantify and use methodologically sound techniques in making policy claims. For instance, they had a long standing alliance with Columbia University's School of Public Health in providing research support on air pollution and its impact on child health (Sze, 2007). This engagement is 30 years in the making and builds on extensive community-based planning techniques that consider "communities of color not as objects of study but rather active collaborators with researchers and institutions" (185). They consider climate change as an issue that will exacerbate existing inequalities in planning and development, therefore they spend years crafting alternative visions for neighborhoods scheduled to undergo change by the city council. Since 2017, for instance, they engaged residents and associations living and working on what is perceived to become 'the ground zero' (Velaverde and Gandhi, 2019) of East Harlem's redevelopment plan, that is the area enclosed between East 124th Street

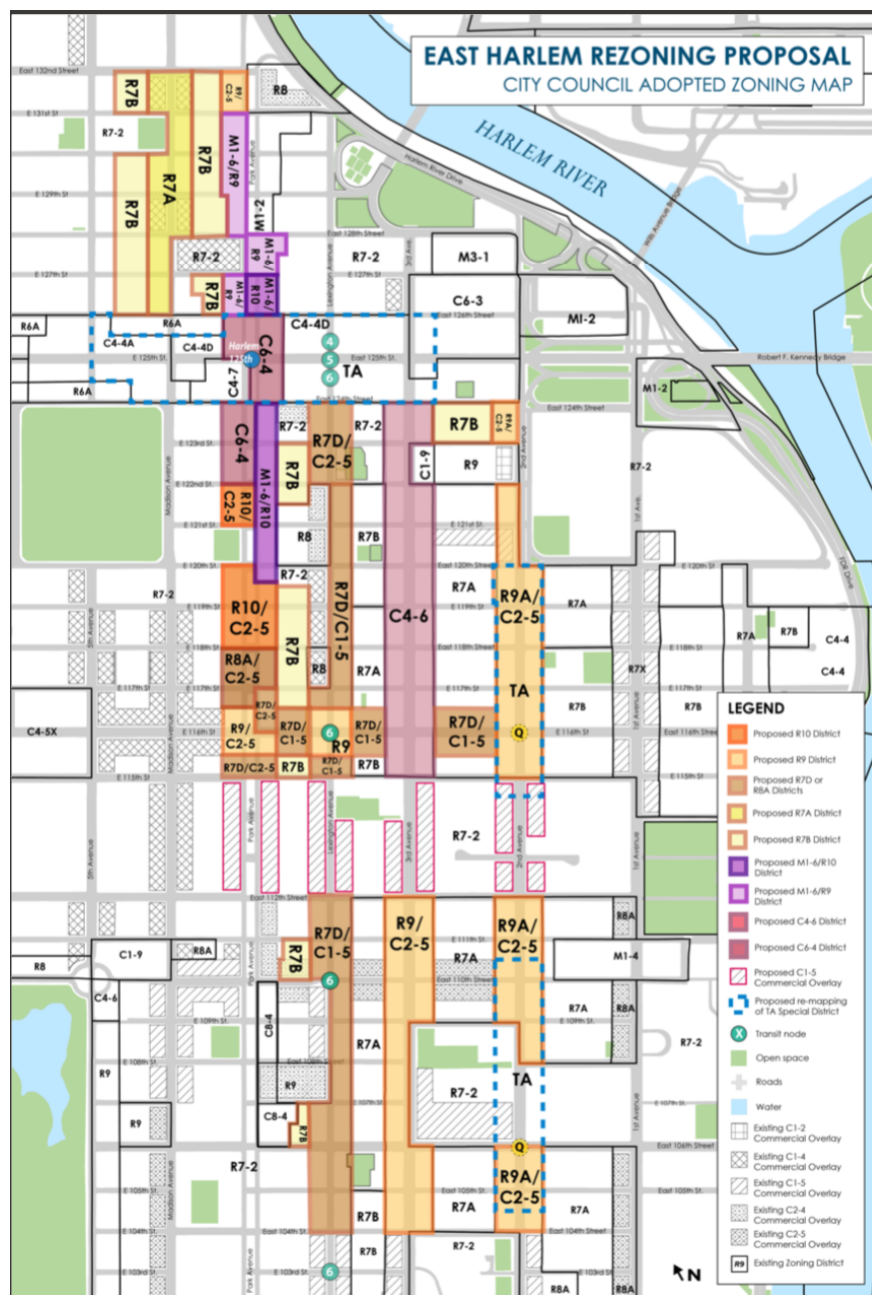


Figure 2: Couldn't find a caption, edit here to supply one.

to the South and East 126th Street to the North, and Madison Avenue and Second Avenue on the West and East. The plan was drafted after an extensive visioning process, where charrettes were produced detailing concerns and desires of citizens and associations around transportation, connectivity and access, neighborhood amenities and streetscape. The result are 4 goals, 8 strategies and a host of actions, addressing economic and cultural needs, health and safety and environmental resilience including stormwater management, trees for shading and solar powered LED lighting on East 125 St.

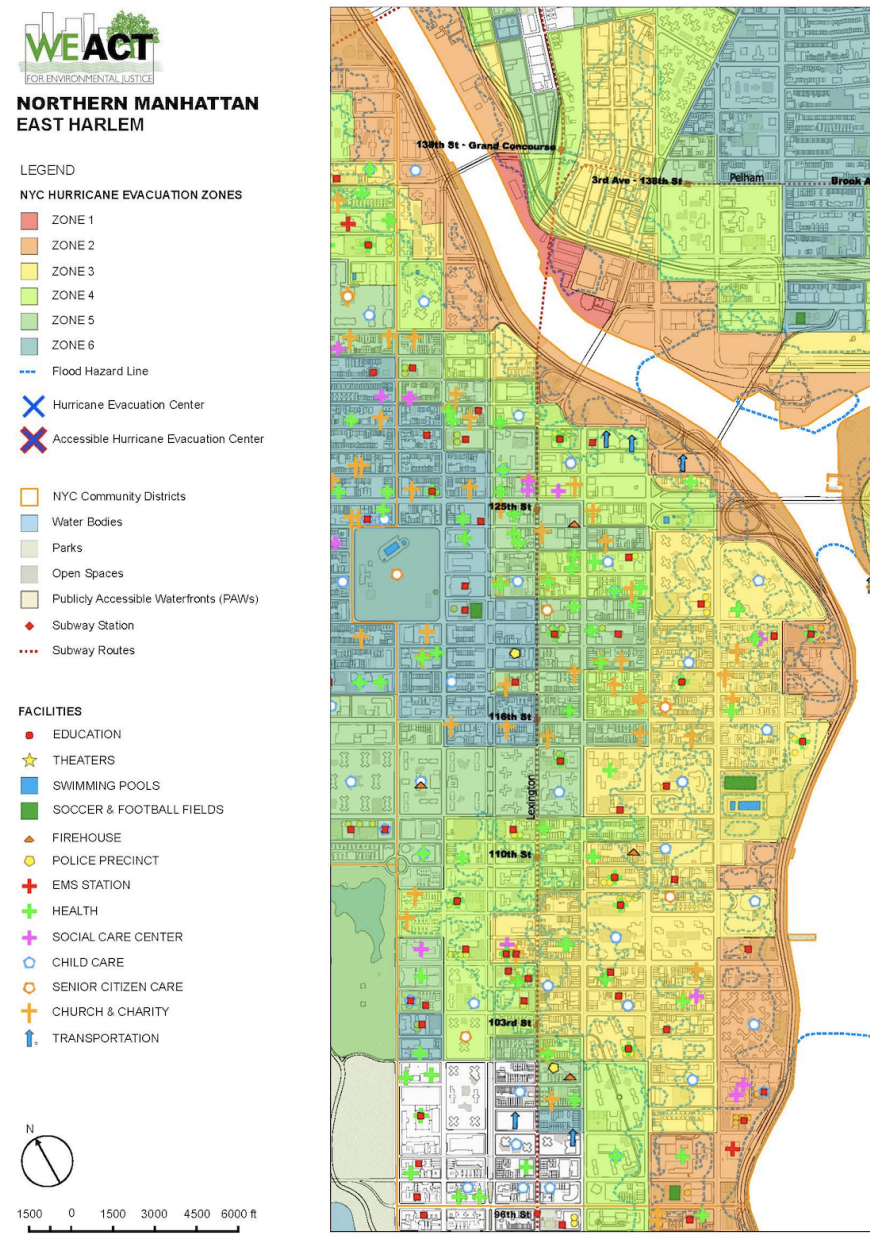


Figure 3: Couldn't find a caption, edit here to supply one.

5. Spaces of Deliberation in East Harlem: What Futures?

As seen above, along with event organized by some community groups, the Rezoning of East Harlem led to opportunities to discuss flood vulnerability that may not be available otherwise. Yet the issue of turnout at events planned by the organizations I interviewed is big. Getting the word out to communities that may be the most impacted by changes in zoning and by flooding is perceived as challenge due to the scarce resources that the organizations have to, for instance, leave flyers, when at times this is one way to reach low income groups. Organizations largely rely on word of mouth by their existing network, including official authorities like Parks and Council members, and mailing lists. Participation is influenced by whether individuals have

the time ‘to be political’ even if they have multiple jobs or none at all.

Elsewhere other planners and civic groups, expressed the feeling that deliberation processes organized by official authorities are not transparent and are driven by interests of powerful lobbies. In a recent Op-Ed for the Gotham Gazette, long term urban designer and city planner John West (2019), detailed his concerns for transparency and responsiveness to citizens in the process of forging a future Comprehensive Plan for New York City. In a follow up email directed to all affiliated neighborhood organizations, he lamented that city authorities and the Mayor engage “*in disingenuous political theater*” and then act disregarding the negative impact on neighborhood residents and small businesses. The current approach towards citizens “*is neither transparent or resident driven rather it is developer and lobbyist driven*”, going as far as declaring that “*Residents are treated to misleading presentations by staffers who are either not in the know or are ordered to obfuscate and misdirect*”. West is also against the use of “legislative language” at public hearings which is often undergoes significant changes by lobbyists and developers that make it “*unrecognizable or unintelligible*” to lay publics. West advocates for a wide spread distribution of the exact scope and detail of any such plan and the exact language that will be used to put a plan into law, requiring full disclosure of the political ties with interest groups that any public official or staff member may have with developers, land owners or their trade associations or lobbyists but also of campaign contributions or contributions to officially favored non-profits.

While very desirable for a ‘democracy’ like New York City, this seems far from achievable under the current political leadership. The implications of such a statement for issues of coastal flooding is that, at minimum, the rezoning maps of the city should reflect the actual risk that people and properties may be exposed to, at best a whole new way of deliberating around the climate would see groups like WeAct, closely work to produce evidence-based research with universities and CBs who have a trusted base of citizens and a large network of agencies to tap into. A new deliberation process may also ask: which powers and decisions about climate change and urban development might be delegated to elected neighborhood councils? For example, we might give neighborhoods and CBs more power over the sustainable management of public spaces — sidewalks, street parking, stoplights, the placement of crossing guards, the organization of trash pickup, street trees, stormwater, bike racks, parks, public-private plazas. We could also give residents power to veto egregiously out-of-context buildings, the right to say no to buildings that require spot rezoning and the right to veto air-rights transfers that result in an excessive breach of contextual height limits or veto more developments in the floodplain that may cause stormwater or coastal surges to flood areas that have benefited from less resilience measures.

5.1 Concluding Reflections

In this pilot study the focus was on understanding how community groups describe the exposure and vulnerability to coastal flooding from their perspective and as representatives of the constituents they work with or for in East Harlem. East Harlem is a neighborhood like many others in New York City, with a long history of urban change, migration, community action (Goldstein, 2017) and now increasing rates climate change vulnerability. The study was particularly interested in showing how distributional analyses of who is exposed to coastal flooding and where, need to be complemented with a procedural justice lens to actually understand how changes in exposure and impacts of flooding are rooted in past and present decisions, the procedures put in place by institutions and the ability of counter-narratives or understandings to emerge, be heard and influence mainstream planning.

Based on the literature review in section 2, I chose to focus on the three dimensions of procedural justice, namely: recognition, participation/procedure, and epistemic justice. Recognition is the ‘processes of disrespect, insult and degradation that devalue some people and some place identities in comparison to others’ (Walker, 2009:615) or, in other words the lack of recognition about group difference in a society where some groups are privileged while others are oppressed (Schlosberg, 2003). It is possible to say that the culture of disenfranchisement and institutional abandonment in the NYCHA development that took part in this study,

is a case of mis-recognition. The interviewee often referred to a lack of motivation, self-esteem and degradation among largely tenants of color at Washington Houses, perpetrated by the many bureaucratic layers and lack of oversight that NYCHA developed since its defunding began in the 2000s. This mis-recognition has implications for climate change vulnerability in that many tenants, already burdened by persisting poverty, physical mobility issues, inconsistent services provision, may be less active in attending meetings about issues like flooding, perceived as low in their ladder of priorities; they may refuse to evacuate for fear of loathing or enter in conflict with authorities towards whom they lost trust; and losing their affordable home in the process. At the same time, there are sustained efforts by leaders, who are tenants themselves, to raise moral, advocate for tenants' needs and make alliances with organization such as the DREAM School, in order to plan for better emergency preparedness. The kind of survey that led to a better, albeit not comprehensive, understanding of physical mobility is an example of localized knowledge production that certainly NYCHA authorities would not be able to orchestrate or disseminate for better decision making on the ground (that is if they have up to date information on their tenants' physical status). These and more complex forms of localized knowledge production on climate vulnerability should be sustained in time and maybe used as a platform to build an autonomous understanding and political power to demand for larger changes in NYCHA's structure and accountability, which in turn, could lead to better services provision, better housing quality and less disenfranchisement.

As noted in the review, recognition is tied to participation and procedure, whereas more recognition leads to more participation. A procedural lens allowed to understand that there is a diversity of instruments for deliberation around climate change as part of larger issues of concern for the neighborhood. From public hearings and board meetings organized by the CB, to hands-on days organized by CIVITAS on coastal protection to opportunities for community-based planning as part of the momentum brought by the Rezoning Plan. The turnout in smaller events is perceived as a problem, however, where either constituents do not use the CB as much as they could, or there are bigger concerns that people deal with in their daily lives. This is reflected in the most talked about topics brought by officers in public meetings: homeless, drugs, education, affordable housing. Not so much climate change. This is not to say that speakers disagree or do not believe in it, it is to say that in a public meeting where you have 5-10 minutes you talk about priorities! Indeed, flooding of any kind seems to become the priority only when a disaster occurs.

The CB could be invested with new powers, beyond only advisory, because they are in a jurisdictional position that allows for a closer engagement with citizens, while weighing in on larger processes that affect the district and city at large. Groups like WeAct already possess the know-how and skills to produce a good level of evidence-based research and visual maps to render visible what the city chooses to exclude from public view. It's true that FEMA maps and hurricane risk zones are publicly available, but as WeAct showed, there are more politically charged ways to show how the rezoning map not only leaves key facilities in the floodplain but also builds new ones. An aware citizen is a citizen that has seen a map like that and has reflected on its implications when the next hurricane strikes.

The study also daylighted a variety of perceptions and ways of knowing flood exposure, vulnerability and climate resilience. Coastal flooding exposure was understood in terms of extent of water reach in the aftermath of Sandy, as a legacy of the natural biophysical properties of the land, while inland flooding exposure was connected to rainfall and high-water tables, leading to 'blue sky flooding', or as the consequence of newly built developments which may shift aquifer waters elsewhere and worsen flooding when it happens.

Climate change resilience was seen under an even larger amount of viewpoints: 1) an issue of land use and building design; 2) an opportunity for ecological designs; 3) a need for better emergency preparedness and emergency funds; 4) an issue of building materials; 5) an opportunity for tax credits and more comprehensive assessment of housing retrofitting costs; 6) as 'the impossibility' of relocating lower income households that are most at risk'.

All these views have implications for the politics of resilience in New York City. On the one hand, they demand that all these disarticulated perceptions of what climate resilience may look like, to be made visible as well as its contrast and overlaps with City led agendas. While the Rezoning Plan contemplated issues of

new building designs, it did very little to address ground floors in existing properties – aside from mandating that boilers and other mechanical equipment be raised. CDCs are desiring other solutions around building materials but also more comprehensive and sustained solutions such as a long-term commitment with the government, underwriting a deal where low income housing are given tax credits to be able to do the necessary mitigation measures. A district-wide assessment of the costs of retrofitting is also needed and could drive cost-efficiency if the costs are shared across the whole of Northern Manhattan. The Rezoning also mentions hard infrastructure measures, such a sea wall, along portions of the East River Esplanade. Yet elsewhere in the city, in areas like Jamaica Bay and Fishkill in Staten Island, that are also less urbanized, the State has promoted ecological work to restore wetlands. Although groups like CIVITAS, are producing plans and advocating at the State level for the same to happen on the East River Esplanade, the city seems to be more concerned with maintaining the promenades due to the time it would take to obtain permits.

Another reflection on the politics of resilience is connected to emergency management and how organizations access information about flooding. Although the sample of organizations was very small and more should be done to understand this issue further, it is clear that a dependency on knowledge produced by weather forecasts, online and on tv, or to check what the Mayor is saying to do, are what organizations rely on to understand when and where it may flood. The only more informal way was to use weather apps. May this dependency on centralized knowledge become detrimental during power shutdowns in the even to catastrophic flooding? Finally, emergency preparedness seems to be the purview of COAD and CERT, while other organizations like the CB are not as informed on where to go and what to do, and yet it their role as represents East Harlemites in the face of constant change seems crucial.

A procedural justice lens makes knowledge about flood vulnerability rich and thick by adopting value-heavy concepts (Hulme, 2018) like justice, fairness, recognition to daylight how and why different people may be affected by flooding. In its ability to highlight institutional practices that misrecognize vulnerable citizens, we see a close connection between seemingly disparate issues such as housing affordability and tenants neglect and flood emergency preparedness and recovery. Nevertheless, a thorough study of participation in deliberation processes about climate change is difficult, because the topic, when it's not in the aftermath of an event, is just one among many, at time more pressing issues in East Harlem's public hearings. Epistemic justice in the form of understanding citizens as knowers in their own right is also complex. Multiple and conflicting knowledges can be daylighted but this is only part of what epistemic justice means to my understanding. Here climate knowledge should be produced by and for citizens, in processes like community research and planning. Further studies may research the practices, discourses, knowledge produced, used and shared across alternative forms of climate change counter-planning currently ongoing in the city. Reasoning together in public to make actionable knowledge must allow for the expression of contrasting value commitments, however inconvenient this may be. What are the knowledge practices that allow asymmetric understandings to emerge? How can they be nurtured? Once the contrasting value commitments are on the table, is it enough that they be acknowledged to change the course of action for climate resilience?

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