

Subsiding sediments, gender, and obstinate repairs in the coastal city

Marie Belland ^{1a}

Eka Handriana ^{b,c}

Michelle Kooy ^d

Amalinda Savirani ^e

Hotmauli Sidabalok ^f

Margreet Zwarteveen ^{a,d}

^a University of Amsterdam, the Netherlands

^b Soegijapranata Catholic University, Indonesia

^c Amerta Air Indonesia Foundation, Indonesia

^d IHE-Delft Institute for Water Education, the Netherlands

^e Gadjah Mada University, Indonesia

^f Soegijapranata Catholic University, Indonesia

Abstract

Scholars have convincingly proposed understanding processes of tidal flooding and subsidence as questions of environmental justice: they form part of a politics of uneven urbanization, with those most responsible for causing subsidence suffering least from its effects and being the first to be protected by public flood management projects, at the expense of many others. This article suggests

¹ Marie Belland, University of Amsterdam, the Netherlands. Email: m.v.belland@uva.nl. Eka Handriana, Soegijapranata Catholic University, Indonesia and Amerta Air Indonesia Foundation, Indonesia. Email: handrianac@gmail.com. Michelle Kooy, IHE-Delft Institute for Water Education, the Netherlands. Email: m.kooy@un-ihe.org. Amalinda Savirani, Gadjah Mada University, Indonesia. Email: savirani@ugm.ac.id. Hotmauli Sidabalok, Soegijapranata Catholic University, Indonesia. Email: oely.sidabalok@unika.ac.id. Margreet Zwarteveen, IHE-Delft Institute for Water Education, the Netherlands and University of Amsterdam, the Netherlands. Email: m.zwarteveen@un-ihe.org. We would like to thank two anonymous reviewers and the editor of the *Journal of Political Ecology*, as well as Bosman Batubara and Bagas Yusuf Kausan for their advice during all phases of this research project. The first author is grateful to Virgiawan Adi Kristianto and Pradnya Samarra Putri for their translation and insights during the interviews quoted in this article and Alejandra Burchard-Levine for her help with the translation of the abstract. The first author has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie Innovative Training Network NEWAVE – grant agreement No. 861509.

a feminist-inspired expansion of these analyses. By ethnographically documenting the continuous acts of repair of residents living in flood-damaged neighborhoods, we shed light on the micro-politics of water and sediments in subsiding areas. In our study area in Semarang in Indonesia, such repairs are often carried out by women, with the PKK, a state-initiated organization of (house)wives, assuming an important role in coordinating them. By emphatically constructing care for bodies and houses as part of what it takes to be (seen as) a good woman, the PKK situates essential responsibilities for maintaining coastal neighborhoods live-able in the private domain. This helps to cheaply enroll women's labor into the state capitalist and developmentalist project. We conclude that in a landscape increasingly degraded by state-promoted processes of uneven urbanization, not only the responsibilities of causing land subsidence, but also the efforts to repair its impacts are unevenly distributed. Those engaging in acts of maintenance and repair are not merely surviving or diligently fulfilling their duties as good citizens. Repairing homes and bodies, we argue, also expresses their desire to stay and, in this sense, forms part of subtle strategies of circumventing, obstructing, and resisting state projects of industrialization and urbanization that hinge on relocation.

Keywords: land subsidence, flood, repair, care, PKK, Indonesia, environmental justice, micro-politics

Résumé

Plusieurs chercheurs-ses ont éloquentement proposé d'appréhender les processus de subsidence des sols et d'inondations côtières comme des questions de justice environnementale: ces processus font partie d'une politique d'urbanisation inégale, au sein de laquelle les plus responsables de la subsidence souffrent le moins de ses effets et sont les premiers protégés par les projets publics de gestion des inondations, au détriment de beaucoup d'autres. Cet article propose une extension de ces analyses d'inspiration féministe. En documentant ethnographiquement les activités de réparations continues de celles et ceux qui résident dans des quartiers endommagés par les inondations, nous éclairons les micropolitiques de l'eau et des sédiments dans les espaces affectés par la subsidence. Dans notre zone d'étude à Semarang en Indonésie, ces réparations sont souvent effectuées par les femmes en lien avec le PKK, une organisation initiée par l'état de femmes (au foyer) qui joue un rôle important dans leur coordination. En construisant le soin des corps et des habitations comme faisant partie intégrante des requis pour être (considéré comme) une femme vertueuse, le PKK place la responsabilité vitale de maintenir les quartiers côtiers vivables dans le domaine privé. Cela permet d'enrôler le travail des femmes à moindre coût dans le projet capitaliste et développementaliste de l'État. Nous concluons que dans un paysage de plus en plus dégradé par des processus d'urbanisation inégale promus par l'État, non seulement la responsabilité de la subsidence des sols, mais aussi les efforts pour en réparer les impacts sont inégalement répartis. Les personnes qui performant des actes d'entretien et de réparation ne se contentent pas de survivre ou de remplir avec diligence leurs devoirs de citoyens. Nous avançons que la réparation des maisons et des corps, est aussi l'expression du désir de rester et, en ce sens, fait partie de stratégies subtiles de contournement, d'obstruction, et de résistance aux projets étatiques d'industrialisation et d'urbanisation qui s'articulent autour du déplacement des populations.

Mots-clés: subsidence des sols, inondations, réparations, soin, PKK, Indonésie, justice environnementale, micropolitique

Resumen

Varios/as académicos/as han propuesto de manera convincente entender los procesos subsidencia e inundaciones por mareas como cuestiones de justicia ambiental: estos procesos forman parte de una política de urbanización desigual, en la que los principales responsables de causar la subsidencia sufren menos sus efectos y son los primeros en ser protegidos por proyectos públicos de gestión de inundaciones, a expensas de muchas otras personas. Este artículo sugiere una ampliación de estos análisis inspirada en el feminismo. Al documentar etnográficamente los actos continuos de reparación a los que residen en barrios dañados por las inundaciones, arrojam luz sobre la micropolítica del agua y los sedimentos en áreas con subsidencia. En nuestra área de estudio en Semarang (Indonesia) estas reparaciones son frecuentemente realizadas por mujeres, con el PKK, una organización estatal de mujeres (amas de casa), que desempeña un importante papel en su coordinación. Al enfatizar el cuidado de los cuerpos y las casas como parte de lo que se necesita para ser (vista como) una buena mujer, el PKK sitúa las responsabilidades esenciales para mantener los barrios costeros habitables en

el ámbito privado. Esto contribuye a incorporar de forma económica la mano de obra femenina al proyecto capitalista y desarrollista del Estado. Concluimos que, en un paisaje cada vez más degradado por procesos de urbanización desigual promovidos por el Estado, no sólo se distribuyen de forma desigual las responsabilidades de causar la subsidencia del terreno, sino también los esfuerzos para reparar sus impactos. Quienes se dedican a las tareas de mantenimiento y reparación no solo están sobreviviendo o diligentemente cumpliendo sus deberes como buenos ciudadanos. La reparación de casas y cuerpos, argumentamos, también expresa su deseo de quedarse y, en este sentido, forma parte de estrategias sutiles para eludir, obstruir y resistir los proyectos estatales de industrialización y urbanización que dependen de la deslocalización.

Palabras clave: subsidencia, reparaciones, cuidado, PKK, Indonesia, justicia medioambiental, micropolítica

1. Introduction

In November 2023, Susanti^{*2}, V. (translator), and the first author of this article (M.B.) arrived late at the wives' association gathering. After saluting each of the women attending, we squeezed ourselves into a corner of a large and crowded living room and were quickly handed a meal packed in a carton box. The fan did not work due to power failure, something common at this time of the year in this district of Semarang, Indonesia. As a local coordinator, Susanti was expected to wrap up the meeting. Her enunciation is cadenced and precise, using Bahasa Indonesia, colored with interjections in Javanese to prompt enthusiasm, and thick with numerous abbreviations. Not unlike a preacher, she has the participants complete her sentences in unison. With the distinctive clarity of officials, Susanti announced her talking points and how they relate with the two goals of "keeping the environment clean" and residents healthy. In the frequently flooded and subsidence-prone neighborhood where we locate our research, this is in no way a small task. In this article, we zoom in on this labor of maintenance and repair to shed light on the gendered micropolitics of subsidence.

When joining gatherings of the wives' associations, or PKK (*Pemberdayaan Kesejahteraan Keluarga*, or groups for Family Welfare Empowerment), M.B. was struck by the combined patronizing tone and the efficiency of these meetings. Susanti's address illustrates the heterogeneity of the tasks undertaken by these associations. After describing issues of degenerative diseases and engaging women to participate in a mice-catching campaign, Susanti underlined the importance of wearing protective masks and monitoring children's health with regard to the risk of tuberculosis infection. She also insisted on adopting better cleaning routines since a large amount of rubbish is still to be seen a couple of streets away. Susanti pursued her address with the topic of microfinance based on rotating saving and loans distribution (*simpan pinja*), reminding the audience of the names of the participants within the group who had not yet reimbursed their loans, as well as the amounts borrowed. Susanti concluded with a call to resume urban farming activities as the rainy season was approaching. This list of activities was reviewed within 20 minutes.³

Our interest in the wives' associations and the gendered work they organize stems from the recognition of their practices as acts of maintenance and repair. Such recognition cannot be done in isolation from attention to how responsibilities for repairs are distributed, also in relation to what (and who) caused the damages done by subsidence and flooding. There are spectacular effects resulting from depletion of aquifers and compaction of alluvial sediments in Semarang under the pressure of groundwater extraction in industrial coastal areas, urban densification, and land use change in open spaces in the hilly areas of Semarang City. Along the coast, the soil surface is lowering rapidly, in some places at rates exceeding a dozen centimeters a year (Abidin *et al.*, 2013; Andreas *et al.*, 2019; Nugroho & Handayani, 2021; Sarah *et al.*, 2020). Drawing on and expanding previous studies that convincingly argued that land subsidence and floods in Semarang originate in and are reproduced by

^{*2} All the names used in this article are pseudonyms.

³ Fieldnotes in Mangkang Werten (22/11/2023).

processes of uneven urbanization (Batubara *et al.* 2021; Batubara *et al.*, 2020; Permana, 2024), we connect a micropolitics of repair to broader issues of coastal becoming and the possibilities of striving for environmental justice in subsidence areas.

The gathering of the PKK took place in Mangkang, an area in the north-west of Semarang where some 18,400 residents live⁴, and which is vulnerable to both tidal flooding and flash floods from rivers. In Mangkang, our research location, land subsidence causes the wrong kinds of water to seep into the wrong places: brackish water infiltrates the soil, penetrating aquifers and communal wells used by residents for their daily needs. Tidal water and river water are both considered dirty and unsafe because they carry garbage and sediment. This water clogs draining canals, enters houses, seeps into walls, damages and stains belongings, and comes in contact with the body.

Water overflows are a daily concern for residents of Mangkang, and, especially, as we argue in this article, for women because they are the ones most involved in the many daily acts of repair needed to protect themselves and their neighbors from coastal degradations. As our opening vignette suggests, many of these acts are organized through the wives' associations or PKK. The PKK's mission statement is a set of ten principles that are hard to miss in Mangkang (or elsewhere in Indonesia) as they are placarded or engraved at multiple locations and read out aloud in every meeting. Those include mutual self-help, food distribution, and the protection of health and the environment (Soetjipto & Adelina, 2013). As such, PKK are (ineluctably) vested with the responsibility to deal with the consequences of land subsidence.

This article sets out to document how the damage to coastal residences including erosion, tidal flooding, and the deterioration of infrastructures, are experienced and mitigated in the many acts of repair that occur under the supervision of the PKK. Our argument is that land subsidence, flooding and protection measures are unevenly distributed across space and social groups, and also in terms of the continuous work that people need to do to repair damaged environments and bodies. We take repair as an empirical entry point to reveal the mechanisms shaping the social reproduction of life in damaged landscapes, with two objectives. The first is to take the measure of what it takes – and from whom – to live on an unstable and damaged earth. Second, theoretically, we aim to tie together the projects of making visible acts of repair and land subsidence. Both are necessary for a more politically acute analysis of land subsidence in Semarang and elsewhere. We offer an analysis that exposes the political and deeply uneven character of sedimentary processes, while also helping identify and support the crafting of good conditions of living in subsiding areas.

In the following sections, we examine insights from feminist political ecology and science and technology studies (STS) about repairs, from which we build our study of water and sediments (Section 1). We then present the specificities of the PKK, whose activities we study ethnographically to understand the (micro-)politics of repairs in our study area (Section 2). The next two sections detail the activities of the PKK in Mangkang that aim to repair bodies and homes. Finally (Section 5), we dive into the relationship between PKK members and the state, specifically highlighting the fact that it is partially responsible for the damage occurring in Mangkang while encouraging (and to some extent organizing) the repairs. This leads us to conclude that in subsiding areas, the PKK cheaply enrolls women's labor into the state capitalist and developmentalist project, while simultaneously justifying its own negligence, i.e., its failure to protect its citizens from the damage caused by subsidence and coastal abrasion. This does not mean, however, as we argue in our conclusion, that residents merely comply with such an agenda. Repairs, we argue, are also a means for the residents to organize the conditions for them to remain in subsiding areas.

⁴ Data from Mangkang Kulon subdistrict, 2022; Mangkang Wetan subdistrict, 2022; Mangunharjo subdistrict, 2022.

2. Feminist political ecology of repairs in the subsiding landscape

Our research is located in the project of situated and feminist political ecology to study gendered power relations and how these shape specific environments (Cornea, Véron, & Zimmer, 2017; Lawhon & Ernstson, 2013). There is an almost violent logic in the reproduction of uneven exposure to flooding through urban planning and infrastructure, which Batubara and co-authors (2021, 2020) and Permana (2024) demonstrate in Semarang. Central to their analyses is the fact that public policies consistently encourage the industrialization and densification of the coast, a project involving a combination of land conversions, coastal construction, and deep groundwater extraction that cause clay-rich highly compactible soil layers to rapidly subside. This extractive form of urbanization, Batubara *et al.* argue in their study of land subsidence in Jakarta, can be historically situated in the Suharto regime (1966-1998) and its aftermath (Batubara, Kooy, & Zwarteveen, 2023). As the surface of Semarang's soil subsides at the most rapid rates measured in Indonesia, tidal flooding occurs in coastal neighborhoods.

Importantly, even though flooding has become highly disruptive and a major concern for inhabitants, the particularly tight relations of reciprocity connecting the political and economic elites of Semarang hamper efforts to address its causes (the drivers for land subsidence listed above) and skew the geography of flood protection in ways that ultimately aggravate flood-induced destruction in the poorest coastal neighborhoods (Permana, 2025). The resulting distribution of the harm and risks caused by flooding, erosion, and land subsidence is highly uneven, with those having contributed most often suffering least. Not just floods, but also flood protection measures produce unevenness, in that the safety of some is achieved at the expense of others. Uneven flood protection is continuously in the making; it is reinscribed in the city landscape through the repair of flood infrastructures (Ley, 2021).

Mangkang is among the neighborhoods most exposed to flood risk in Semarang. It is a peri-urban space whose economy revolved around agriculture and aquaculture until the intensification of coastal industrialization in the 1980s degraded both activities through the leakage of pollutants and subsidence-leading-to-flooding. The encircling of Mangkang by major industrial zones⁵ caused a shift in livelihoods, and this area became a pool for cheap labor to the benefit of nearby industries. Industrial expansion involved coastal reclamation protruding into the sea, which simultaneously worsens coastal subsidence and tinkers with ocean currents, causing them to deflect and rush towards Mangkang's shoreline (Kausan *et al.* forthcoming). Sustained signs of ecological degradation in Mangkang did not deter further large-scale land conversions in upstream areas, for example the construction of the "BSB City" housing project across 1,000 hectares. This project disrupted rainwater infiltration, which further increased surface runoff toward downstream areas, and hence the risk of flash floods (Batubara *et al.*, 2021).

Residents of Mangkang have historically received low priority in public interventions, and the community remains without municipal piped water, and still lacks flood protection. We found this lack of protection is worsened by the state frequently elevating the road that borders Mangkang to protect more southerly areas. It then acts as a flood embankment, causing water to stagnate in Mangkang and other northern coastal districts.⁶ There is hope of a drier future enabled by a government-led giant seawall project. Mangkang could become a strategic site for future investment. As we explore elsewhere, the labor of Mangkang's residents and its damaged ecology could become a resource for extractive economies, with submerged parcels being massively and forcibly acquired by developers (Belland *et al.*, 2025). Both the seawall and the land acquisition risk severing residents' access to their economic resources, further marginalizing them from development agendas, reflecting

⁵ Wijayakusuma Industrial Estate, located east of Mangkang, opened in 1986–1987; the 100 ha. PT Kayu Lapis wood-processing factory, situated on its west side, was completed in 1987; and the multi-sector PT Guna Mekar Industrial Zone, to the south, was established in 1986.

⁶ Interview with civil servants of Semarang public work department (18/08/2022); Pusdataru, 2022, "Desain Pengendalian Banjir Kota Semarang" (Semarang City Flood Control Design) (unpublished presentation).

broader environmental injustices (Sidabalok, 2021). Nonetheless, the population is growing as newcomers to the city seek urban employment. Among those who remain exposed to floods through – or despite of – repeated rounds of repair, the feeling of life "stuck somewhere between ecological, economic, and medical crisis" (Ley, 2021: 184) blends with the acknowledgment that flood risks are inherent to coastal life.

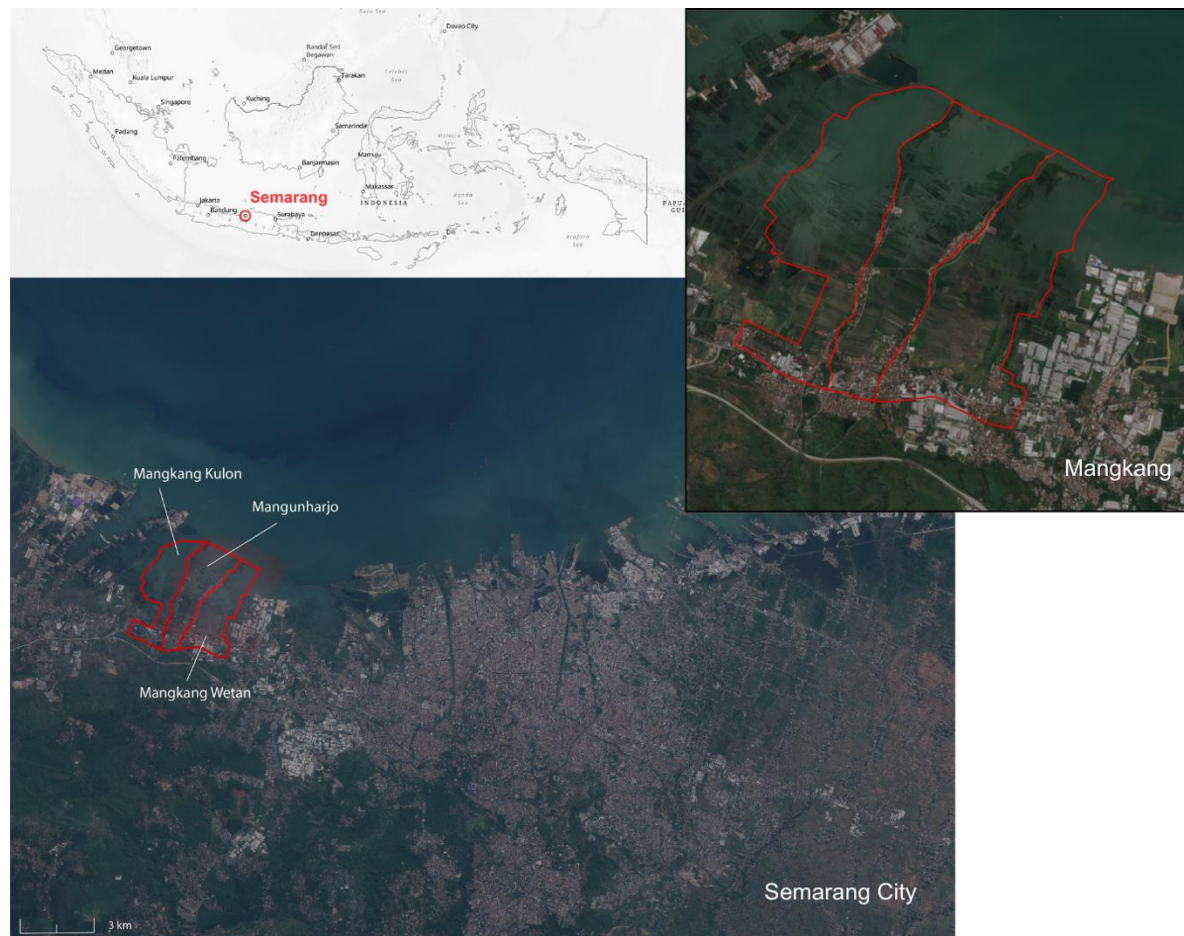


Figure 1: Location of Mangkang in Semarang City (base maps: Copernicus Sentinel data, July 2024).

We propose that acts of repair provide an important thread in the weaving of the fabric of the sociomaterial relations that make and unmake the subsiding landscapes of Semarang. Our contention is that a feminist-inspired focus on homes and bodily repairs usefully adds to the political ecology of floods and subsidence by drawing attention to questions of social reproduction, or how the ability to continue living in landscapes that are subsiding and prone to floods hinges on the continuous work of healing and repair – of bodies, houses, streets – and by exposing the very uneven and deeply gendered ways in which this work is distributed. We base this contention on literature in political ecology and beyond – mostly in anthropology and science and technology studies (STS).

As Graham & Thrift (2007) note, repairs are not incidental acts of fixing broken things but a critical part of how social life functions. We understand repairs as practices of maintenance or care

oftentimes made invisible and undervalued, yet essential to social life and politically consequential – in ways that are all but clear-cut or definitive. The life-sustaining quality of repair makes it a relevant entry point to approach questions of environmental justice: on a damaged planet, it matters what gets repaired, by whom, how, and to what end (Barca, 2020). Boudreau's observation in Mexico City (perhaps not incidentally also a subsidence-prone city) applies well to the North Coast of Semarang. There is the "constant repair of oneself, the city and the objects that constitute daily life make life possible here" (Boudreau, 2022: 851). Jackson (2014) also notes that modern systems are more adequately described in terms of brokenness and therefore always-in-need of repair, than in terms of wholes to be continuously innovated.

The importance and necessity of repair is worth repeating, as care and maintenance typically receive little attention or recognition in policies or scholarship, while also generally yielding little economic reward. It is commonplace to state that the invisibility of repairs is the marker of a job well done, as things tend to only stand out when they malfunction (Star & Ruhleder, 2016). Yet, the lack of appreciation for repair and the relative inconspicuousness of care- and maintenance work is also embedded in power relations. "Invisibility here is more a performance than an effect; an effect of how maintenance work and maintenance workers are devalued in everyday life," writes Anand (2020: 9). Repairs, in short, are neglected because so are repairers and their expertise (see also Henke, 1999). As Anand shows, this neglect or devaluation can be life-endangering for the repairers. Urban studies on, for instance, transport systems in Kampala (Doherty, 2017) or on the maintenance of Delhi glass facades by Acharya (Acharya *et al.*, 2024) even argue that such a devaluation is functional for the flourishing of the city; to make the urban work, certain types of workers need to be made disposable, with their bodies being put at risk, ready to be replaced or displaced.

This argument is at the core of feminist scholarship which links an interest in repair with a critique of the capitalist exploitation of reproductive work. Materialist feminist theories have identified and contested the hierarchization of male-coded productive work over "backgrounded" and female-coded reproductive labor, as the latter is crucial for allowing the continuation of the former (Barca, 2020; Fraser, 2017; Mies, 1986). This gendered valuational hierarchy also helps to understand the invisibility and devaluation of repairs: as practices linked with care and reproduction that tend to happen in the so-called domestic or private sphere, repairs constitute a form of labor that is considered of lesser value. Feminist scholars have exposed how repair work is organized following extractive gendered, racialized, and colonial logics that allow pushing the responsibility of repair work onto those groups in society who are considered less deserving of good lives (Barca, 2020; Vergès, 2019). Questioning such logics importantly hinges on re-thinking the categories and oppositional dichotomies often used to rank and value labor (such as work-home; productive-reproductive; private-public; nature-culture; men-women; modernity-tradition). By centering repair or care when trying to make sense of the world, feminist scholars (joined by others) have refreshed and complemented existing understandings of how people behave and how specific realities are (re)made and transformed (see Lindén & Lydahl, 2021; Mol & Hardon, 2020).

We are inspired by these works in that we aim to study repairs in order to expand the political ecology of land subsidence and the flooding it induces. Doing so, we do not mean to imply that (a focus on) repair holds an intrinsic emancipatory potential. After all, the promise of repairing something – especially a damaged landscape – can coincide with or even enable future dispossession (see Huff & Brock, 2023).

Rather, our strategy consists in using situated political ecology's preferred methods of thick description and attentiveness to daily practices. Following the prescriptive activities of the PKK and its principles to make women the protectors of health and environments, we mainly focus on those repairs that aimed at keeping homes and bodies healthy, in spite of flooding and subsidence. Interviews and participant observations are mainly based on M.B.'s experience in joining and documenting PKK activities in Mangkang over six months of her 2022-2023 fieldwork and journaling from E.H., who has been involved in various PKK activities elsewhere in Semarang for nearly 17 years. Our involvements in these activities differ widely. For M.B., her observations of PKK activities

were conducted as a temporary outsider, oftentimes a topic of amusement marked by mutual misunderstandings, jokes, and numerous pictures, whereas E.H.'s long-term participation in the PKK has taken the form of data recording on behalf of the PKK and the conduct of planting activities to advance the PKK's ten main programs. M.B.'s involvement in PKK is guided by a curiosity for land subsidence, and E.H.'s by the hope of deepening exchanges among women and improving living conditions. Bringing these observations together is an effort to qualify the specificity of PKK-organized repairs in subsiding areas.

3. Studying the wives' associations

The wives' associations (in Bahasa Indonesia the *Pemberdayaan Kesejahteraan Keluarga*, which literally translates to groups for Family Welfare Empowerment) are an organization that enables a lot of the repairs taking place in Semarang coastal areas. They provide a good case to think across questions of the invisibility of, and responsibility for, repair. We do not provide an analysis of PKK as an institution, something other feminist scholars have done at different moments of its history (Robinson, 2008; Soetjipto & Adelina, 2013; Suryakusuma, 2011). Rather, we methodologically use the wives' associations as an entry point to understand the politics of repair in Semarang, tracing how the PKK enables and promotes repairs in particular ways. In this section, we draw on previous studies to depict the relationship between the state, PKK, and married female residents in marginalized communities who are rendered responsible for environmental repairs.

The PKK operates as a shadowing and differently gendered replica of local administrations. It mirrors the (presumed male) political administration through a system of appointments-by-association: the coordinator of the PKK at any given level is the wife of the elected (male) leader at that level. At the national level, the head of the PKK coordinating team is the wife of the Minister of Home Affairs (Soetjipto & Adelina, 2013). This organization of PKK official leadership is to some extent honorific, as in practice, other women than the wives of elected leaders also assume a coordinating role. Most PKK activities are taking place at finer administrative levels: the *dasa wisma*⁷, an ensemble of usually 10 to 20 houses; the RT (*Rukun Tetangga*) that usually gathers 30 to 50 women from the same neighborhood; and the RW (*Rukun Warga*), which is attended by a few representatives of each RT PKK. In 2016, Semarang claimed some 21,289 *dasa wisma* groups organized by nearly 128,000 female cadres (such as Susanti).⁸ In this article, we purposefully name such abbreviations to convey the heavily bureaucratic language that structures this organization. Attention to acronyms and vocabularies, moreover, also illuminates PKK's history.

Before 2010, PKK did not refer to *Pemberdayaan Kesejahteraan Keluarga*, or Family Welfare Empowerment, as we mentioned in our introduction, but to *Pembinaan Kesejahteraan Keluarga*, Family Welfare Guidance. The term *pembinaan* (guidance from above) is a marker of the authoritarian New Order regime. It expresses the hierarchical relations between people and civil servants (Li, 2007: 121; Robinson, 2008), which serves, according to Suryakusuma (2011), as a form of "indoctrination, mobilization of society to serve the state." Suryakusuma's pioneering work argues that PKK is an institution crafted under the Suharto regime with the objective of supporting its patriarchal and developmentalist agenda. The women mobilized to support state programs were expected to conform to the New Order's patriarchal ideal of womanhood, which casts women as housewives and the family as a production unit. She crafts the concept of "state *ibuism*" –from *ibu*, both mother and wife – to express how gender norms and ideologies serve as an instrument of mobilization and social control that support state programs (Suryakusuma, 2011). Interestingly, as noted by Soetjipto and Adelina (2013: 31), the PKK does not explicitly identify as a women's organization, in the sense that it does not claim to be an advocate of the interests of women, nor are its ten guiding principles about gender-specific issues.

⁷ In its everyday use, *dasa wisma* is shortened to *dawis* or *pokdwis* for *kelompok* (group) *dasa wisma*.

⁸ Semarang City Government, 2016 (accessed on 26/11/2024).

The analysis of Suryakusuma still bears relevance today – see Robinson (2008) about PKK in the post-New Order era. The PKK retained the function of "mobilizing" women to serve the capitalist developmentalist agenda of the Indonesian state – an agenda that survived the democratization period and thrived under the Joko Widodo presidency (2016-2024) (Warburton, 2016). In the official terms of the 7th National PKK Working Meeting held in 2010, PKK coordinators are "a team of mobilizers" and government partners who function as facilitators, planners, implementers, and controllers to which various ministries can "entrust" their program (Soetjipto & Adelina, 2013). In her study of women labor in Central Java, Newberry opportunely refers to the PKK as the successful "conscription of Indonesian women, particularly those of the lower classes, as unpaid social welfare workers" (Newberry, 2006:16). The term conscription accurately evokes a similarity with the military: the PKK's anthem is sung at gatherings as is the Indonesian national anthem while standing in lines, and both organizers and participants wear specific colors, a resemblance to a uniform.

The PKK has been criticized for its promotion of a patriarchal ideal of womanhood that is deeply at odds with local realities, especially for working low- or middle-class and non-Javanese women, and for inadequately supporting their aspirations (Robinson, 2008). Furthermore, this tool of government relies on mutual surveillance and competition among neighborhoods to advance ongoing state programs. In flood-prone areas of Semarang, we take an interest in PKK as the enabler of frequent and impressively diverse acts of repair. We start with the repair of bodies.

4. Repairing bodies: Circulation of food, dirt, and mosquitoes

Health programs for children and dengue prevention in Mangkang

Tidal floods damage not only the built environment but also bodies. During flood events, we observed the dedication of women to their family members and their efforts to limit material damage by displacing belongings like electronics and food. Doing this involves prolonged bodily contact with floodwater. Mustika is the owner of a small restaurant in Mangkang Kulon which used to belong to her parents and where she has been working since her early teens. Her house, close to the restaurant, used to be regularly flooded until Mustika fully remodeled and elevated it at great cost a couple of years before we met. To her, the major issue with floodwater is its salinity and dirtiness. She explains: "The risk of getting a disease! Itching, diarrhea, catching a cold... Yes, of course! Because the water continues [to rise, and] that water is dirty water⁹." Moreover, floodwater rises from the bathroom, posing a sanitation threat.

Mustika's assessment is confirmed by Merisa. Since the birth of her first child, Merisa has been a housewife, and, for more than a decade, she has been a PKK cadre with a function called *posyandu*, which confers her with specific authority in health monitoring. *Posyandu*, the abbreviation for *Pos Pelayanan Terpadu* (Integrated Health Post for Children), is the program in which trained female residents (*kader posyandu*) act as an intermediary between the population and maternal and child health programs at the local health center. Children below the age of 5 are expected to be received at the home of their local *Posyandu* and examined once a month. Their weight is recorded, and the *posyandu* can provide vitamins and medicines when needed. This makes *posyandu* a formidable link in a web of monitoring health that functions vertically through administrative levels. PKK cadres also serve as data managers when presenting the collected information about the health of toddlers to the village health center as part of the Village Health Forum (*Forum Kesehatan Kelurahan/FKK*).¹⁰

Merisa explained clearly how health issues differ seasonally, with an increased concern for dengue fever during the rainy season, in which waterborne rubbish attracts flies and causes diarrhea, a disease that most severely affects young children. She also notes that "sunken houses" affected by

⁹ Interview with Mustika, Mangkang Kulon (31/03/2022).

¹⁰ Observation from the Village Forum Health and interview with Desi (21/07/2024).

subsidence are hotter and more humid, hence favorable to the development of mold causing breathing difficulties (*paru-paru basah* literally "wet lungs") and pneumonia.

Prevention of dengue fever is among the prerogatives of the PKK. This involves working intimately with residents. For example, coordinating members of the PKK organize the inspection of bathrooms in Mangkang weekly, following a set rotational system and also involving employees of the local PUSKESMAS (public health center) to prevent the development of mosquito eggs and the spread of disease. The *Pemeriksaan Jentik Nyamuk* (PJN, inspection of mosquito larvae) is a visual appreciation of the *bak mandi* (the bathroom water reserve, usually opened) and other potential water containers such as vases, ponds, aquaria, and drinking water dispensers. Brownish spots indicate mosquito eggs. If mosquito eggs or larvae are found, the *bak mandi* needs to be emptied and cleaned immediately, if possible with chlorine. In other neighborhoods where the presence of larvae is self-reported, there has been a drop in reporting due to residents not wanting to be perceived as unhygienic. The intrusiveness of bathroom inspection is weighted against a concern for accuracy. These and other monitoring and reporting components of the PKK activities are central to its perceptions of and documentation of repair practices. This we also observe in how the PKK organizes food circulation for vulnerable bodies.

Collective kitchens and other circulations of food

This section draws attention to the circulation of individually packaged meals, also known as rice boxes (*nasi kotak*). They are not unique to Mangkang or Semarang, but they help to sustain those negatively impacted by flooding. Rice boxes always include a portion of rice, a source of protein, vegetables, and chili sauce (*sambal*) placed on a plastic tray and inserted in a carton, which is closed and made easily transportable using raffia. More elaborate boxes have deep-fried crackers, further choices of proteins, fresh vegetables, and are accompanied by additional snacks. Packaging, oftentimes involving an individual plastic wrap for each item contained in the box, adds to the long hours of meal preparation. PKK meetings and events may order rice boxes from different members on rotation, who are paid. PKK members are expected to be able to put together many boxes, usually thanks to the labor of women and younger relatives.

During flood events, boxes are the first and most direct type of support from a PKK-organized program called *dapur umum* (collective/public kitchen). Organizing a collective kitchen can be done within half a day, with support from the state, or in some instances, local companies. Female residents from unaffected areas cook for their neighbors and especially children who, based on their weight and height compared to their age class, are identified as malnourished by the *posyandu*. In Mangkang Wetan subdistrict, for example, three children are considered malnourished and, as such, are entitled to extra meals cooked and delivered to them by a PKK on a rotational basis.

With the circulation of boxed meals, the PKK acts and consolidates the overlap between poverty (as an official category) and exposure to tidal flooding. This is perhaps most evident in how Dwi, an assertive woman in her 50s and subdistrict official in Mangkang – a neighborhood to which she commutes but does not live – coordinates the distribution of meals to families that self-register as poor.¹¹ The preparation of the boxes is contracted to a PKK member and occurs overnight. When handing the boxes to her (mostly female) recipients, Dwi asks them to appear in a picture with their box, a process that further reaffirms and publicizes the beneficiaries and their status as "poor" citizens as part of routine reporting of governmental programs. Dwi's tours areas where puddles characteristic of tidal floods stagnate between houses and the modesty of the still-flooded residences reveal the acute exposure to flooding of citizens categorized as poor.

Such interactions show how the PKK provides food as a form of daily supervised relief to poor residents, who are also those living in nearly permanently flooded properties. It also illustrates how relations between the state and (female) residents are generated and reproduced through the mediation

¹¹ Fieldnotes, Mangkang Kulon (21/10/2022).

of the PKK: there is an expectation of gratefulness from the beneficiaries for their packaged meals and of readiness and industriousness from residents less affected by flooding.

Importantly, the cartons are recycled, with the process "entrusted" to the PKK by the state environmental agency, in an effort to mitigate the environmental impacts of waste.¹² Cartons, paper, plastics, and glass are gathered and sorted weekly by the women within their *dasa wisma*, rather than left unsorted in a bucket for garbage collectors hired by the residents under the budget of the PKK to pick and burn. Once taken in front of the house, garbage is sorted and packed. When joining this, M. B. was shown how to cram and squeeze rice boxes into used rice bags so they are filled to their maximum capacity. It was early in the morning, but the effort left the women in the work party sweating. M.B. noted how rice boxes are by far the most common among light carton material. The bags are weighed and recorded: in this case a dozen kilograms, which might seem negligible when compared to the enormous amount of plastic one can observe on the riverbanks some 50 meters away. Yet, women deploy great time and effort to sort out and pack garbage in this way.¹³ Interestingly, M.B. was not the only one to observe the content of garbage bins, as during the sorting, the participants discussed and organized the reallocation of clothing items that had been thrown away after a flood event.

Bodies that are repeatedly exposed to floods require special forms of care and repair, a lot of which is done by PKK members. Our overview of repairs that sustain and strengthen bodies foregrounds their thoroughness, their diversity, and the various skills necessary to carry them out, from medical training to serve as *posyandu* to the ability to operate catering for groups often larger than a hundred people. Yet, the prescriptive character of the PKK's injunctions works in ways that conceal these skills: labor like cleaning, cooking, or monitoring bodies appears as something that is reasonable to *expect* from married female residents as part of good female citizenship. From the scale of the body, we turn to that of the house to examine how women are involved in the maintenance and repair of their homes.

5. Repairing homes against water, salt, and sediments

In this section, we review how maintaining house cleanliness, pleasantness, and safety is complicated by muddy and salty waters. We observed how tidal overflows and subsidence increase and lengthen the gendered work involved in cleaning and repairing houses and infrastructure (both as a subsistence practice, and for beautification), and it also complicates urban agriculture.

Previous studies have documented difficulties in accessing freshwater water for domestic uses in coastal Semarang. Mangkang, an area unserved by the Semarang central piped water network, is among the neighborhoods relying heavily on shallow and deep groundwater. The area experiences falling groundwater levels (Putranto, Hidajat, & Susanto, 2016) and the infiltration of saltwater into the upper sedimentary layers of the coast, a process accelerated by land subsidence (Rahmawati, Vuillaume, & Purnama, 2013). This has led to a (costly) race for depth, as residents are required to drill ever-deeper artesian wells to satisfy their daily needs (Batubara *et al.*, 2020; Hadipuro & Indriyanti, 2009). Poor water quality becomes an ever-more severe issue in the aftermath of flooding, as this is when latrines overflow. After floods, women have little other choice than to spend several days cleaning the house with buckets and mops.¹⁴

Soil salinity shapes coastal landscapes and climates by preventing the growth of trees and plants. Residents complain that coastal districts count few trees, resulting in overwhelmingly high temperatures during the dry season. Those closer to the coast describe their neighborhood as a "salty place," in which trees will "never grow because of the heat and saltiness," something they must

¹² "DLH Terus Sosialisasikan Pilah Sampah", 03/09/2021, https://semarangkota.go.id/p/2834/dlh_terus_sosialisasikan_pilah_sampah (accessed on 01/08/2024).

¹³ Fieldnotes, Mangkang Kulon, 04-12-2022.

¹⁴ "If there's anything else, we just have to clean it up for a few days," explained Mustika (31/03/2022).

become accustomed to.¹⁵ In several neighborhoods, PKK groups manage small gardens tended by PKK members. Moreover, the PKK advises and encourages residents to grow flowers and plants to embellish their neighborhood. This is reiterated after larger flood events, with advice to use polybags or used jars. In October 2023, urban farming took on additional importance under the impulse of the Semarang government, as its mayor launched an initiative to increase cultivation of inflation-stricken products. This was the *Tancap Bang Tani*, an abbreviation of the program's goal to "Plant Chili and Onion to Control Inflation" (*Tanam Cabai dan Bawang untuk Tekan Inflasi*). The PKK coordinators trained at the Semarang Agriculture Department are meant to encourage and accompany urban agriculture at the district and sub-district level.¹⁶

To protect themselves from floodwater, coastal residents resort to house repairs, building extensions, reconstructions, and modifications that vary in form and ambition (Ley, 2021, 2023; Marfai *et al.*, 2008). In Mangkang Wetan, Cici's house illustrates how successive acts of repair are imagined, combined, and conducted.¹⁷ Cici owns the house where the gathering took place in our opening vignette. It was constructed by her parents-in-law, and is particularly spacious. It is also remarkably low-lying, and water often seeps inside. The living room is four steps lower than street level, which borders the overflow-prone Plumbon River. After the PKK meeting, Cici offered to show us her "room underground," as she nicknamed that part of the house – "the room is downstairs, underground. In a cave" (*kamarnya dibawa, di bawah tanah. Di gua*), she laughed. These two rooms are now so low-lying that they appear to have been excavated – the bedroom and the bathroom behind are six or seven extra steps down and resemble a basement. In the parcel behind her house, Cici's husband, a construction worker, had just finished the frame of a small house which he and Cici initially planned to rent out. The news that the Plumbon River would be 'normalized' (that is, widened and bordered with higher embankments) and that her main house would be destroyed in the process, along with 300 plots and their buildings bordering the river, scuppered this plan. Cici decided to move into the little house herself, since it lies the other side of white demolition markers. In any event, Cici could not afford to elevate the floor of her present house and she has effectively become downwardly mobile (literally and socially) given the flood management plan and her downsizing. While the state compensation entitlement had not been settled at the time of the interview, Cici anticipated it would be insufficient to buy a house or land of a similar size, something other residents of Mangkang have experienced and criticized during previous river normalizations.

This vignette and our other observations in Mangkang suggest gendered repair activities. Infrastructure and house (re)construction is performed by men through daily employment, individually or collectively in the form of *gotong royong*, which is the free collective manual work for the repairs and maintenance of public infrastructure, for example, draining flood canals.¹⁸ Some is performed by state-employed workers. In interviews, female PKK leaders present their activities as strictly non-infrastructural¹⁹ but our research nuances this statement, as we observed that female labor actively supports and enables rebuilding activities. For example, after a flash flood destroyed the embankment of a bridge in Mangkang Kulon, male residents gathered on an early Sunday to shovel material from the riverbed and retrieve the iron structure. While they worked, women brought large kettles of tea, cooked fried snacks and distributed sweet treats they bought from small businesses or itinerant sellers.²⁰

¹⁵ Interview with Fitri, Mangkang Wetan (30/03/2022).

¹⁶ "Program Urban Farming Terus Digenjot, Upaya Kota Semarang Menekan Inflasi", 05/03/2024, <https://semarangkota.go.id/p/5730/program-urban-farming-terus-digenjot-upaya-kota-semarang-menekan-inflasi> (accessed on 01/08/2024).

¹⁷ Interview with Cici, Mangkang Wetan (22/11/2023).

¹⁸ *Gotong royong* is often translated as "mutual cooperation," but, like the involvement in PKK, its practices are registered and sanctioned by the state.

¹⁹ Interview with Dwi, Mangkang Kulon (09/11/2022).

²⁰ Fieldnotes, Mangkang Kulon (11/2022).

An interviewee was frustrated by house reconstruction. For example, Sriningsih, a woman in her 50s who has always lived in Mangkang, deplored that her husband, also a construction worker, refused to build a small embankment in front of their main entrance to stop tidal water ("let it be" he told her about tidal flows in resignation).²¹ Even though female labor is "backgrounded" and women do not have the same level of authority or autonomy as men in planning these house repairs, they do play an important role. Among the infrastructural practices of flood protection, women organize the placement of ceramic tiles. Tile flooring is a sign of higher social status, as opposed to a dirt floor, since they waterproof and facilitate cleaning. In the East of Semarang, we met residents experimenting with placing ceramics on their walls in addition to their floors.²²

To summarize, female labor is needed for dealing with muddy and salty waterflows in Mangkang, where land subsidence and flooding are common. Women have routinized commitment to modify or improve homes and neighborhoods through daily micro-repairs (which differ in scale and visibility, but still support larger infrastructural or macro-repairs that are mostly performed and organized by men). Women's repairs benefit freshness, cleanness and urban greening, and in addition, tackling high soil salinity and infrastructural flood protection hinge on "backgrounded" female labor. We now interrogate the reliance of state programs on the work of PKK members, discussing what this means in terms of responsibilities for repairing damaged landscapes.

6. Duty to repair, obstinacy of repair

We have shown how the state relies on the work of Mangkang women who insure their subsistence, living space, and healthcare. Keeping bodies healthy is crucial for safeguarding a pool of laborers, something that is especially strategic for employers. Women perform this work despite urban planning rendering coastal areas increasingly hostile for low- and middle-income residents. In what follows, we reflect on the PKK's mediating role, showing how it mobilizes an ideology of motherly care as good citizenship to cheaply enroll women's labor into the state capitalist and developmentalist project.

Our descriptions of PKK underlined its intrusiveness, with repairs being coupled systematically with surveillance. Each PKK activity is verified, accounted for, and reported to the hierarchy of state administrations. When asked about the involvement of residents in PKK activities, Dwi, the PKK cadre that M. B. accompanied in the distribution of packaged meals, explains:

They all come along. Because the PKK is mandatory, the observance is like this, the residents are encouraged to join the PKK. If you don't join the PKK, you don't know anything. [...] Whatever announcements there are, they did not know. [They] found out by looking around. If they attend the meeting, they will know; there is this, there is that.²³

Dwi's comment expresses how the PKK has become a privileged space for information exchange and circulation. While joining the PKK is actually no longer legally mandatory since the end of the Suharto regime (Robinson, 2008), social blame remains attached to the non-participation of married women in the PKK. The PKK combines surveillance with the promotion of local "champions" and competition to mobilize its members. Within this limiting frame, women are strategic in their degree of involvement, and we observed varied rates of attendance to PKK events depending on their interests.

²¹ Interview with Sriningsih, Mangkang Wetan (29/03/2022).

²² Interview with Setiawati, Terboyo Wetan (8/8/2022).

²³ Interview with Dwi, Mangkang Kulon (9/11/2022).

It is well known that acts of repair are rooted in normative assessments: a sense of how things are to be used properly, when they should be repaired, and what constitutes a proper fix for specific damage (Denis, Mongili, & Pontille, 2016; Gregson, Metcalfe, & Crewe, 2009). In its interventions, the PKK makes explicit, oftentimes with great precision, what constitutes a healthy body and a healthy house. We gave a few examples of such norms throughout our article: the healthiness of children is evaluated by *posyandu* cadres based on, among other criteria, their weight and size, their diet, and the absence of given diseases. Similarly, a house is healthy if it is mosquito-free, its floor is kept clean using fresh water, and its pleasantness can be assessed from the presence of plants surrounding it and ceramic floors.²⁴ The outcome of the PKK interventionist approach, backed up by surveillance, evaluation, and competition, is that repair labor is expected of married women as part of good citizenship and womanhood, even if PKK members must deploy significant efforts to keep up with continued flood-induced destruction. As tidal water floods neighborhoods further inland and increasingly seeps in houses and upper soil layers, ever more labor is required from women, who are vested with the growing responsibility to make and maintain healthy homes and bodies.

Placing repairs under the responsibility of women, the PKK relocates repairs into the private sphere. Constructing ecological and social repairs as part of domestic work not only allows the appropriation of the cheap or free labor of the repairers but also absolves the state of its duty to look after the health and wellbeing of its citizens. Women's labor is needed because the government fails to provide good flood protection, yet making repairs the responsibility of women also assists with making state negligence unnoticed. Other feminist scholars have similarly noted how poor people (frequently women) need to engage in everyday tasks of water- or flood management to make up for state failures to care (Acevedo-Guerrero, 2025; Biza *et al.*, 2022; Leonardelli *et al.*, 2023).

PKK's construction of repairs as a domestic and private responsibility not only leads to an under-appreciation of the work of repair but also serves to conveniently direct the attention away from the question of who and what caused the very threats that PKK encourages women to protect themselves against. As we mentioned earlier, state-promoted forms of capitalist urbanization as well as state-initiated large-scale flood protection measures are largely to blame for the problems of subsidence and flooding that residents from Mangkang are navigating. In fact, recently published planning documents reveal the state's intention to continue propagating mutually reinforcing cycles of destruction and capitalist appropriation of land and labor in Mangkang. These plans foresee the relocation of Mangkang low-income coastal residents in favor of industries and high-income housing – see Belland (2025). In view of such plans, efforts of residents to stay and sustain life in Mangkang become more than mere compliance to PKK directives.

In addition to being (seen as) good citizens and housewives, continuous acts of repair also are rooted in and supporting the commitment of Mangkang residents to stay in subsiding areas. Previous studies noted the fact that residents in coastal Semarang do not wish to move, despite worsening land subsidence and flooding (Bott & Braun, 2019). We ourselves witnessed this desire to stay in the aftermath of the 2021 normalization of the Bringin River, when a vast majority of the 360 households who lost their houses constructed new habitations in the few available parcels of Mangkang instead of moving to other areas. In interviews, residents repeatedly expressed their attachment to their neighborhood and their communities. According to Mustika, "(If) we were there with city people, we and our neighbors would not be friends with each other. Here, togetherness is still acted upon." For Fitri, "neighbors are like relatives (*saudara*)."²⁴ PKK gatherings are occasions to strengthen these links by exchanging news and gossip, conducting business, or organizing impromptu celebrations. For residents, therefore, repairs also constitute acts of (re-)crafting (endangered) attachments and connections to places and neighbors.

²⁴ Some of these criteria derive from the standards of international organizations, such as the "WHO Housing and Health Guidelines," to which the Indonesian Ministry of Health refers.

The success of the PKK in organizing repairs should therefore not be unequivocally read as a successful strategy of the state to absolve itself of its caring responsibilities by delegating them to residents – mainly women. For residents, repairs also constitute efforts to strive towards a more environmentally just life, and can even form part of subtle strategies of circumventing, obstructing, and resisting state projects of industrialization and urbanization. Indeed, when seen through the eyes of provincial civil servants, continuous acts of repair can appear as a form of unreasonable obstinacy. It is telling in this regard that, in a long discussion about flooding and subsidence issues, state planners commented on the "harshness" of coastal inhabitants in Semarang and their tendency to "disobey" (contest) state planning. In this sense, repair constitutes a complex political terrain for different actors to delicately negotiate, navigate, and mold how subsidence and flood protection play out.

7. Conclusion

The ability to continue to live in the always-almost-falling-apart world (Jackson, 2014) such as the flood and subsidence-prone area of Mangkang importantly hinges on continuous activities to repair, restore, or maintain buildings, surroundings, and bodies; it requires constant engagement in fixing and caring for things and people. We have taken these repairs seriously when analyzing and understanding land subsidence and flooding. Inspired by scholars who insist that the world is always-in-the-making, and who therefore make a plea for directing research attention to how this making and re-making is done (Anand, 2017; Boudreau, 2022; McFarlane, 2016; Simone, 2010), we consider repairs as an important thread in the weaving of the fabric of the socio-material relations constituting the subsiding landscapes of Semarang. Foregrounding the many acts of care and maintenance in large part done by women forcefully underscores how much work and ingenuity it takes to live on an unstable and damaged Earth, confirming the centrality of repair in sustaining life, preserving human value, and upholding some sense of socio-material order while simultaneously drawing a different kind of much-needed attention to the severity of the problem of land subsidence.

In this way, or so we conclude, an ethnographic documentation of acts of repair usefully expands the political ecology of floods and land subsidence in Semarang and elsewhere. Many scholars base their plea for attention to repair and care on the assumption that it is work that goes unnoticed. In Mangkang, however, women's acts of repair to prevent, attenuate, conceal, and heal the negative consequences of land subsidence and flooding are meticulously monitored, recorded, and evaluated by the semi-administrative organization of PKK, or wives' associations. The PKK coordinates many of these repair activities, in the process actively defining and constructing them as work that women need to do if they want to be seen and known as good citizens. Indeed, the PKK normatively defines, requests its members to perform, sometimes finances, and always tracks and evaluates activities of repair and care. By emphatically situating the responsibilities for maintaining life in coastal neighborhoods in the private domain, the PKK contributes to the undervaluation of the ecological labor done by women, while enacting a specific ideal of female citizenship. By making repair the task of women, constructing it as a logical extension of what it takes to be a good mother and housewife, this is an ideal that helps justify the negligence of the state towards its own citizens. Pushing repair to the private, domestic domain also helps conceal the state's continued participation in the very projects of urbanization and industrialization that contribute to subsidence and flooding in the first place. We conclude that not only the responsibilities for causing land subsidence, but also the efforts to repair its impacts, are unevenly distributed.

With this conclusion, we nevertheless do not want to suggest that acts of repair unequivocally confirm the success of the state in implementing a particular developmentalist agenda. Our findings reveal that Mangkang residents' repair activities not just signify their compliance with PKK directives but are also motivated by their stubborn determination to continue living in coastal neighborhoods. This is perhaps a reminder that appropriation goes both ways: demonstrating adhesion to the state developmentalist agenda is a form of performing the 'good' community, which means one worthy of state investments to be protected from flooding and capitalist encroachment. Yet, by engaging in acts

of repair, residents also appropriate the PKK to organize the conditions for them to continue to live on the coast and sustain coastal relations despite subsidence and flooding. Especially when exceeding the plans and designs of state authorities, acts of repair potentially subvert socio-material orders in subtle ways. Residents may therefore mobilize repair to either accommodate or circumvent capitalist encroachment.

A focus on small acts to heal and re-make bodies, houses, and landscapes grounds what and who is at stake in coastal subsidence somewhat differently. It draws attention to the smaller temporal and spatial scales at which coastal urban politics also play out. Beyond underlining the need to meticulously document the micro-politics of repair – to expand and complement the understanding of the processes through which unevenness is (re)produced – our study also identified that repairs are and can be mobilized to strengthen widely different urban projects (preserving living space for low-income residents vs. high-end real estate and/or intensified coastal industrialization).

This suggests that studying repairs fruitfully intersects feminist studies of care in damaged landscapes with studies of future-making. The rapidly growing scholarship on transformations to sustainability and post-structuralist and post-humanist feminisms for reparative theorizing (or theories of repair) propose repair as a starting point of transformative changes towards greater sustainability and justice (Gibson-Graham, 2006; Leonardelli *et al.*, 2023; Von Redecker, 2021). This scholarship suggests that transformations always necessarily start with practical and pragmatic projects of caring for, repairing, or recovering things and relations. Projects that do not form part of new 'grand narratives' or are in opposition to them, but that consist of smaller attempts to do things differently, constituting what Von Redecker (2021) calls an 'interstitial revolution.' Such work could enrich the understanding of how maintenance, repair, and care engender hope, expectations, speculation, or promises and with what effects for present and future urban environments (see also Boudreau 2022; Huff & Brock, 2023 for existing reflections in this direction). Ultimately, repair and care are as much adaptive responses to environmental crises as the locus of negotiations between residents, the state, and urban capitalists. Appreciating the centrality of repairs, therefore, can usefully expand and refresh understandings of the political ecology of damaged landscapes.

References

- Abidin, H. Z., Andreas, H., Gumilar, I., Sidiq, T. P., & Fukuda, Y. (2013). Land subsidence in coastal city of Semarang (Indonesia): Characteristics, impacts and causes. *Geomatics, Natural Hazards and Risk*, 4(3), 226–240. <https://doi.org/10.1080/19475705.2012.692336>
- Acevedo-Guerrero, T. (2025). Water with larvae: Hydrological fertility, inequality, and mosquito urbanism. *Environment and Planning E: Nature and Space*, 8(1), 13–30. <https://doi.org/10.1177/25148486221099801>
- Acharya, A., Wong, L., de Waal, E., Campbell, H., Fluker, R., Shop, R., ... Millington, N. (2024). Field notes on repair: 6. *Places Journal*. Retrieved from <https://placesjournal.org/article/field-notes-on-repair-6/>
- Anand, N. (2017). *Hydraulic City: Water and the infrastructures of citizenship in Mumbai*. Duke University Press.
- Anand, N. (2020). After breakdown: Invisibility and the labour of infrastructure maintenance. *Review of Urban Affairs*, LV(51), 52–56. <https://www.epw.in/journal/2020/51/review-urban-affairs/after-breakdown.html>
- Andreas, H., Zainal Abidin, H., Gumilar, I., Purnama Sidiq, T., Anggreni Sarsito, D., Pradipta, D., & Wijaya, D. D. (2019). *On the acceleration of land subsidence rate in Semarang City as detected from GPS surveys*. 94, 1–6. E3S Web of Conferences. <https://doi.org/10.1051/e3sconf/20199404002>
- Barca, S. (2020). *Forces of reproduction: Notes for a counter-hegemonic Anthropocene*. Cambridge University Press. <https://doi.org/10.1017/9781108878371>

- Batubara, B., Kausan, B. Y., Handriana, E., Salam, S., & Ma'rufah, U. (2021). *Banjir Sudah Naik Seleher: Ekologi Politis Urbanisasi DAS-DAS di Semarang*. Cipta Prima Nusantara.
- Batubara, B., Kooy, M., & Zwartveen, M. (2023). Politicising land subsidence in Jakarta: How land subsidence is the outcome of uneven sociospatial and socionatural processes of capitalist urbanization. *Geoforum*, 139(103689), 1–10. <https://doi.org/10.1016/j.geoforum.2023.103689>
- Batubara, B., Warsilah, H., Wagner, I., Salam, S., & Koalisi Pesisir Semarang-Demak. (2020). *Maleh dadi Segoro: Krisis Sosial-Ekologis Kawasan Pesisir Semarang-Demak*. Lintas Nalar.
- Belland, M. (2025). Futuring the volatile city: Speculation and anticipatory politics of land subsidence in Java. *Singapore Journal of Tropical Geography*, 46(3), 353–370. <https://doi.org/10.1111/sjtg.70021>
- Belland, M., Kausan, B.Y., Kooy, M., & Zwartveen, M. (2025). Seeing like a pond: Amphibious stories of coastal subsidence in Central Java, *Geoforum*, 161, 104248. <https://doi.org/10.1016/j.geoforum.2025.104248>
- Biza, A., Kooy, M., Manuel, S., & Zwartveen, M. (2022). Sanitary governmentalities: Producing and naturalizing social differentiation in Maputo City, Mozambique (1887–2017). *Environment and Planning E: Nature and Space*, 5(2), 605–624. <https://doi.org/10.1177/2514848621996583>
- Bott, L.-M., & Braun, B. (2019). How do households respond to coastal hazards? A framework for accommodating strategies using the example of Semarang Bay, Indonesia. *International Journal of Disaster Risk Reduction*, 37(101177), 1–9. <https://doi.org/10.1016/j.ijdrr.2019.101177>
- Boudreau, J. (2022). CITY OF REPAIR: Practicing the future in Mexico City. *International Journal of Urban and Regional Research*, 46(5), 851–864. <https://doi.org/10.1111/1468-2427.13102>
- Cornea, N. L., Véron, R., & Zimmer, A. (2017). Everyday governance and urban environments: Towards a more interdisciplinary urban political ecology. *Geography Compass*, 11(4), 1–12. <https://doi.org/10.1111/gec3.12310>
- Denis, J., Mongili, A., & Pontille, D. (2016). Maintenance & Repair in Science and Technology Studies. *Tecnoscienza – Italian Journal of Science & Technology Studies*, 6(2), 5–15. <https://doi.org/10.6092/issn.2038-3460/17251>
- Doherty, J. (2017). Life (and limb) in the fast-lane: Disposable people as infrastructure in Kampala's boda boda industry. *Critical African Studies*, 9(2), 192–209. <https://doi.org/10.1080/21681392.2017.1317457>
- Fraser, N. (2017). Behind Marx's hidden abode: For an expanded conception of capitalism. In P. Deutscher & C. Lafont (Eds.), *Critical theory in critical times* (pp. 141–159). Columbia University Press. <https://doi.org/10.7312/deut18150-009>
- Gibson-Graham, J. K. (2006). Imagining and enacting a postcapitalist feminist economic politics. *Women's Studies Quarterly*, 34(1/2), 72–78. <https://www.jstor.org/stable/40004733>
- Graham, S., & Thrift, N. (2007). Out of order: Understanding repair and maintenance. *Theory, Culture & Society*, 24(3), 1–25. <https://doi.org/10.1177/0263276407075954>
- Gregson, N., Metcalfe, A., & Crewe, L. (2009). Practices of object maintenance and repair: How consumers attend to consumer objects within the home. *Journal of Consumer Culture*, 9(2), 248–272. <https://doi.org/10.1177/1469540509104376>
- Hadipuro, W., & Indriyanti, N. Y. (2009). Typical urban water supply provision in developing countries: A case study of Semarang City, Indonesia. *Water Policy*, 11(1), 55–66. <https://doi.org/10.2166/wp.2009.008>
- Henke, C. R. (1999). The mechanics of workplace order: Toward a sociology of repair. *Berkeley Journal of Sociology*, 44, 55–81. <https://www.jstor.org/stable/41035546>

- Huff, A., & Brock, A. (2023). Introduction: Accumulation by restoration and political ecologies of repair. *Environment and Planning E: Nature and Space*, 6(4), 2113–2133. <https://doi.org/10.1177/25148486231168393>
- Jackson, S. J. (2014). Rethinking repair. In T. Gillespie, P. J. Boczkowski, & K. A. Foot (Eds.), *Media Technologies: Essays on communication, materiality, and society* (pp. 221–240). MIT Press. <https://doi.org/10.7551/mitpress/9042.003.0015>
- Kausan, B. Y., Belland, M., Handriana, E., & Hamdani, R. (n.d.). *Semarang Lemahe Ambles, Membangun Pengetahuan Sosial Dari Pengalaman Sehari-Hari Warga Tentang Amblesan Tanah di Pesisir Semarang*. Bantul: Mata Kata Inspirasi.
- Lawhon, M., & Ernstson, H. (2013). Provincializing urban political ecology: Towards a situated UPE through African urbanism. *Antipode*, 46(2), 497–516. <https://doi.org/10.1111/anti.12051>
- Leonardelli, I., Kemerink-Seyoum, J., Kulkarni, S., Bhat, S., & Zwarteveen, M. (2023). A feminist analysis of women farmers navigating groundwater qualities in Maharashtra, India. *Water Alternatives*, 16(1), 134–152. <https://www.water-alternatives.org/index.php/alldoc/articles/vol16/v16issue1/692-a16-1-9>
- Leonardelli, I., Kemerink-Seyoum, J., & Zwarteveen, M. (2023). Obliqueness as a feminist mode of analysing waterscapes: Learning to think with overflows. *Environment and Planning E: Nature and Space*, 6(2), 863–879. <https://doi.org/10.1177/25148486221117725>
- Ley, L. (2021). *Building on borrowed time: Rising seas and failing infrastructure in Semarang*. University of Minnesota Press.
- Ley, L. (2023, October 23). *Vertical reclamation and the inequalities of building on sinking land*. Presented at the Speculative Climate Urbanism and the Sea: The Inequalities of Building and Living on Water in Southeast Asia, Singapore. Asia Research Institute, National University of Singapore. Retrieved from <https://ari.nus.edu.sg/wp-content/uploads/2023/04/Program-Climate-Urbanism-1.pdf>
- Li, T. M. (2007). *The will to improve: Governmentality, development, and the practice of politics*. Duke University Press.
- Lindén, L., & Lydahl, D. (2021). Editorial: Care in STS. *Nordic Journal of Science and Technology Studies*, 9(1), 3–12. <https://doi.org/10.5324/njsts.v9i1.4000>
- Marfai, M. A., King, L., Sartohadi, J., Sudrajat, S., Budiani, S. R., & Yulianto, F. (2008). The impact of tidal flooding on a coastal community in Semarang, Indonesia. *The Environmentalist*, 28(3), 237–248. <https://doi.org/10.1007/s10669-007-9134-4>
- McFarlane, C. (2016). The geographies of urban density: Topology, politics and the city. *Progress in Human Geography*, 40(5), 629–648. <https://doi.org/10.1177/0309132515608694>
- Mies, M. (1986). *Patriarchy and accumulation on a world scale: Women in the international division of labour*. Zed Books.
- Mol, A., & Hardon, A. (2020). Caring. In J. R. Bowen, N. Dodier, J. W. Duyvendak, & A. Hardon (Eds.), *Pragmatic inquiry* (pp. 185–204). Routledge.
- Newberry, J. (2006). *Back door Java: State formation and the domestic in working class Java*. Broadview Press.
- Nugroho, D. A., & Handayani, W. (2021). Kajian Faktor Penyebab Banjir dalam Perspektif Wilayah Sungai: Pembelajaran Dari Sub Sistem Drainase Sungai Beringin. *Jurnal Pembangunan Wilayah Dan Kota*, 17(2), 119–136. <https://doi.org/10.14710/pwk.v17i2.33912>
- Permana, Y. S. (2024). Drainage politics: The political economy of flood management in Indonesian cities. In E. Aspinall & A. Savirani (Eds.), *Governing urban Indonesia* (pp. 197–217). Singapore: ISEAS - Yusof Ishak Institute. <https://doi.org/10.1355/9789815203738-014>

- Permana, Y. S. (2025). The collusion trap: Business - political collusion and flood risk management in Indonesia. *International Journal of Disaster Risk Reduction*, 122(105408), 1–12. <https://doi.org/10.1016/j.ijdrr.2025.105408>
- Putranto, T., Hidajat, W. K., & Susanto, N. (2016). Developing groundwater conservation zone of unconfined aquifer in Semarang, Indonesia. *IOP Conference Series: Earth and Environmental Science*, 55, 1–9. <http://doi.org/10.1088/1755-1315/55/1/012011>
- Rahmawati, N., Vuillaume, J.-F., & Purnama, I. L. S. (2013). Salt intrusion in coastal and lowland areas of Semarang City. *Journal of Hydrology*, 494, 146–159. <https://doi.org/10.1016/j.jhydrol.2013.04.031>
- Robinson, K. (2008). *Gender, Islam and democracy in Indonesia*. Routledge. <http://doi.org/10.4324/9780203891759>
- Sarah, D., Hutasoit, L. M., Delinom, R. M., & Sadisun, I. A. (2020). Natural compaction of Semarang-Demak alluvial plain and its relationship to the present land subsidence. *Indonesian Journal on Geoscience*, 7(3), 273–289. <https://doi.org/10.17014/ijog.7.3.273-289>
- Sidabalok, H. (2021). Jalan Tol dan Tanggul Laut Semarang Demak dalam Perspektif Keadilan Lingkungan. *Prisma Jurnal Pemikiran Sosial Ekonomi, Transformasi Ruang Kota: Mencari Keadilan Sosial-Ekologis*, 40(3), 90–99. <http://repository.unika.ac.id/id/eprint/35083>
- Simone, A. (2010). *City life from Jakarta to Dakar: Movements at the crossroads*. Routledge.
- Soetjipto, A. W., & Adelina, S. (2013). *Suara dari Desa: Menuju Revitalisasi PKK*. Marjin Kiri.
- Star, S. L., & Ruhleder, K. (2016). Steps toward an ecology of infrastructure: Design and access for large information spaces. In G. C. Bowker, S. Timmermans, A. E. Clarke, & E. Balka (Eds.), *Boundary objects and beyond*. (pp. 377–416). MIT Press. <https://doi.org/10.1145/192844.193021>
- Suryakusuma, J. I. (2011). *State ibuisim: The social construction of womanhood in New Order Indonesia*. Komunitas Bambu.
- Vergès, F. (2019). Capitalocene, waste, race, and gender. *E-Flux Journal*, #100. <https://www.e-flux.com/journal/100/269165/capitalocene-waste-race-and-gender/>
- Von Redecker, E. (2021). *Praxis and revolution: A theory of social transformation*. Columbia University Press.
- Warburton, E. (2016). Jokowi and the new developmentalism. *Bulletin of Indonesian Economic Studies*, 52(3), 297–320. <https://doi.org/10.1080/00074918.2016.1249262>