

SYNTHESIS

Planetary health justice: feminist approaches to building in rural Kenya

Mikaela Patrick¹, Gulraj Grewal², Winnie Chelagat³ and Geordan Shannon⁴**Abstract**

The planetary health concept describes the relations between health and climate. The inequities that connect these two domains are experienced most by low-resource and vulnerable populations, *e.g.* the impact of drought on subsistence livelihoods and associated mental health issues. Climate justice and health justice are framed through capabilities and integrated with ecofeminist approaches. Spatial justice is introduced as the ability to conceptualise how these interconnected injustices are mediated through environments. The integration of these theories can provide a justice-based planetary health approach that could overcome several barriers. Design and spatial practice offer processes and tools to understand the complexity of planetary health across scales, systems and relations; and to generate design solutions that promote equity and justice. Practical examples of Global South design projects are presented that connect health and climate. The example of a maternal health project in rural Kenya shows how a conceptual design framework for a justice-based planetary health can contribute to the planetary health.

Practice relevance

Global challenges of inequity are increasingly understood as complex and interconnected. The planetary health movement conceptualises a holistic view of the world incorporating an ecofeminist perspective. Addressing these challenges requires the ability to conceptualise interconnected injustices in climate and health and practical approaches, where participatory design processes can be useful. A conceptual framework can be used to design integrated solutions to planetary health injustices, relevant for built environment and development practitioners. The processes, tools and components of practice from the Global South are explored, which can be used to promote equity within the built environment.

Keywords: architecture; adaptation; climate justice; ecofeminism; Global South; planetary health; spatial justice; Kenya

1. Introduction

If the land is sick, you are sick.

(Fiona Livingstone, University of Newcastle, Centre for Rural and Remote Mental Health; cited in Kenyon 2019)

How are climate justice and health justice connected? This paper explores the basis of the philosophical ambitions of planetary health and provides some examples of how this can be applied to the built environment.

Climate justice frames global warming as an ethical and political issue. It recognises that the human impacts of climate change will not be borne fairly between different groups of people (United Nations 2019). Health justice promotes the right of all people to realise health and well-being through a range of public health, policy and legal mechanisms

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(Ruger 2009; Benfer 2015; Gostin 2011). The concept of planetary health offers a systems-based approach to frame climate challenges by considering the multi-scalar and interrelated nature of the health of people and our planet (Horton 2018). Ecofeminist scholars have linked questions of justice regarding the unequal treatment of both women and nature to planetary health for many years (Gaard & Gruen 1993). The increasing inequities due to an accelerating climate emergency (Benevolenza & DeRigne 2019) have created a new urgency to develop justice-based approaches to tackling planetary health in the context of climate change.

Spatial design practices are central to mapping resourcefulness and understanding the social, political, economic and environmental forces that can enable health solutions in a resource-scarce future (Stema 2018, 2019a, 2019b, 2019c). The built environment has a role in shaping planetary health (Lindley *et al.* 2011; Oni *et al.* 2019), and design may offer methods to address the planetary health discipline's challenge of translating research into action (Martin, Mullan, & Horton 2019).

Inequality and inequity are both place based and gendered. Women, children and the elderly in low-resource settings are considered the most vulnerable to health challenges and ecological crisis (WHO 2014; Shiva 2016; Benevolenza & DeRigne 2019). There is a need for conceptual and practical mechanisms to improve health and well-being, but which do not reinforce existing structural power imbalances (Shiva 2016). Despite challenges experienced by such vulnerable communities in low-resource settings, the conditions of resource scarcity can drive creativity (Goodbun, Till, & Iossifova 2012). Grassroots participatory practices led by vulnerable groups can offer equitable solutions for planetary health. It is proposed this can be framed through an ecofeminist approach to design practice.

This paper synthesises the capability approach, ecofeminism, ethics of care and critical spatial practice into a conceptual framework of planetary health. This conceptual framework maps out an approach to design processes that takes into account contextual and structural factors (Aranda-Jan, Jagtap, & Moultrie 2016). Its application to the fields of architecture, global health and development practice is considered through an exploration of some ecofeminist projects in the Global South. Details are presented of a multidisciplinary collaboration project to co-design a maternal health space in rural Kenya. The context, process of participatory design and outcomes of this project will connect the theories described in the conceptual framework and reflect on our position as 'planetary health designers and practitioners'.

2. Conceptual framework

2.1 Planetary health connects climate justice and health justice

The capability approach recognises that in order to achieve freedom, and thus justices, people need to be able to have the capabilities to enable them to live in ways they themselves deem meaningful. In this tradition it is recognised that each individual's capabilities are shaped by the social structures in which they are embedded (Sen 1999; Alkire 2007). The capability approach has recently been applied to climate justice work in order to advocate for participatory approaches that account for human diversity and vulnerabilities in developing climate adaptation solutions (Schlosberg 2012; Shi *et al.* 2016) and indigenous struggles that connect nature and culture (Schlosberg & Carruthers 2010).

With regard to health justice, Venkatapuram (2015: 51) applies the capability approach to connect human rights, health and capabilities, framing health justice as 'the moral right of the capability to be healthy'. In this context, the role of human capabilities in maintaining health and well-being implies access to the necessary resources, but this does not always mean they will be mobilised (Oosterlaken 2009). Design practice may not always achieve inclusion as this is dependent on people's capabilities. Frediani (2008) stresses the importance of 'participatory capabilities': choice, ability, opportunity. To design effective health interventions, it is first necessary to understand people's health capability.

Both health justice and climate justice mobilise the capability approach to explain the right to live free of injustices (Ruger 2006). In the introduction to *Health Justice* (2011: 1), Venkatapuram remarks:

for human beings to be able to live a full lifespan and experience as few avoidable physical and mental impairments as possible they need to be surrounded by a supportive environment.

For example, nutrition and shelter throughout a person's life-course are fundamental to a holistic sense of good health. Both nutrition and shelter are profoundly shaped by the environment and consequently affected by an evolving climate crisis, and there is increasing evidence of negative mental health impacts of climate change (Padhy *et al.* 2015; Kenyon 2019; Rouf & Wainwright 2020).

In low-resource settings, worsening climatic conditions (*e.g.* more frequent droughts) are increasing health and resource challenges faced by already vulnerable populations, or historically oppressed, populations (Stema 2019b) and exacerbating inequity (Clayton, Manning & Hodge 2014). The human right to good health is intimately connected to collective rights protecting the environment, as evidenced in indigenous land struggles where the destruction of nature is a source of collective pain (Kenyon 2019) and a site of political struggle for dignity and equity (Schlosberg & Carruthers 2010). The capability approach frames a concept of justice that connects resource inequity with social and cultural struggles.

Planetary health offers a conceptual framework to describe a holistic system of climate and human health at different scales. The impacts of climate change to physiological and psychological health operates at three scales: environmental, human systems and infrastructures, and individual (Clayton *et al.* 2014). Through forming an emancipatory space of enquiry (Horton *et al.* 2014; Horton 2018), planetary health brings together the right to climate justice and health justice with the capability approach; it also offers a justice-based approach to address the inequities in this system (Figure 1).

However, barriers exist to designing and implementing solutions such as an overreliance on gross domestic product (GDP) as a measure of wealth; short-sighted views of human progress; a lack of evidence or support for transdisciplinary research that connects health and social and environmental determinants; and an aversion to addressing uncertainty in decision-making and allocating resources within and across governments (Whitmee *et al.* 2015). These have been described as imagination, evidence and implementation gaps, and holistic solutions to overcoming them can be developed through considerations of the capability approach; the spatial aspects of justice; and understanding how social relations are constructed and reinforced through space in their design (Lefebvre 1991; Ahmed 2018).

2.2 Ecofeminism and practices of care

Ecofeminism is a political and philosophical theory and movement that connects the oppression of women with the oppression of nature (Gaard & Gruen 1993; Patrick 2019) through histories of masculine dominance, capitalist modes of production and colonialism (Federici 2004, 2018; Shiva 2016). According to Gaard (2015), these mutually oppressing forces cannot be addressed in isolation, which is evidenced by how climate change is unequally affecting women's health: there is 'no climate justice without gender justice' (Terry 2009: 15; see also Sorensen *et al.* 2018). Feminist philosophers consider the detrimental effects on physical and mental health from the subjugation of nature through a feminist lens (Rawes 2013) and argue that gender, ecology and health are fundamentally intertwined (Shiva 2016).

An ecofeminist perspective on health is that biomedical reductionism—a view on health focused on biological symptoms of the human body—is linked to colonial, accelerated and unsustainable development practices such as mass agriculture and biopiracy in the pharmaceutical industry. These practices have roots in how both nature and women have been historically oppressed, which creates health injustices (Shiva 2016). This perspective on health speaks of planetary health, as the health of one is intrinsically connected to the health of others, including non-humans, and to questions of justice. This resonates with a capability-based approach to justice, and ecofeminism proposes the solutions to these 'interconnected problems' lie in community-based ways of knowing, dialogue and reaching collective forms of knowledge (Gaard & Gruen 1993).

The ethics of care theory emerges out of recognition of the interconnected nature of our existence (Tronto 1993; Puig de Bellacasa 2012; Fitz & Krasny 2019). 'Thinking with care' suggests addressing environmental challenges through collaborative and multi-species relations (Haraway 2016; Puig de Bellacasa 2012).

Care is: '*everything that we do to maintain, continue and repair "our world" so that we can live in it as well as possible. That world includes our bodies, our selves, and our environment, all of which we seek to interweave in a complex, life sustaining web.*' (Tronto 1993: 103; quoted in Puig de Bellacasa 2012: 199, who added the emphasis)

Valuing care highlights individual vulnerability and reliance on others and other things. In this form, care is central to a justice-based planetary health. Practices of care have historically been feminised, and are associated with unpaid

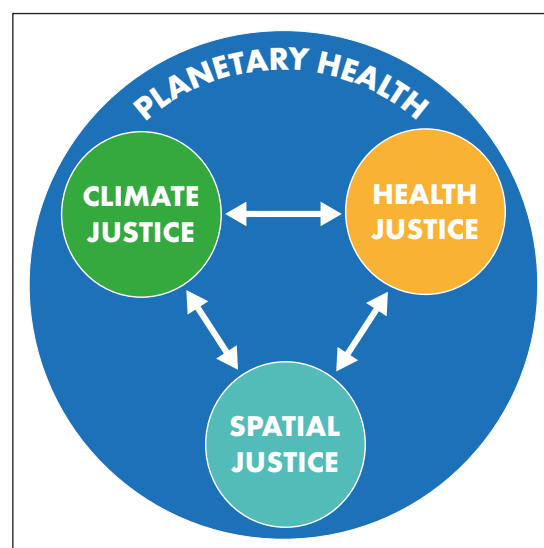


Figure 1: Planetary health connects climate justice, health justice and spatial justice.

labour and practices of sustenance rather than production. In the Global South, colonial legacies represent a devaluing of caring practices to focus on mass agricultural production for export and profit, which are considered drivers of environmental destruction (Shiva 2016). Decolonial feminists would argue that the unpaid labour of sustaining the land of 'home' and caring for the household are not valued in this agenda. Ecofeminism and ethics of care offer a different way of inhabiting the planet, one of making kin, sustenance and care, rather than domination and control (Haraway 2016; Patrick 2019). The ecofeminism approach to justice-based planetary health (**Figure 2**) offers a methodological approach to address the imagination, evidence and implementation gaps present in planetary health practice. This framework is shaped by a partial, lived and positioned way of thinking (Rendell & Padan 2019) to provide reflection on practices of planetary health.

2.3 Feminist spatial practice

Ecofeminism proposes collective forms of expression through dialogue and community-based, collective and ways of knowing (Gaard & Gruen 1993). Feminist spatial practice encompasses the ethical principles of inclusivity, flexibility and reflexivity. Bringing spatial aspects to planetary (both ecological and societal) injustices experienced by women, Lesley Kanes Weisman (cited in Rendell, Penner, & Borden 2000: 5) writes:

One of the most important tasks of the women's movement is to make visible the full meaning of our experiences and to reinterpret and restructure the built environment in those terms. We will not create fully supportive, life-enhancing environments until our society values those aspects of human experience that have been devalued through the oppression of women, and we must work with each other to achieve this.

These are feminist concerns which have critical dimensions that are both societal and spatial. They will require feminist activism as well as architectural expertise to insure a solution.

Thinking on gender and architecture first became prominent in the 1970s (Rendell *et al.* 2000), and since the 1990s a feminist perspective has offered a radical and critical approach to spatial practice and ecological concerns (Rendell 2018). A feminist spatial practice can be seen as an act of resistance, an act of spatial justice, that is essential to mobilising Horton's (2018) vision of an 'emancipatory planetary health'. Rawes (2013: 2) argues that gender is inseparable from ecological practice, referring to:

feminist thinking and practice for questioning the social justice and ecological health of our societies, and our built and natural environments.

The concept of 'relational architectural ecologies' (Rawes 2013) offers a spatiotemporal and material approach to the relational concerns of injustice found in planetary health and ecofeminism, grounding a critical, feminist, position of ecological architecture.

The concept of ecological architecture has been grounded in predominantly Western, European and North American world views. Ecofeminism, climate justice and health justice seek to challenge this as patriarchal and technocratic

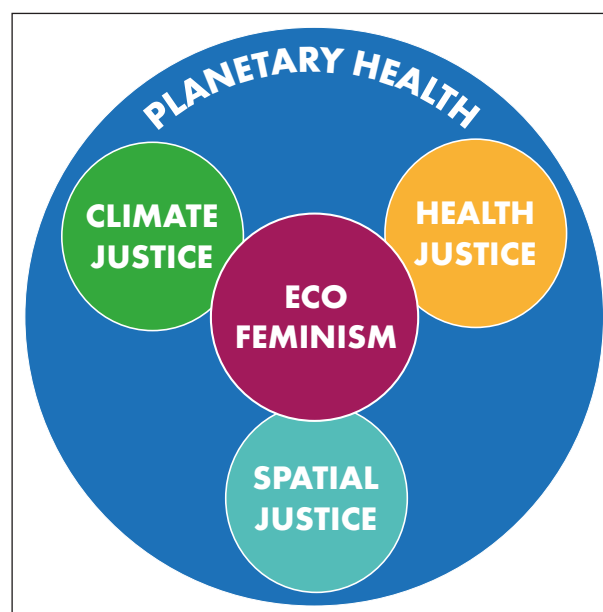


Figure 2: Conceptual framework of justice-based planetary health. Ecofeminism's understanding of injustice connects climate, health and spatial problems; these domains are both distinct and interconnected.

paradigms that are destructive to planetary health (Gaard & Gruen 1993; Shiva 1994; Horton 2018). Man's control of nature is considered problematic as it is representative of the subjugation (Scott 2016; Rawes & Spencer 2017), and has contributed to planetary health challenges such as natural resource depletion, biopiracy and changing disease patterns (Patrick 2019). These patriarchal modes of thinking have resulted in assumptions that there are 'technical fixes' to these challenges, and that the efficient distribution of resources is the answer (Bateson 1972; Goodbun 2012). Critical perspectives on justice and the capability approach offer compelling arguments (Shi *et al.* 2016) for ecologically just design, which is conceived of a complex, open, system that creates space for 'slow change' and a complex, planetary, socioecological system (Goodbun 2012).

Guattari (2010) frames three interconnected ecological domains: mental ecology, social ecology and environmental ecology, and proposes that it is our failure to *connect* these domains that is blocking our ability to address environmental problems. Mobilising ecofeminism to overcome planetary health injustices may offer a method to overcome these failures of disconnected thinking.

2.4 Practices of ecofeminism in the Global South

The gendered injustices of climate change are perhaps most violently apparent in the experience of women in the Global South. Design and spatial practice can offer practical methods, first, to make visible and, second, to overcome these injustices. Several contemporary examples of 'ecological architecture' that are critical, ecofeminist and decolonial are presented below to illustrate a framework for design that enacts justice in the space of planetary health.

In the Sahel, indigenous women are reclaiming traditional forms of knowledge by deploying transformative spatial practice. Hindou Oumarou Ibrahim, an indigenous climate activist and President of the Association for Indigenous Women and Peoples of Chad (AFPAT), proposes that there are 'no climate change solutions without traditional knowledge' (Ibrahim 2018). She employs participatory spatial modelling to map the impacts of climate change on the environment of Lake Chad, using this method to train members of the Mboboro tribe to adapt to climatic change. The training articulated indigenous ways of understanding the land, enabling the protection of certain sacred trees which have both medicinal and ecosystem functions under traditional Mboboro law (AFPAT 2018). This process accounts for diversity of knowledge and capabilities, enabling spatial forms of justice for both people and the environment they inhabit. In this example, caring skills and sensibilities are being formed through collective processes of spatialising complex planetary challenges.

In a second project, participatory approaches to planning are employed to understand urban inequality in Freetown, Sierra Leone. The 'Change by Design' methodology, developed by Architecture Sans Frontières UK (ASF-UK), employs multi-scalar participatory activities such as mapping to connect local, specific, experiences to the complex 'socio-spatial urban dynamics' and power structures that may be inhibiting transformative change (SLURC *et al.* 2018). Participation involves an entire community in the decision-making processes that shape their environments. Participatory planning offers practical tools to enable the 'flourishing of diversity'. In particular, the Change by Design method describes participatory planning at four scales: policy and planning, city, neighbourhood, and home. The methods it employs of 'diagnosing the context, dreaming of a better future and developing alternatives' (SLURC *et al.* 2018) create trust and ownership throughout the design process (**Figure 3**). The effectiveness of this process is limited by the extent to which participation is realised.

The third example shows how challenges of maternal health disproportionately affect women living in poverty and indigenous women and across Sub-Saharan Africa. A lack of basic infrastructure such as water present barriers to provide even basic obstetric care (McDougall, Campbell, & Graham 2016). Large distances to reach maternal health clinics present geographical barriers for women accessing care alongside household and cultural structures that influence care-seeking behaviour (Munguambe *et al.* 2016). The lack of access to healthcare spaces is increasingly understood as a significant barrier to care (Singh, Speizer, & Phoya 2017). Design, therefore, may be a useful tool to address maternal health challenges. Joyce (2018) uses the idea of 'birth stories' to construct a spatial understanding of the process of giving birth. Joyce poses the idea that birth has to take place *somewhere*, and in many cases this territory is not determined by the woman giving birth, but social and institutional norms dictate the location. These are often based on Western biomedical assumptions about the healthy way of giving birth. The birth space is something that is often controlled (by men) and therefore a site of spatial injustice. The way spatial design is employed to improve maternal health is broadly divided into two categories: bringing women to the provision of care; and finding ways cultivate care in the community.

Maternity waiting homes are built environment interventions and positioned close to hospitals. They provide a space that women can safely await labour close to the medical care they may need. The importance of design in the uptake and use of these spaces was studied by comparing a facility that adopted an existing building and one that was purpose-built (Singh *et al.* 2017). The purpose-built maternity waiting home, designed by MASS, is reconceived as a village and the design accommodates not just the woman waiting to give birth but also accompanying children and family members. It organises space to allow for cooking and storytelling, activities that constitute acts of collective caregiving which may be important to overcome cultural and emotional barriers to accessing maternal care (**Figure 4**). It houses workshops to facilitate income-generating activities, allowing women to maintain some of their duties of care (as labour) and frames 'waiting to give birth' as a collective project for women (MASS 2015).

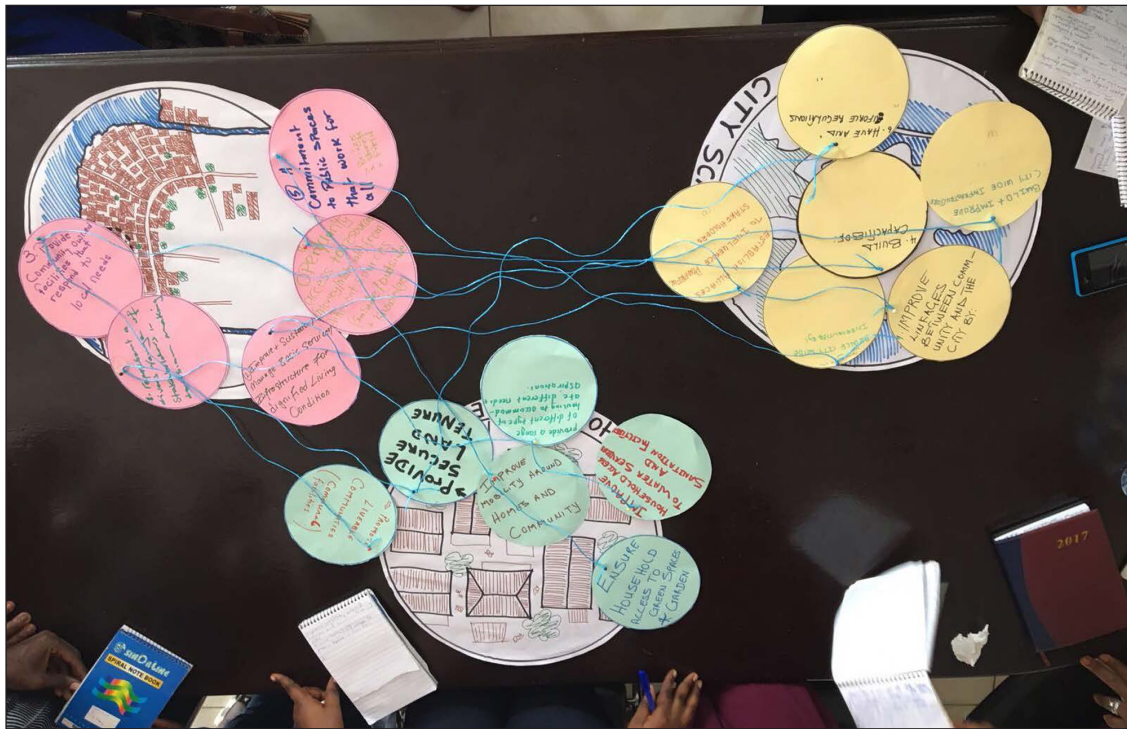


Figure 3: Participatory planning connecting issues across scales. Photo: Alexander Stone. Source: SLURC *et al.* (2018).



Figure 4: The Maternity Waiting Village frames reproduction as a collective activity. Photo: Iwan Baan. Source: MASS (2015).

Two further projects provide design examples that cultivate care in the community. The Asili Project does this through an ‘ecosystem’ of design interventions providing clean water, agricultural services and a health clinic to the Kabare community (IDEO 2016). This project, led by the Kabare community themselves, was developed through a co-design process led by Alight and IDEO. The design connects economics resources, infrastructure and health (**Figure 5**). By building access to these services and resources simultaneously it widens access and improves participation across health and agricultural production vital for generating income. The process of co-design was instrumental in facilitating a way to understand the interconnected nature of problems faced by communities in low-resource settings. It also ensured

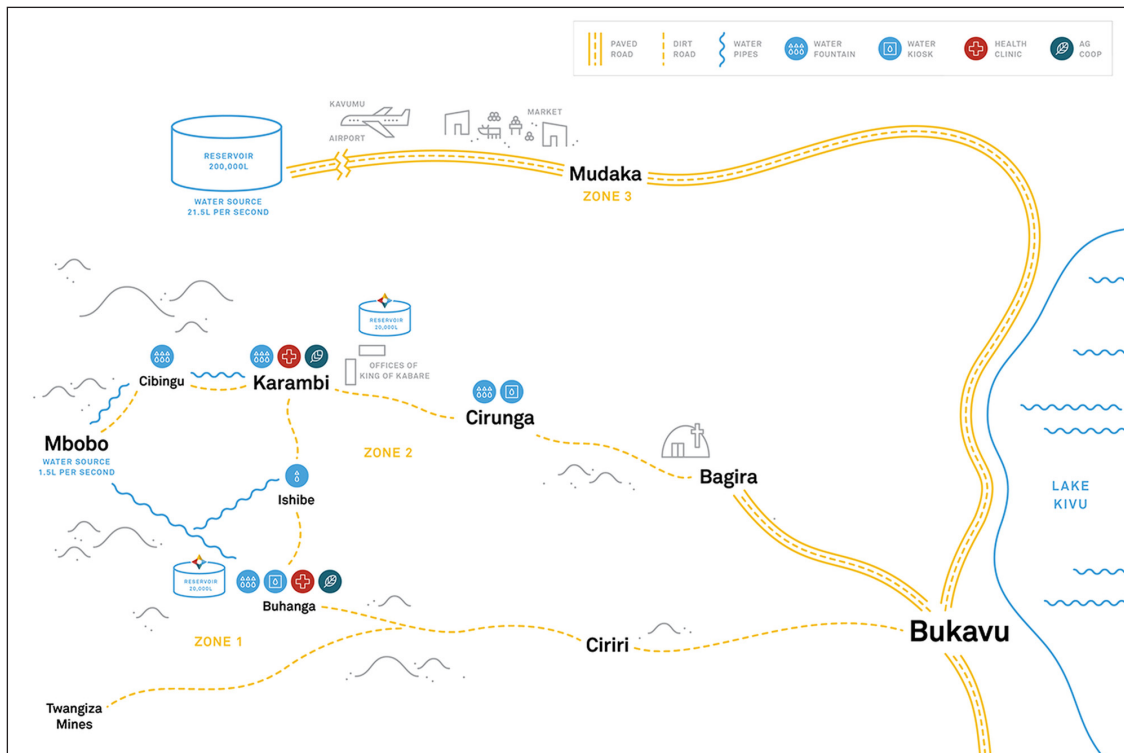


Figure 5: The Asili Project proposes an ecosystem of interventions. Source: IDEO (2016).

that solutions generated were not top-down, reinforcing problematic technical solutions and narratives of a 'broken aid system' (IDEO 2016). In Kenya, the work of BuildX Studio and its partner organisation BuildHer goes one step further to consider how the process of designing and constructing buildings can enact gender-based justice by incorporating construction skills training for women in the realisation of the project, not just in the eventual use of the space.

The above examples represent a decolonial, ecofeminist approach to design, illuminating some of the processes (inclusion and capabilities), tools (multi-scalar participatory planning and design) and components (systems, infrastructure and services) of a design that enacts planetary health justice. These construct a different relational understanding of holistic planetary equity, one that is collaborative and caring, instead of one focused on domination and exclusion (of nature and other 'others'). These examples of 'critical care' have huge relevance for architecture and urbanism (Fitz & Krasny 2019).

3. Exploring a framework for planetary health

A 'deep contextual understanding' is valuable for designers working in low-resource settings, and frameworks can be a tool to analyse this context (Aranda-Jan, Jagtap, & Moultrie 2016). For a planetary health approach that draws on ecofeminist principles, the situated nature of knowledge is an important facet of research and practice (Rendell & Padan 2019). The following key principles form the basis of a framework of design (Figure 6) for a justice-based planetary health:

- Climate justice and health justice are intimately connected:
 - through the interdependencies between people and environments and
 - the capability approach highlights the diversity of vulnerabilities.
- Planetary health encompasses three forms of justice (climate, health and spatial).
- Ecofeminism and ethics of care offer an approach to understand an interconnected justice-based planetary health through collectivity and diversity.
- Critical spatial practice is a mode of enquiry that can set out the interconnected problems of planetary health across systems, scales and relations.
- Participatory design practices could offer inclusive and adaptive solutions.

The authors explored the utility of this framework in creating justice-based solutions to problems of health and climate in a project based in Kenya; these are described in detail below. In doing so, it is appropriate to consider how much this thinking is informed by our own experiences in the practices of medicine, global health and architecture, and how much of our practice is driven by theory.

The Maternal Aid for Mothers in Africa (MAMA) *Manyatta* project is a collaborative partnership and co-design project for maternal health in rural Kenya. In March 2019, a multidisciplinary partnership of architectural designers, doctors, midwives, global health researchers and development practitioners was created to support MAMA, a maternal health

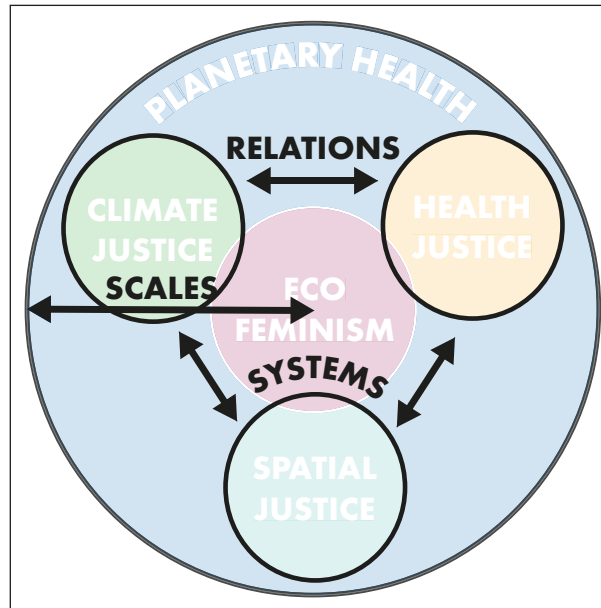


Figure 6: Conceptual framework of design for a justice-based planetary health.

non-governmental organization (NGO) based in Eldoret, Kenya, with their ongoing work in the community of Orus, East Pokot.

The wider context of maternal health in Kenya is important to understand the vision of MAMA's work. Maternal health progress across Kenya has been mixed in the last 20 years, and socioeconomic inequities (*e.g.* lack of skilled birth assistance) still persist in the Rift Valley regions, where MAMA's work is located. Maternal literacy, awareness and understanding of maternal health practices, and family size are important drivers for efforts to improve maternal health (Keats *et al.* 2017). MAMA's work seeks to overcome these barriers by building health capabilities, by training traditional birth attendants and increasing community health literacy. An example of an additional geographical factor connecting health and climate change in Kenya is the negative impact of declining food availability on child malnutrition (Grace *et al.* 2012).

In Orus, East Pokot (a rural part of Baringo county, Kenya, inhabited by the Pokot people), a more complex relationship between climate, health, food availability and gendered power structures is found. The region is arid, sitting just north of the equator at $0^{\circ}58'1.31''N$. The Pokot people are semi-nomadic and pastoralist, and historically politically marginalised. In recent years the increase of seasonal droughts has diminished cattle stocks and increased incidences of cattle rustling. The loss of men's livelihoods has led to increasing gender-based violence. As cattle are viewed as sacred in Pokot culture, their loss is also perceived as a form of cultural violence. While men tend cattle (the main source of sustenance), goats and chickens are looked after by women. If financial resources are needed, *e.g.* for emergency medical care, a household would sell a goat to generate the income. The village is governed by a female chief, but her governance is guided by the village elders, who are all men. Village business is decided through 'barazas' (meetings of the elders), which all the men are entitled to attend, but not women. The political and economic context of Orus connects climate, livelihood, and gender as intersecting challenges.

In terms of public infrastructure, the community has access to a recently constructed borehole (which they have to pay to use), and this is used as a gathering space. There are two unused public buildings, intended to be a health clinic and school, that the county government built several years ago. There is a dam or water pan, which was dry when the authors visited, but it does provide a source of water when the rains come. There is a cattle dip, which is now rarely used as the community reports that most of the cattle have perished due to the drought.

In terms of private infrastructure, there are around 20 homesteads in Orus, with each one situated at least 1 km apart as the home environment for the Pokots is extremely private. Homesteads house a polygamous family group, of a man with multiple wives. Society is also extremely patriarchal; most men are polygamous. Women's standing in society is very low: they are considered of lower social standing than cattle. The homestead consists of several *manyattas* (small thatched roof, wattle-and-daub structures around 2.5 m in diameter) for each of the wives and their children, a kitchen *manyatta*, a cattle pen, chicken coops and a food store.

The materials to build and maintain the homestead are sourced locally by women who are responsible for building, maintaining and repairing their *manyattas*. Building is a collective process for the women, and they usually help each other. The *manyattas* are built from a wooden frame structure packed with earth to keep cool (**Figure 7**). *Manyattas* have either no or poor ventilation, so the air is stagnant, which may have health implications, particularly with the presence of infectious diseases. The structures are not well protected from rain or wind, with only minor water



Figure 7: *Manyattas* are built by Orus women using locally sourced materials. The plastic fastening circling the thatched roof is an attempt to secure the roof in high winds.

protection through plastic bags and sacks lining the interior roof, so during the wet season they become damaged and flooded, and they need rebuilding seasonally.

It is a cultural practice to rebuild the *manyatta* each year as the community is semi-nomadic and a homestead may relocate annually to find fertile grazing lands. However, as the climate has changed in recent years, they have become more sedentary, maintaining the homestead for longer periods. The *manyatta* structures are still regularly rebuilt as structural damage from strong winds, heavy rains and insect infestations are common problems.

The people in Orus are mostly dependent on locally available natural resources for building, and these resources have become harder to find due to drought and changing climatic conditions. Women have to travel further to gather materials or struggle to build their home with less sturdy pieces of wood, which means the structures degrade faster. These are clearly sources of stress for the women in Orus, who also balance several other duties to care for their families.

Throughout a women's pregnancy through to giving birth, women are expected to continue their sustenance and caring duties as normal, and the women shared stories of giving birth in the bush while out gathering materials. Women in the community help each other during childbirth if they can, and older, experienced women become traditional birth attendants. The experience of birth in Orus is complicated by its geographical remoteness, cultural traditions, lack of basic equipment and training, and depleting natural resources, reducing food availability to support mother and baby's health.

Orus currently has very limited access to the formal health system; the nearest town with a health clinic is Tangelubei, a market centre with a level two health facility, which is about 50 km away by dirt track (**Figure 8**) (MAMA 2019). There is a dispensary (a limited pharmacy) located at Kokwototo, which is about half the distance. By car, these distances are still challenging because, even in good weather conditions, the terrain is extremely rough, and when the heavy rains come, mudslides and flash flooding are common. However, most of the community members do not have access to transport and these distances are great when travelling on foot. If emergency access to healthcare services is needed, the community will try to sell something (such as a goat) to pay for a '*boda*' (a motorbike taxi), but this is rarely an option.

The region suffers from high maternal mortality amongst a complex burden of disease. It is clear that there are many barriers to realising health capabilities, particularly for women. The causes of health problems and the resources to mobilise health are negatively impacted by changing climates, making it necessary to understand health equity as planetary health justice.

3.1 Design process: brief and community participation

MAMA has been conducting training on basic maternal healthcare with traditional birth attendants and community health volunteers. During these sessions, MAMA gained deeper insights into the Orus community's needs. The community expressed the desire for a health space in the community. While MAMA agreed that a health clinic would

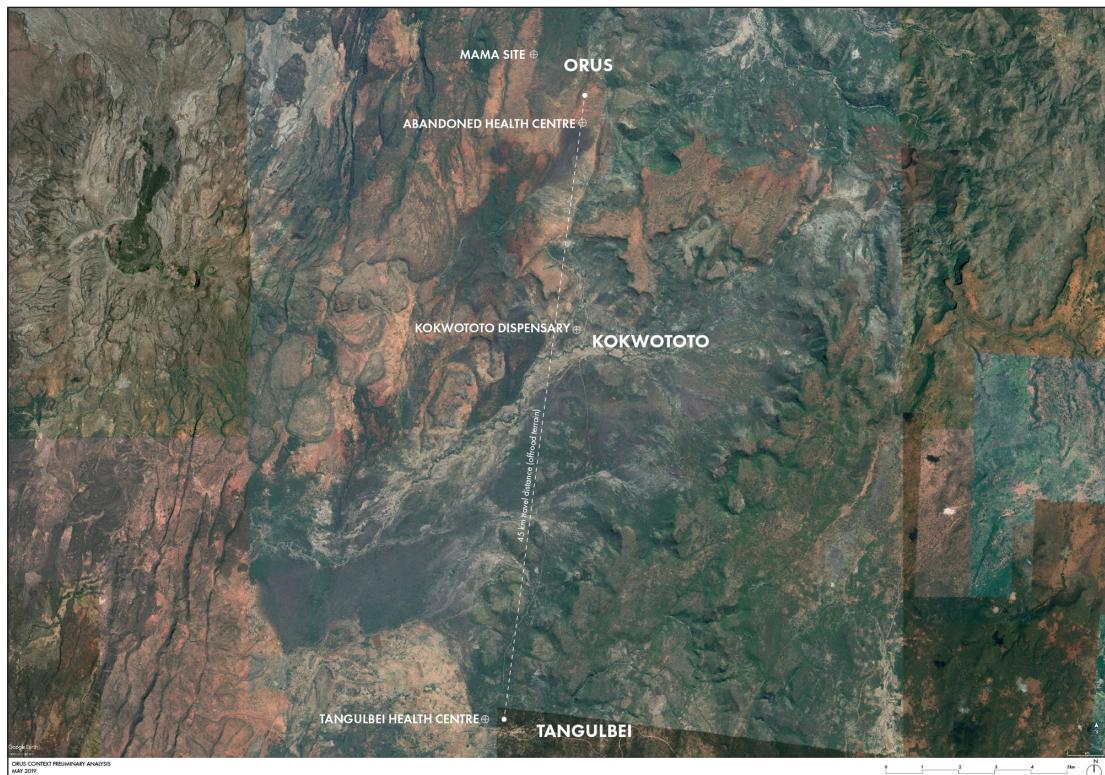


Figure 8: Territorial context: the distance to the nearest health clinic is challenging considering the lack of properly built roads or affordable transport.

benefit the community, the village's extreme resource-scarcity presents barriers to implementing a health intervention at that scale.

MAMA had responded to the community's desire for this space by developing a brief for a 'maternal *manyatta*', a space they envision providing basic antenatal and postnatal care, and access to health information (MAMA 2019). This space was planned to be temporary, built using the vernacular structures of *manyattas*. This was aligned with the community's spatial practices of rebuilding and relocating. Recognising that the processes required to cultivate health in the community would need to explore these wider social, cultural and environmental questions, MAMA explored partnerships to help find design solutions.

In March 2019, our team was invited by the village chief to visit the community to develop this partnership. To establish community permission before the visit, a design brief was prepared that set out the purpose of the visit, methods of co-design and the participatory activities that would take place. This brief was developed with MAMA, approved by their board and the village chief. This granted permission for the co-design activities. The visit took place in May 2019 to build partnerships and explore design opportunities. During the visit, the fact that the authors were invited to visit a homestead and the interior of a mother's *manyatta* is indicative of the trust felt by the community and the support of the MAMA *Manyatta* project.

3.2 Design process: approach, methods and activities

To develop insights to inform potential design solutions, a holistic, multi-scalar approach was taken to engaging with the community. This draws on participatory design methodologies to 'diagnose context and dream of solutions' (SLURC *et al.* 2018) by conducting group discussions with different stakeholders to explore each of their unique perspectives. A series of sessions was organised through the village chief, and facilitated by a local woman, Nowella, from another village in East Pokot, who acted as translator. The local community health volunteers, who have a longstanding relationship with the MAMA team, helped organise the activities. To build consensus and trust throughout the design process, in line with ecofeminist methods, these sessions were proposed as dialogues and the participants selected the location of the discussion.

The first discussions took place with the village elders, where all the men were present, in the *baraza* where they conduct their political meetings, an open space with trees offering shade and places to sit. This session was used to explore the social, political structures of the community and its history. After receiving support from the men for the project, the authors hosted discussions with the women, under a different set of trees, where they shared more intimate insights on their daily lives, livelihoods, and caring practices and health challenges. This was followed by a more focused exploration of both individual and population health challenges with the community health volunteers and traditional birth attendants, who are all women. The design team prepared some open, probing questions to initiate conversation asking about the community's history and ways of life, but allowed the conversation to flow organically, uncovering the

community's aspirations for their health and well-being. These initial questions were needed to gain insights on the bigger picture, and steer the conversation from immediately discussing health clinics.

In addition to two days of community dialogues, participatory spatial design techniques were employed that consisted of walking journeys through the community, a guided visit and dialogue in a homestead, and a participatory planning session 'in-place' on the land granted to the MAMA for the *Manyatta* project. These activities helped situate the knowledge shared in the community dialogue, and together all these activities represent the processes and tools needed to generate design insights.

3.3 Design process: multi-scalar insights

The insights were formed over four days of community engagement through four socio-spatial scales: the environment, the village and community, the homestead, and the mother. The application of these scales forms the basis of an understanding of design opportunities that considers interacting systems and relations, a holistic design approach as a way to overcome the fragmentary thinking which has been shown to be a barrier to climate justice (Guattari 2000; Boehnert 2018) and enabling planetary health (Whitmee *et al.* 2015).

At the environmental scale, climate change is well observed and understood by the people in Orus. The changing climate causes diametrically opposing problems, with increases in both drought and heavy rainfall (causing flash floods and mudslides). Drought is diminishing water supplies, impacting livelihoods as cattle cannot access water and there is less vegetation to feed the cattle or provide human sustenance. Natural resources, used in building the *manyattas*, are also dwindling and much harder to find, and the heavy rains, floods and mudslides are damaging these structures more frequently.

Communal life is mediated through gatherings organised around trees that give good sun protection. The Pokot people are semi-nomadic, and it appears that a manmade environment does not form the basis of social relations. During initial consultations for the MAMA *Manyatta* project, the use of the existing (abandoned) health clinic was suggested, but the community rejected this. The local MAMA team reported that the building is viewed with suspicion by the community because it is representative of the political and economic injustices to which they feel subjected and they were not consulted in its construction.

Another very public infrastructure is the water point. The water point is an open air space that grants access to the precious natural resource of water and is a prominent gathering point for the community. This existing location was also suggested for the MAMA *Manyatta* project and rejected. It was considered too populated, as health and maternal health in particular are viewed as very private experiences. The *Manyatta* project was tasked with creating a space for private exchanges and one-on-one training where women feel safe to express themselves freely, drawing on the scales of their homestead and collective experiences as women and mothers. The relational nature of these different places and scales were drawn in place by stakeholders during participatory design exercises (**Figure 9**).



Figure 9: Participatory planning of the Maternal Aid for Mothers in Africa (MAMA) *Manyatta* project site is drawn through the earth it will occupy.

3.4 Design process: proposal

The honesty of the stories shared by all the women reflects the trust the community has in MAMA as an organisation. The creation of a space for the MAMA *Manyatta* project has the potential to create an emancipatory space for these women that cultivates a system of care. While the space is to house basic maternal healthcare, education and awareness, the MAMA *Manyatta* project would also provide a collective space of care for the women of Orus, somewhere they can gather, sing, and cook and potentially tend to the land.

The problems experienced in Orus describe a set of relations at multiple scales that make it clear that a building for health in this setting cannot be understood without reconciling intersecting injustices between climate, health and gender. It is clear that resources are scarce, so any intervention that depends on physical resources to build and maintain it must carefully consider what resources may be most appropriate to use. Health challenges are complex and embedded within cultural and social power structures that mean a space for maternal health must offer a safe space for women to enact their health capabilities. Women are responsible for the practices of sustenance in community and family structures and this labour is not 'productively' valued in economic terms (Federici 2004). This means women have no time for income-generating activities and are reliant on their husbands for income. For the MAMA *manyatta* space to support women's health in a holistic way, the design proposal should use resources in the most appropriate way, understands health within sociocultural systems and reconciles unpaid duties of care is a design that enacts a sense of planetary health justice (Table 1).

By grounding design in theories of justice and ecofeminism, there is the imagination and potential to overcome implementation challenges (Whitmee *et al.* 2015). On a practical note, evaluation of the design insights led the team to decide that the MAMA *Manyatta* project is not one intervention, but a series of gradual interventions that collectively begin to create this desired space. The first intervention, increasing training in the community and providing basic equipment that can currently be resourced, will lay the foundations of ownership for the broader MAMA *Manyatta* project by building trust and showing MAMA's commitment to the community of Orus (Figure 10). To develop the technical design for a MAMA *manyatta* space, local design and construction expertise will be needed to explore how the *manyatta's* traditional architecture could be modified. MAMA is also committed to exploring how the process of both designing and building the *Manyatta* project could advocate for gender equity in built environment and development practice more broadly, through the work of organisations local to Kenya such as BuildHer (described above).

3.5 Design process: limitations

The design process of the MAMA *Manyatta* project presented obstacles such as language, time and geography. However, the major factors were cultural. As Orus is a patriarchal society where women are considered of lower social standing, it was expected that the design team (formed of mainly women) might experience resistance from men. Furthermore, the design team's experience of local construction practice is limited, and it was concluded that the developed design of the MAMA *manyatta* space should use local design and construction expertise.

Mistrust of aid due to misuse and the lack of long-term sustainability have been problems in the community. Previous attempts such as the government-built clinic are left visibly abandoned and have created mistrust. The theoretical and inclusive approach that grounds the authors' practical work encourages a consistent reflection on the power balances in developing planetary health interventions.

Table 1: Components of the Maternal Aid for Mothers in Africa (MAMA) *Manyatta* project that collectively forms a concept of design for justice-based planetary health.

Domain/problem	Activity	Design process	Design components
Resource-scarcity and changing climate patterns	Careful consideration of the appropriate material resources to build a physical space	Resourcefulness approach (Stema, 2019a; Oosterlaken 2009; (Aranda-Jan, Jagtap, & Moultrie 2016))	Locally appropriate and sustainable building materials, renewable energy sources and subsistence farming
Social, cultural and material health barriers	Creating a space that enacts health capabilities, a space of care	Participatory design and planning (SLURC <i>et al.</i> 2018; Hamdi 2004; Frediani 2016), designing with care (Imrie & Kullman 2016; Stema 2019c; Fitz & Krasny 2019)	Spaces for both private activities, such as a private conversation or medical consultation, and collective activities such as cooking, gardening or subsistence farming
Gender injustices	Organising activities that share duties of care and labour collectively, and create income generation for this collective of women	Thinking with care (Tronto 1993; Puig de Bellacasa 2012), decolonial ecofeminism (Shiva 1994, 2016), critical and emancipatory spatial practice (Rendell 2018; Patrick 2019)	Spaces can house both care-giving and income-generating activities for women. Equipment and resources required for these activities, as well as protocols of use



Figure 10: Maternal Aid for Mothers in Africa (MAMA) *Manyatta* project training session with traditional birth attendants in March 2020. It was the first intervention in the project.

4. Discussion and implications for practice

The insights gained through practical experience of design in rural Kenya reinforce the conceptual framework. A feminist perspective would argue that theoretical research and applied practice are both situated and positioned (Rendell & Padan 2019), and therefore the knowledge claims framed in this conceptual framework cannot be separated from the authors' lived experiences. In the MAMA project, it is clear that the drive that informs their practice and the vision to build new ideas of maternal care cannot be separated from women's experiences as women, as mothers. Reflecting on the wider body of practice the MAMA partnership is connected to, it is clear that an ethic of care and ecofeminism provide a grounding to their work as researchers, designers and practitioners. For researchers and practitioners interested in engaging with climate justice, it would be useful to consider their own 'lived positions' and what the ethics of their practice should be.

As a process for exploring the principles for design for a justice-based planetary health, the MAMA *Manyatta* project offered the solutions to maternal health in Orus by addressing climatic and planetary health challenges, bridging relations between the historically marginalised entities of both nature and women. The semi-nomadic ways of life inherent to the Pokot people represent a relationship with nature that is different to prevailing historical paradigms of urbanism and development. It is dependent on nature and does not seek to control it. It respects nature for how it shapes communal practices and offers valuable resources to sustain human life. This alternative view expresses an idea of ecological design, architecture and urbanism that in combination with 'critical understandings of care' (Fitz & Krasny 2019; Wahl 2017) inform a more considered and inclusive approach to designing and building in the context of the climate emergency. This is not only relevant to design practice in conditions of scarcity but also has wider significance for built-environment practice. The participatory way in which the design activities took place in for the MAMA *Manyatta* project, through the community's selection of locations and their greater control of dialogue, places the power of producing knowledge in the hands of the community. This builds an understanding of a design process that enacts spatial justice by recognising a community's history and traditions while also encompassing their aspirations and capabilities (SLURC *et al.* 2018; Frediani 2016). The participatory methods of producing knowledge expressed in ecofeminism can usefully inform the ethical approaches of design practitioners concerned with the inequity of the built environment.

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Authors contributions

M.P. is the lead author, responsible for the main drafting of the text and structure of the argument. G.G. contributed substantially to the design project in Kenya and gender focus of the paper. W.C. was the lead local contact and facilitator with the community, contributing substantially to the participatory and inclusive methods/approach of the paper. G.S. contributed substantially to developing the paper's structure and conceptual framework and was the organiser of the partnership. All authors contributed to the final version of the text.

Competing interests

The authors have no competing interests to declare.

Consent

Permission was granted by the Orus community leaders, local health service and the MAMA organisation for the design-related activities that took place. No primary data were collected in this process.

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