

Conflicts over urban Eco-DRR: Unaddressed problems with Nature-based solutions

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Abstract: Major cities around the world are greening their spaces to better deal with future flood and drought risk and make their cities more attractive for habitation and investment. However, local responses to such interventions rarely seem to meet with broad-based enthusiasm; rather, such interventions have become politicised and even resisted. One ready reasoning is that people normally resist change and nuisance from construction works in their backyards - it gets worse before it gets better. People will come round to it once a beautiful amenity is in place, unless poor implementation sparks discontent. But conflict over green interventions tend to run deeper than that, and touch on both process and outcome legitimacy.

Cases from South Africa (Durban), Bangladesh (Dhaka), the Netherlands and the United Kingdom (UK) may illustrate standoffs over ecosystem-based disaster risk reduction (Eco-DRR) and nature-based solutions in urban water-related risk management, and suggestions are made for improved practice.

Introduction

Recent years have seen a drive in many cities to “green” and “climatize” hydrologic (flood and drought) disaster risk reduction strategies, under the banner of a lexical field of buzzwords like Nature-based solutions (*Nbs*), Ecosystem-based Disaster Risk Reduction (Eco-DRR), the Water-energy-food-climate Nexus, climate proofing, climate resilience, Building with Nature and green and ecological infrastructures. Major cities and urban centres around the world are greening their spaces to better deal with future flood and drought risk and make their cities more attractive for habitation and investment. Enthusiastically embraced by many in the policy and NGO community (Sebesvari *et al.* 2019), such approaches bring the promise of combining healthier, more sustainable living with climate adaptation and mitigation and sustainable disaster risk reduction.

While hard to see for the project team, it is not immediately obvious to all involved why these projects are needed. To them, nature-based solutions may come across like a solution in search of a problem. Sure, it will make the environment greener, but will it put food on the table? What’s in it for them? There may also be resentment over 'middle class hobbies' and the perception of imposed views of natural values. Brief, local responses to such interventions rarely seem to meet with broad-based enthusiasm; rather, such interventions have become politicised and even resisted.

We will argue that stand-offs over Eco-DRR and nature-based solutions in urban water-related risk management are to be expected, inventorise factors in play and make suggestions made for improved practice.

The insights are based on 20 years of research on Space for the River in the Netherlands, and research in Durban, South Africa.

What is green infrastructure/NBS?

While there are useful dictionary definitions, in practice the interpretation of 'nature-based' has seen quite some expansion over the years:

1. Green and ecological infrastructures¹ places an emphasis on nature as a form of 'infrastructure' to have the same function as grey infrastructure. Salt marshes, mangroves, sand dunes and coral reefs are customarily understood as natural climate buffers, and their function has come to be revived by the decommissioning of dams, embankments and polders – so-called 'depoldering' ('returning land to the sea') (van Staveren *et al.* 2014; Dekker & Fantini 2020) and the restoration of green landscape elements., such as natural wetlands in purifying water (Jewitt, 2015; Pringle, 2015, Meissner, 2021).
2. Other nature-based solutions combine such 'soft' interventions with 'harder' engineering, as in 'building with nature' (Sinnott *et al.* 2017). This has also involved the repurposing or relabeling of existing infrastructure as 'climate-smart' or 'climate-resilient', as well as the construction of new 'green' (ecological) infrastructure.
3. After a period of smaller 'living with floods' and wetland conservation projects, bigger infrastructural modernisation projects are now being built to cushion against flood and drought extremes expected to become more frequent with advancing climate change (Leitner & Colven 2017). Even high dams these days are 'climate buffers' funded under green and clean funds. Their rationale is often boosted by a powerful national or regional development drive to pay for or benefit from the investment.

Social science missing in action

However, local responses to such interventions rarely seem to meet with broad-based enthusiasm; rather, such interventions have more often than not become politicised and even resisted. One reason for this proffered by Triyanti & Chu (2018) is the absence of sociology in this domain. As Triyanti and Chu (2018) have noted, 'green infrastructure' approaches tend to be focused on "scientific projections, engineering techniques, and their respective roles in shaping economic benefits" while negating the politics of their governance, often relying on "idealised elaborations of accountability, legitimacy, and adaptability", which may be due to the very low involvement of social and political scientists in the domain (Triyanti & Chu 2018). A common assumption of such initiatives is that enhanced environmental sustainability implies improved social sustainability (including health, well-being and "liveability"). This assumption is certainly not bullet-proof, as growing evidence of climate change adaptation interventions increasing the vulnerability of often already marginalized groups (Eriksen *et al.* 2021).

¹*Green infrastructure* (GI) is "a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services" (European Commission 2013).

Triyanti & Chu (2018) note that by far the most common umbrella theory in governing Eco-DRR is socio-ecological systems (SES), which assumes a mutual constitution and complex interaction between the social and ecological. It seems fair to say that SES is ecological rather than social, though. SES “highlights the ability of systems to absorb disturbances while maintaining their structures and function” and “sets the goal of preparing the system to tolerate – or bounce back from – current and future environmental changes exacerbated by climate change. This requires a constant ‘bracing for impact’.

Likewise, Fabinyi (2014) notes much SES literature defines people’s interests and livelihoods as concerned primarily with the environment, and thereby underplays the role of other motivations and social institutions. Wamsler et al (2020) expands on this insight noting participants (residents) in climate policy deliberations often do not take a climate perspective; they voice other, e.g. economic concerns. Scientimetric research by Stojanovic et al (2016) “reveals that a systems-based conceptualization tends to limit the kinds of social science research favoring quantitative couplings of social and ecological components and downplaying interpretive traditions of social research”. A possible reason for this is that SES research is predominantly conducted by natural scientists. Their background knowledge in the empirical sciences compels them to focus on the paradigms and theories as well as topics they are more familiar with.

This disconnect between the ecocentric and sociocentric planning is also visible in policy practice. For example, PR China and Bangladesh have cleaned up their act in legislation, to such an extent that the environmental rather than the social impact of new projects is being regulated. Also in Western urban interventions, there is often little coordination between environmental and social departments (e.g. Dordrecht). In the Rockefeller’ Foundation’s 100 Resilient Cities project, citizens are notably absent as actors.

Legitimacy

Conflict over green interventions tends to run deeper than ‘backyardism’ and touches on both process and outcome legitimacy. Let’s discuss these in turn.

Process legitimacy: Green interventions are often planned and implemented top-down by an in-group (‘epistocracy’; Meissner 2021) convinced of the obvious superiority of green interventions. Those excluded may not even be aware that the intervention is coming to their area.

Green Infrastructure can cause “uncertainty and anxiety in the local communities as the government and private sectors engage in development activities that have significant impacts on their present and future lives” (Dalimunthe 2019).

Outcome legitimacy: Benefits and costs often accrue to different urban stakeholder groups. Direct and indirect impacts such as induced migration (displacement) -‘indirect displacement’. This form of displacement occurs when the results of policies or actions render it irrational or intolerable for people

to continue to live in a home environment (Drydyk & Elliot 2001; Warner & Wiegel, under review) and crowding out by gentrification are among the most visibly resented issues. Green infrastructure can bring a 'green gentrification' of previously neglected areas, which can drive up house prices making it impossible for the lower social strata to pay rents or buy property in such an area (Gould & Lewis 2016).

Taming a wicked problem?

A “**wicked problem**” is a problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize. It refers to an idea or problem that cannot be fixed, where there is no single solution to the problem, According to Rittel & Webber (1973) it is characterized by goal disagreement and uncertainty over facts, requiring continuous deliberation, learning, and reflection

There is simply no clear social consensus on

- ▶ Whether climate change is a crisis issue
- ▶ How we see and value nature
- ▶ What we consider 'green' – in the Netherlands, the 'manicured' cultural landscape with its cows and dikes tends to be widely appreciated while rewilded nature is only appreciated if it doesn't bite children or kill chickens.
- ▶ What (distribution of) sacrifices we consider reasonable

A policy domain moreover is not necessarily static; can be dynamic over time. What seems a clear and present danger may be viewed and treated differently over time. The Ooijpolder example below, (Fig from Warner 2008) illustrates this in the case of controlled flooding policy in a rural area near Nijmegen, Netherlands.

A securitised issue unites an array of stakeholders against a common threat (Meissner and Warner, 2021). Climate has proved frustratingly hard to securitise (Trombetta 2008). While Oels claims that the development and security domains themselves have become “greened” and “climatized” (Oels 2012), there is a no blanket support for this. The lack of a clear and present threat has led to nonacademic strategies to keep the pressure on, such as sensationalist summaries of otherwise more nuanced IPCC reports and ostracization of moderates and skeptics. Unintended consequences such as displacement appear to be erased from the climate narrative in the interests of a consensus science that unequivocally proved, once and for all that human-induced climate change will be the next extinction level event if humans do not act with urgency.

		Agreement on values high.....low	
		Threat not open to dispute	Threat open to dispute
Agreement on facts	High	Securitisation (foreclosing debate by speech act) (0) <i>mayor emergency chief; need-to-know top-down instruction for extreme event</i>	Open conflict, internalising antagonisms (power of argument) <i>open contest on security policy; mayors side with CBO</i>
	Low	Routinisation/Managerialism (foreclosing debate by risk management) <i>consultation with intermediate organisations and local authorities, not with citizens</i>	Dialogue: (power of better argument) <i>joint learning with local stakeholders</i>

FIG 7.3 How to counter calamity in a participatory way? A 'participatory security governance' matrix. Matrix axes based on Hisschemöller and Hoppe (1998). Arrows denote chronological development of Ooij episode.

We have seen climatization assumes a consensus about climate as a security issue. Likewise, nature-based assumes consensus over the value of nature and the obviousness of nature as a solution to climatic extremes. We cannot however assume such a consensus, neither on facts at issue nor on the values informing the policies.

Disagreement on these may be culturally informed. For example, the idealisations of rewilding/beautification are not necessarily shared by the intended beneficiaries. In the Netherlands, many see the cultural landscape cows and grass-covered dikes as enjoyable 'nature', and conservationists' celebration of 'wild nature' is not infrequently dismissed as an elitist hobby. Also, when wild horses or cows bite little children, nature isn't so much fun anymore.

In Germany, connection and access to the forest is cultural embedded, so that controlled flooding even for a few days a year may run into resistance.

In addition to this lack of agreement on the matter itself, social opposition to green infrastructure can have reasons that have little to do with the infrastructure itself. There may be a 'shadow of the past' wreaking havoc on trust and project legitimacy.

- Opposition to anything the authority will present due to earlier conflict. Example: farmer resistance to Space for the River due to earlier anger over enforced herd culling in response to foot-and-mouth spread
- Residents opposed to returning land to the sea considering historic traumatic flooding in that region.

Externalities - The eggs broken to make the omelette.

Those who are not opposed to the general idea may resent the sacrifices they are expected to put up with. At the very least, construction noise, dust, heavy construction traffic, and other nuisance from construction works in their backyards to make the nature-based intervention happen, and as a rule took longer than planned. Naturally it gets worse before it gets better, and like a home reconstruction, many will forget the gritted teeth once the project is ready and functional. Indeed,

many projects that now stand out as great feats of engineering and design were bitterly resented when they were mooted.

But for those expected to make space for dams or bypasses, it can mean the destruction of their homes and relocation to distant places, without proper consultation and compensation. Poorer stakeholders cannot if compensation is uncertain or absent (Warner & van Staveren 2018), and if projects run into delay, as they inevitably will, such stakeholders will lack the resources to tide them over a period of change. The delay in Bangladesh's TRM projects, where farmers could not till the soil until the multiyear intervention was complete, is a good example.

The same issue with large scale development projects can be expected with green infrastructure projects. In fact, they may be same projects, only relabelled.

Prestigious urban green projects often go with the eviction of impoverished or slum areas to purify the green spaces.

The example of Hatirjheel in Bangladesh may serve here. Hatirjheel ('Elephant Lake') is a wetland lakefront connecting old and new Dhaka, the megacity capital of Bangladesh. It is scattered by illegal settlements, and a dumping ground for waste. A visionary architect developed a beautification and buffer project connecting lakes in uptown Dhaka. The ensuing land acquisition for the creation of an artificial lake has led to the forced eviction of tens of thousands of people living there informally or semi-informally (Nijhum 2019). This shows how also 'green infrastructure' has legitimised displacement in beautification and climate buffering projects. In Dhaka, Bangladesh (Nijhum 2019).

The Hatirjheel example points at another issue. Urban green infrastructure tends to be showcases, placed in highly visible middle-class or upcoming areas, rather than working class or slum areas. As a consequence of the green investments, these gentrified areas become even more middle class, as rents become unaffordable.

Green areas are often unaffordable or non-beneficial to poor. The poor/informal sector is likely to be labelled as unsustainable backward and expendable.

Rediscovered, not necessarily reapprciated

In the Netherlands and Bangladesh, 'making space for the river' has revived traditional local practices that had fallen into disuse, such as building on mounds, opening floodgates to flush out salts from the land while letting in silt, and in Bangladesh, for land reclamation. When these local practices are upscaled to national planning, the sense of ownership can easily be lost and its implementation be done put of step with local practices. This was the case with Tidal River Management in Bangladesh (Warner & van Staveren 2017; Mutahara 2016). This has led to the seeming contradiction of strong resistance to a practice that originated locally in the same area.

The shock of the new?

A reason for opposition is simply that the project changes people's living environment and therefore may be resisted until it actually materialises. A ready and reassuring line of reasoning is that it is quite normal for people to resist change but will come round to it once a beautiful amenity is in place, unless poor implementation sparks discontent. There are certainly examples the first author has witnessed first-hand, such as Sokolowska river restoration in Lodz in Poland (the EU-funded SWITCH -Sustainable Water infrastructure for Tomorrow's Cities' Health project), Jubilee River Thames bypass in the United Kingdom and Rotterdam, Netherlands (Waterplein) where initial resistance to having a water body was at least in part overcome when the project was implemented. For example, in the case of the Bentemplein Waterplein in Rotterdam, which would double as a storage basin for stormwater, migrant parents were worried as their children playing on the square cannot swim and might drown, a fear that could easily be assuaged once they saw the square in action.

One ready and reassuring line of reasoning is that people normally resist change and nuisance from construction works in their backyards - it gets worse before it gets better - but will come round to it once a beautiful amenity is in place, unless poor implementation sparks discontent. But poorer stakeholders cannot if compensation is uncertain or absent (Warner & van Staveren 2018).

If well implemented, original detractors may become converts and even ambassadors; if poorly implemented, original fans may become opponents. As Flyvbjerg has convincingly shown, big projects usually fall victim to group think on behalf of the planners. Projects will run into delays, cost overruns, and underperformance. Cost overruns have also impelled planners to do a cost-cutting round of 'value engineering'. As a result, the projects do not always do their job.

References

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