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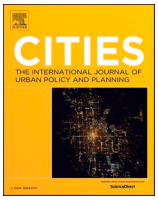

Ecological and societal trade-offs of living a good, safe and green life in urban ecological enclaves

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ABSTRACT

This paper provides a critical cross-disciplinary perspective on urban ecological enclaves as attempts to fulfill the dream of a good life in a safe and green urban context. We take advantage of fertilizing fields of strategic urban planning and design with fields of human geography to unfold potential ecological and societal trade-offs across different scales for the realization of such developments. Based on empirical cases across geographical regions, we exemplify such trade-offs in relation to the displacement of ecological and climatic effects, increased social discrimination and inequity among the urban population and beyond. As a way forward, we seek to intensify awareness of the shortcomings of enclave designations versus the potentials and challenges of traditional, more holistic upgrading strategies through a framework that exposes shortcomings and spans across urban sustainability scales. We propose a more nuanced approach to urban ecological enclaves, in which the regional perspective dominates while avoiding security framings. We challenge the trend of such green initiatives being planned dominantly in upper-class districts, in turn compromising collective rights. By exemplifying the shortfalls of this popular development trend, we aim to contribute to deeper-rooted societal transitions that consider more inclusionary framings of sustainable cities.

1. Introduction

Since the publication of the Brundtland Commission's Report (World Commission on Environment and Development (WCED), 1987), many initiatives have been taken to implement sustainable development agendas (Bayulken & Huisingh, 2015). Despite the increasing number of positive outcomes, the impacts have been minimal compared to the rate of growth (Mebratu, 1998). While climate change and biosphere integrity have become the most immediate concerns for planetary boundaries (Rockström et al., 2009), rapid urbanization with economic growth policies based on linear consumption, are still fueling resource-intensive processes and manipulating world views (Vuong & Nguyen, 2024). These, in turn, are causing rapid degradation of our ecosystems while decreasing the well-being of many (Millennium Ecosystem Assessment (MEA), 2005), transgressing the environmental limits within which humanity can safely live on the planet (Steffen et al., 2015).

This trajectory has brought about a phenomenon among urban populations to request increased protection of ecosystem services, often integrating enclaves of ecological protection into urban fabrics. The principal premise behind such initiatives is the provision of a high quality of life with apparently low impacts on the natural and urban environment (Yigitcanlar & Lee, 2014). Whether such enclaves are labeled eco-cities (Wang et al., 2015), eco-towns (Tomozeiu & Joss, 2014), eco-estates (Alexander et al., 2021) or the like, they represent strategic responses to perceived or real pressures through the promotion of a responsible lifestyle package. These enclaves can create insular precincts, raising concerns about what is left for people outside such privileged areas (Hodson & Marvin, 2010). City planners strive to balance the inevitable tensions between fundamental sustainability aims of environmental protection, economic development and social equity

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(Campbell, 2007), and such tensions and the resulting trade-offs[1] are considerable and appear unavoidable within current growth models and worldviews (Vuong & Nguyen, 2024).

Several publications have questioned the scales and variations of balancing the complex and competing socio-economic and ecological aims, and whether there is a more sustainable approach to urban ecological enclaves than currently practiced (e.g. Atanga et al., 2024; Avery & Moser, 2023a, 2023b; Bayulken & Huisingh, 2015; Bulkeley, 2021; Castán Broto & Westman, 2017; Roseland, 1997). Still, the proliferation of urban ecological enclaves continues with hundreds of initiatives combining the green and friendly with underlying economic growth (e.g. Joss et al., 2013). While negative trade-offs from, for instance, gated communities have been widely recognized (e.g. Atkinson & Blandy, 2005; Landman, 2012; Lara, 2011), it is less clear which compromises surface in connection with urban ecological enclaves.

This paper responds to these gaps by exploring more equitable and just alternatives to such "bounded and divisible ecological security zones" (cf. Hodson & Marvin, 2010). By bringing together concepts and literature from strategic urban planning, urban design and human geography, we seek to nuance the debate with various examples from the perspective of handling trade-offs. With an emphasis on spatial scales and socio-economic perspectives, we propose concrete suggestions to better address the seemingly inevitable compromise of leading good, safe and green lives in the city. The paper is organized as follows: Section 2 outlines the conceptual frame leaning on urban design, securitization theory, and sustainability thinking. Based on the empirical basis presented in Section 3, an analysis of ecological and societal trade-offs of urban ecological enclaves is presented in Section 4. Section 5 rounds up with a discussion and concluding perspectives.

2. Conceptual frame: the good, the safe and the green life in urban ecological enclaves

The dream of a "good life" emerged in the post-war period and has been associated with the American dream of a better, richer and happier life (e.g. Cullen, 2004). In the United States and particularly California, this dream materialized in private residences for the elites of society, who desired a life with a smooth transition between the pulsating city, the green surroundings and the sea (Pasgaard, 2012). This elitist dream of a good life soon became mainstream, first for the upper-middle class and later adopted by the welfare state and the masses, who desired better and happier lives following the same basic script. The geography of this dream was keenly articulated by Dear and Flusty (1998) as a centerless urban form defined by spreading fragments of functions and controlled precincts. The dream was also spread to other countries in the Global South, for healthy, hygienic cities (Martire, 2012) and up-market living (Centner, 2009).

Living a safe life in an urban setting is, in many parts of the world, often associated with divisible zoning or even physically gated precincts or enclaves. This connects to a broader notion of security, which plays a role in the green design of cities. In effect, the discursive power of labeling something "(un)safe" or "(in)secure" can set in motion a process of so-called *securitization* (Buzan et al., 1998), which in the end can justify certain extraordinary measures (Lara, 2011; Lemanski et al., 2008). While positive attention and mobilization of resources can follow, securitizing an issue can also lead to outright mismanagement, by-passing of normal political procedures and stigmatization or violation of rights (e.g. Balzacq, 2011; Elbe, 2006; Trombetta, 2008). Translated into 'leading a safe life in a green urban setting', a promise and promotion of security (e.g., minimizing risks of flooding, pollution, or crime) can have negative side effects if, for instance, certain groups are discriminated against in the name of an ecologically or climatically? safer neighborhood (e.g. Landman, 2012; Raco, 2007).

Finally, sustainability has become a dominant concept since its wide uptake and outreach through the Brundtland report (WCED, 1987), culminating today with the ten principles for the built environment (UIA, 2024) to reach the 17 United Nations Sustainable Development Goals (United Nations, 2015). According to these goals, sustainability touches on aspects such as social equity, economic development, responsible consumption and production, climate action, and protecting life on land and below water. Here, the concept of "leakage" becomes a crucial factor and an indicator of "effectiveness" in achieving stated climatic and ecological objectives (Nathan & Pasgaard, 2017). Leakage refers to a spatial displacement of emissions and degradations occurring *within* or *across* countries, and also *among* land-use activities (Angelsen & Wertz-Kanounnikof, 2008). Theoretically, the risk of leakage from urban areas is of concern if residents (including those in enclaves), for instance, displace not only their emissions and other environmental damages, but also their social ills, to neighboring areas. Since leakage can undermine climatic and other sustainability goals, a displacement of negative impacts can compromise the idealized green and safe lifestyle depending on the scale of perspective. Table 1 below summarizes the three key ideals, concepts and some indicators (e.g. happiness, risk avoidance, leakage) that drive enclave development.

We chose to label the space surrounding the good, safe and green lives as "ecological enclaves". Enclaves can occur in many shapes and combinations in a city context depending on region, functions and historical era (Shane, 2011). In the following paragraphs, we define the spatial scale of ecological enclave developments.

2.1. Framing ecological enclaves

From an urban space production perspective, ecological enclaves strive to exemplify sustainable development. Yet effective urban sustainability, or more precisely *trade-offs* in and *degrees* of sustainability, cannot be measured in isolation (Elliott, 2005), but instead needs to be considered for its place and contribution across the spectrum of scales representing local and regional interrelations (Kriken, 2010). The salient features of ecological enclaves do not always reflect urban sustainability and often subscribe to specific practices or urbanisms that are well-defined and studied. We, therefore, place such practices among the overarching urbanisms defined by Landman (2019, p.57), namely sustainable, new, enclosed, and tactical. We establish a framework that relates these features to urban scales (from public to global space), types of urbanisms and practices (degrees of inclusionary or exclusionary practices), in turn contributing to or retracting from urban sustainability (Fig. 1). We acknowledge that our framings of inclusionary practices are not without economic risks, while exclusionary practices might also entail ecological benefits. However, we choose to adopt this framing based on our practical insistence that sustainability (and ecosystems) spans across spatial scales and is, therefore, always relational.

Table 1
The urban ideal of a good, safe and green life.

Urban ideal	Key concept	Indicators
Good	American dream of easy access to city, nature, and ocean	Being happy and healthy
Safe	Securitization – labeling something a threat to justify extraordinary actions	Security framing and risk avoidance, private governance, services and spaces
Green	Sustainability – social, environmental and economic	CO2 emissions, access to nature/ green public spaces, displacement/leakage

Source: Authors

[1] Trade-off situations can be described as situations where one has to compromise between competing aims and where sacrifices are made (Byggeth & Hochschorner, 2006). One of the first documents that referred to trade-off caused by development was the WCED (1987). In this paper, we mainly refer to trade-offs between environmental/climatic aims and social aims.

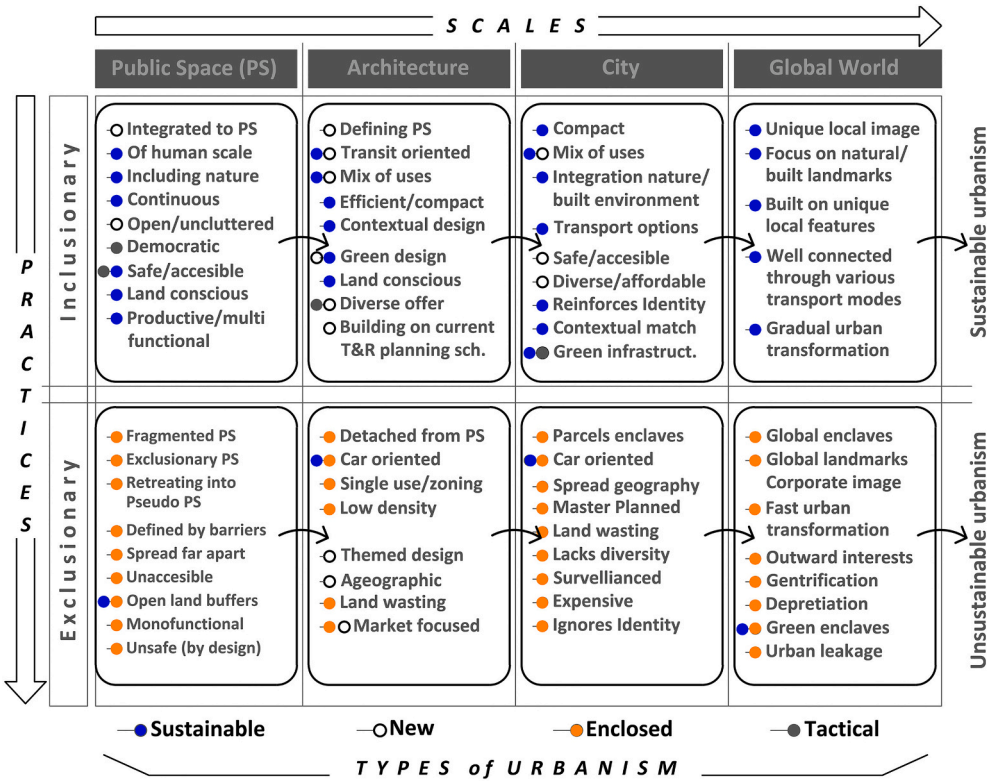


Fig. 1. An analytical framework for urban sustainability to consider coherent planning and design practices across different scales as either inclusionary or exclusionary. (Source: Authors, based on Landman, 2019; Kriken, 2010).

The framework seeks coherence of practices across scales as a requisite to achieve effective urban sustainability: an enclave could be ecologically sustainable and yet may be defined by barriers of control, car-dependency, land-wasting sprawl, leakage and so on. In other words, sustainability within intrinsically unsustainable practices does not lead to sustainable urbanism (Avery & Moser, 2023a, 2023b), but could lead to the good, safe and green lifestyle, for the privileged few. Today, the global city promotes parcel-enclosed urbanism but strives to attain sustainable standards, green certifications and world-class status. These two paths (strive versus promotion), which appear increasingly diverging, need to find common ground for sustainable ecological enclaves to be a possibility. Explanatory logics for this pattern could be traced back to the gradual detachment of composing elements of urban space from the compact city to the global metropolis (Fig. 2).

As the urban settings change, boundaries and distances become prominent. Ecological enclaves join back the elements that under former practices were closely related, but do so in specific scales and differentiated areas. Terminologically, Hodson and Marvin (2010) explain how many new styles of development emerging as responses to ecological pressures are often called eco-cities, but are replicable to other scales (see Table 2). Common across the different types listed in Table 2 is that they build ecological security (Hodson & Marvin, 2010), and some of the descriptions overlap in terms of self-reliance, recycling and renewable energy.

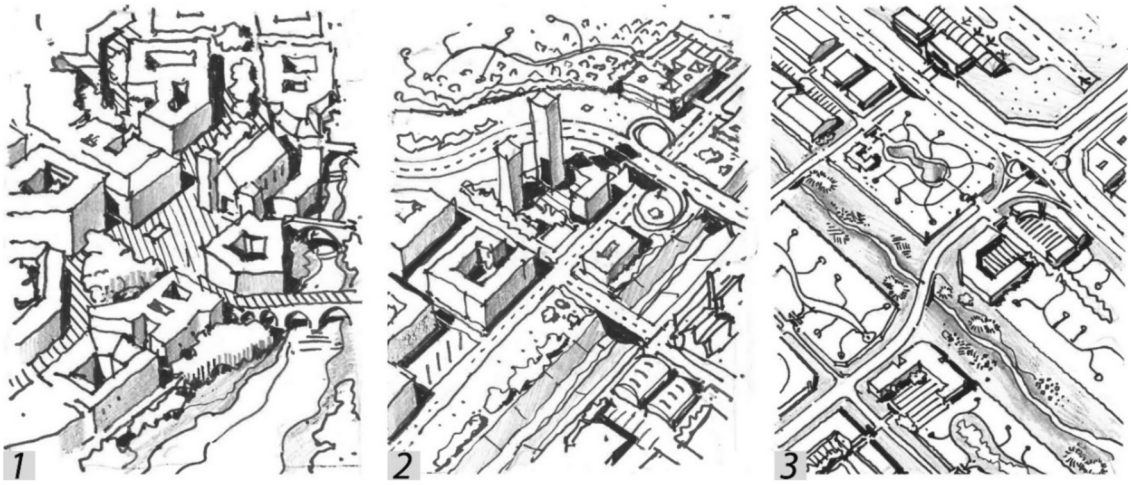
In this paper, we apply a broad definition of enclave, ranging from gated communities to multifunctional blocks with invisible boundaries. What defines the enclaves is the sub-script "ecological", implying that they are all pro-environmental, nature or climate-friendly and sustainable. Importantly, the enclave as a method of planning is often investor-driven and more concerned with sustainability at the scale of the development area as opposed to the wider transformation of the existing city and infrastructure networks (Hodson & Marvin, 2010). Being typically planned as housing projects, campus areas, technology parks, harbor revitalization or other post-industrial transformations (see Section 4), private actors often make decisions without the full responsibility and obligations of their public counterparts. In other words, the ecological enclave is oftentimes a business project meant to generate profit and not (necessarily) intended to serve the wider public or "nature" (the environment), which is critical when evaluating their outcomes (Avery & Moser, 2023a, 2023b).

Within the above argument, we do not deny international attempts towards increased urban sustainability, such as the European Commission, with various initiatives demonstrating dedication towards increased sustainability and confronting climate challenges (Córdoba Hernández & Camerin, 2024). Worth mentioning are effective planning tools for improved decision-making across the literature (e.g. Abo-El-Wafa et al., 2018; Brom et al., 2023; Zhang et al., 2019), methodologies for ecosystem assessment oriented to climate-change adaptation and mitigation policies focused on ecosystem protection (e.g. Córdoba Hernández & Camerin, 2024; Longato et al., 2023). Due to various factors that mostly center on dominant human appreciation, it is not always possible to prevent environmental damage or prioritize green space retention in urban developments (Breed et al., 2023; Córdoba Hernández & Camerin, 2024). Although ecological enclaves seemingly achieve the prioritization of green space, they risk favoring exclusionary practices that retract from urban sustainability.

In summary, many urban ecological enclaves seek to simultaneously integrate and fulfill a desire to maximize well-being, be safe from harm, and live in an ecologically responsible way. Having already noted the risk of tension between the goals of this vision (cf. Campbell, 2007), we explore a range of empirical examples to further analyze ecological and socioeconomic trade-offs, and advance the discussion of alternative planning approaches.

3. Empirical basis: enclave examples from Dubai, Copenhagen and Johannesburg

This paper draws on examples of urban ecological enclaves discussed



The Compact City	The Modern City	The Global City
Continuous public space	Fragmented public space	Pseudo public space
Rich downtown areas	Decaying downtown areas	No downtown (centerless)
Nature as urban structure	Engineered nature (dominance)	Nature recreated in precincts
Mix of uses	Zoning, buffers, single uses	Parcel mosaic zoning
Passive surveillance (by design)	Active surveillance	Security checkpoint geography
Contextual architecture	International architecture	Themed architecture

Fig. 2. From the compact (1) to the modern (2), to the Global city (3), the settings for enclaves increasingly reflect parceled characteristics. (Source: Authors, based on Landman, 2019; Kriken, 2010).

Table 2
Types and scales of ecological enclaves.

Type	Description
Eco-towns	Programme of supposedly exemplar sustainable new towns
Eco-blocks	Designed as urban gated communities. An integrated whole-systems approach to generate all the energy needed from onsite renewables, recycle all of water and to recycle waste for onsite uses. A self-sufficient unit, a circular system.
Eco-islands	Self-reliant forms of urban development using decentralized technologies and recirculating resource flows. Clear boundary that provides a high degree of clarity about the direction and scale of resource flows. Governance structures may be more unified and simplified easing implementation and monitoring. Defined range of publics and stakeholders to engage with on new infrastructure solutions.
Eco-estates	Housing estates with conservation and environmental management intentions. The focus is on species and functional diversity and connectivity for biodiversity between urban green spaces and existing natural landscapes.
Eco-cities	With buildings powered by renewable energy, self-sufficient in water, and food sourced from the surrounding farmland.
Eco-regions	An example of responsible environmental development to the rest of the world. Eco-region designation includes water recycling and energy-saving modifications.

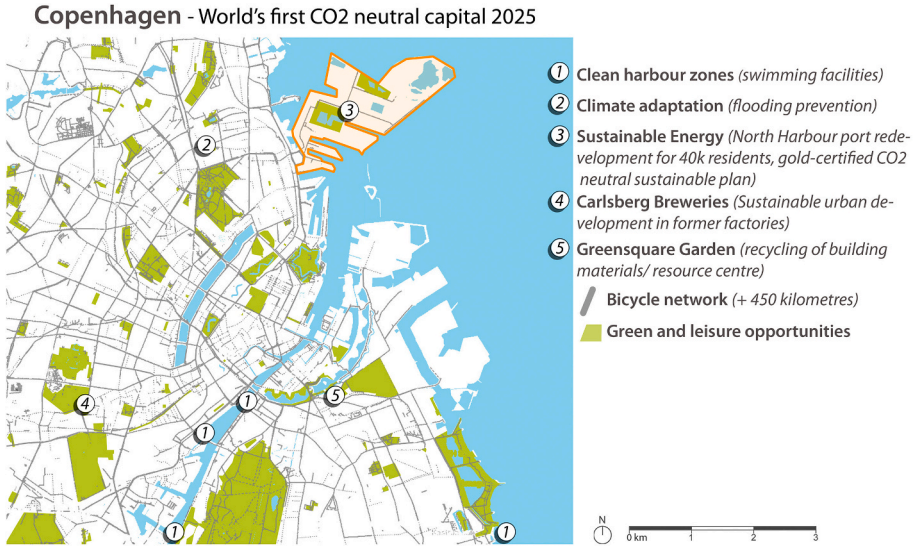
Source: Authors, adapted from Marvin and Hodson (2010)

in the existing scientific literature with attention to examples from the United Arab Emirates (Dubai), Denmark (Copenhagen) and South Africa (Johannesburg). These three examples illustrate very different scales and contexts for urban ecological enclaves, and represent different versions and interpretations of the good, safe and green urban life (see Textboxes 1–3).

4. Analysis: ecological and societal trade-offs in urban ecological enclaves

Common across the ecological and societal trade-offs in urban ecological enclaves is the issue of scale, which should be central when analyzing sustainable cities (Avery & Moser, 2023a, 2023b; Bulkeley & Betsill, 2010; Caprotti, 2014). When looking at the enclaves as isolated units, being good, safe, and green might emerge as positive synergies without negative compromises. However, when upscaling to other levels and including perspectives of those outside the enclaves, a different picture emerges and trade-offs increase, as illustrated in the following sections. With all three geographic regions within the case studies adhering to economic growth models where the forces of labor, capital, and technology are seen to drive total production, it is worth explicitly acknowledging the economic driving forces that lead to ecological trade-offs. The fundamental values of mainstream economics continue to serve as the foundation for the design and analysis of economic policies and worldviews and contrary views are filtered out by gatekeepers. As Graham and Marvin keenly pointed out, alternatives to the pattern are quickly framed as "resistance" (2001, p.388). The profit-driven greed "growth" tendency of humans represents a worldview of

Textbox 1
Copenhagen - World's first CO_2 neutral capital 2025.



The capital of Denmark, Copenhagen, brands itself with an ambitious green profile combining sustainable solutions with growth and a high quality of life. The City of Copenhagen aims to become the world's first CO2-neutral capital by 2025, offers clean water in the city harbor to swim in, stays at sustainable hotels, dinners at eco-certified restaurants, and rides on electric city bikes.
The map shows bicycle/car-free zones and (1) clean harbor zones, along with a range of specific initiatives around the city including: (2) climate change adaptation (prevention of flooding) in Østerbro; (3) sustainable energy smart city in North Harbor; (4) sustainable urban development (water use and recycling) on former Carlsberg brewery properties; and (5) recycling of building materials at future Green Square Garden on Amager.

Sources: Authors, based on Visit Copenhagen, 2024; State of Green, 2023, 2024; Klimakvarter, 2018; Licitationen, 2017.

anthropocentrism that responds with skepticism and denialism to climate change and biodiversity loss, despite all warnings and evident disequilibria in nature (Vuong & Nguyen, 2024). For this reason, socio-cultural transitions are required to shift belief and value systems by influencing thought and behavior within society (Vuong & Nguyen, 2024). Living in ecological enclaves, people are made to believe that they do not participate in this worldview of destruction and pollution and if they do, they can escape the consequences.

4.1. *Increased social discrimination and inequity*

Assumedly, professionals who decide on and plan urban ecological enclaves have well-meaning and/or profit-generating intentions of promoting sound conditions for the residents. Nevertheless, these ideals are mostly restricted to certain social groups. For instance, the dominant development pattern on the outskirts of Dubai takes the form of hundreds of gated communities or estates, essentially an American pattern adapted to local (market) conditions that now define the suburbia of the global city. The green and secure lifestyle of Dubai's Sustainable City, for example, including horse-riding, healthcare, and sports facilities, as well as many other educational and recreational opportunities, idealize a sustainable 'city' but are only accessible for those who can afford it. Illustrating a combination of luxury and environmental goals, each villa has not one but two parking spaces – shaded with solar panels. Indeed, the 10-meter-high buffer zone running along the periphery consisting of 2500 trees, acts not only as an air purifier, but also as a very visible fence separating the construction grounds, outside infrastructure, and facilities (Textbox 2). And it seems to work: the residents were recognized as the "happiest community" at the Gulf Real Estate Awards (Gulf News, 2017). This estate, like countless others, fits within and is a product of the global city, which pushes development in this direction, leaving little room for alternatives. The key features of these products are now considered within our analytical framework of urban sustainability (Fig. 3).

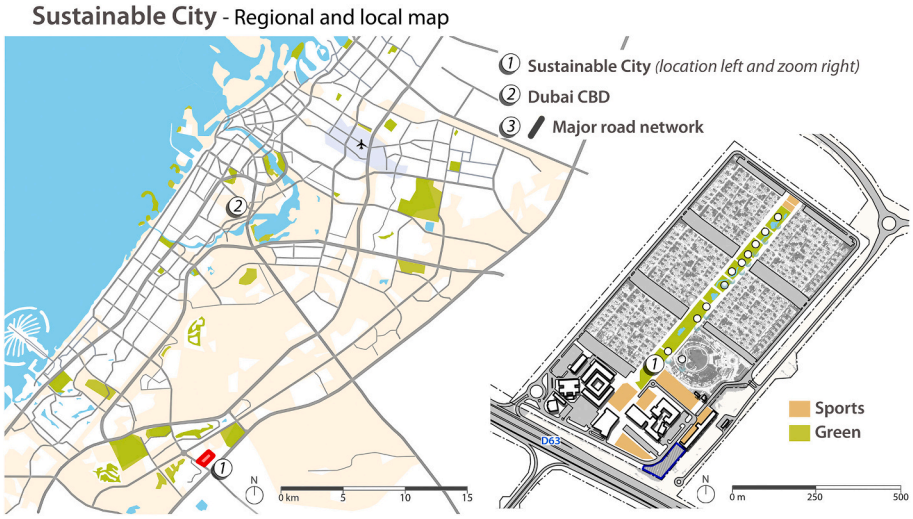
The key aspect that recurs across scales, is that sustainable practices coexist with and within unsustainable ones. The Sustainable City specifically is based on green architectural design that is compact and of good density, and arguably builds on the unique image that Dubai as a city globally promotes: it represents the sustainability that the pattern of development encourages, but cannot be considered a sustainable city from an inclusive urban space production perspective. Furthermore, the embodied installation and operational resources within this development, including those that keep 2500 trees alive, come at an enormous environmental cost, in a climate and ecology that needs to be technologically regulated and maintained.

Copenhagen is a city in a country, Denmark, also, awarded "most happy",[2] but ranking 6th in overshooting its resource use.[3] The Danish capital has the key to simultaneously "support a more sustainable direction without sacrificing welfare and quality of life" (State of Green, 2024). These promises are said to be achieved through intelligent strategic urban planning "making it possible to reach shops, institutions, workplaces, cultural facilities and public transport [..] while trying to

[2] Ranked first three times since the introduction of the UN World Happiness Report in 2012 (Visit Denmark, 2021).

[3] Ranking 6th (March 16th) in comparison to UEA ranked 4th (March 4th) and South Africa ranked 30th (June 20) (Earth Overshoot Day, 2024).

Textbox 2
Sustainable City, Dubai - Regional and local map.



The Sustainable City in Dubai consists of a residential area of 500 townhouses and courtyard villas, an ecoresort of 143 bungalows and individual units. It also hosts a sustainable hotel and resort with a world class natural spa centre, Sustainable Engineering and Research Institute and Training Centre for sustainable practices, a nature inspired Green School from Kindergarden to Grade 6, tourist attractions such as a Planetarium and a grass Amphitheatre, natural 'biodome' greenhouses, organic farm and individual garden farms for local food production, a variety of sport and leisure facilities, and convenient essential facilities such as clinics, bank, Juma mosque and a traditional souk. All powered by 600,000 Square Feet of Solar Cells (Baharash Architecture, 2013).
The map shows the Sustainable City in the Dubai context with its borders and location in relation to the regional infrastructure and environment.

Sources: Authors, based on Property finder, 2019.

predict and address the major environmental challenges of tomorrow" (State of Green, 2024). The other side of the coin of this fairytale is the increased prices for housing, which has become unaffordable to most families in recent years (Berlingske, 2016; Finans, 2017), displacing lower-income groups (Gómez Martín et al., 2020), in particular the safer and green districts, such as the new North Harbor (Boliga, 2017; Copenhagen Municipality, 2017; see Textbox 1). Indeed, there can be "tensions between (well-financed) development projects of entire neighborhoods and bottom-up, volunteer-driven, fragile communities" when it comes to collaboratively transforming urban nature within the city (Koefoed, 2019, p. 539). In addition, the many climate-friendly and organic restaurants in Copenhagen certainly offer a clean – or green – conscience (Visit Copenhagen, 2024), but organic production takes up much space *outside* the (sustainable) cities – an issue widely debated among nature conservationists (e.g. Hole et al., 2005; Phalan et al., 2011). The urban setting of Copenhagen corresponds to the compact city, where barriers and control checkpoints are less amenable to physical representation, instead, other measures fill the void: Copenhagen, despite initial resistance, is officially a CCTV surveilled city (Liebst et al., 2019), while the municipality has recently legally banned begging in public and "camping which creates public insecurity" (Justesen, 2023; K-News, 2024). We now place Copenhagen within our analytical framework with a focus on the exclusionary practices across scales (Fig. 4) since admittedly, the majority of the inclusionary sustainable practices are in place.

Copenhagen is a great city, but to what extent it is truly accessible and inclusionary remains contested since many cannot afford to live, visit or stay there, and gentrification patterns may be present in some forms: a well-defined end-user (consumer) coupled with lifestyle migration (displacement) supported by services and policies that maintain the pattern.

In South Africa, a country with proliferating gated communities, high crime rates, the highest global socio-economic inequity (World Bank, 2022) and the eighth highest ratio of shopping mall market size worldwide (SACSC, 2017), several alternative initiatives that still respond to the ecological (enclave) concerns are being paradoxically promoted and implemented. The ambition to attain World Class City status, like the case of Johannesburg, resulted in public projects addressing the sustainable agenda in various forms. Examples include the Gautrain (rapid rail) promoting Transit Oriented Developments, or the Bus Rapid Transit (BRT) system, which concentrates movement, activities and densities around its routes and hubs (while lowering carbon emissions).[4]

Situated in Johannesburg, the Paterson Park project presents a valuable case for our discussion (Fig. 5). The project aligns with the BRT's strategy branded "Corridors of Freedom" by creating intense nodes served by public transport. This project builds on existing infrastructure and comprises several stages, including the central stream re-naturalization (de-culverting), consolidation of landscaped areas, construction of community facilities (social, sports, recreation) and the construction of additional residential bulk in various densities, formats and income levels (not yet implemented in 2024 but approved since 2019).

In principle, Paterson Park is a well-planned, designed and

[4] Use. Urban Sustainability Exchange (n.d.) Found online at https://use.metropolis.org/case-studies/the-bus-rapid-system-rea-vaya [Accessed 5 April 2024].

Textbox 3
Paterson Park, Johannesburg - Transit-based development strategy

The "Corridors of Freedom" transit based strategy in Johannesburg, South Africa, aims at concentrating activities around dedicated lanes transport facilities. The Paterson Park project is one such development that centers around the headwaters of the Orange Grove. In addition to top class community facilities (including library, sports and conference venues), the node proposes the construction of affordable housing in medium to high rise buildings of high density.

Sources: Authors, based on CBA Consulting and KH Landscape Architects working drawings.

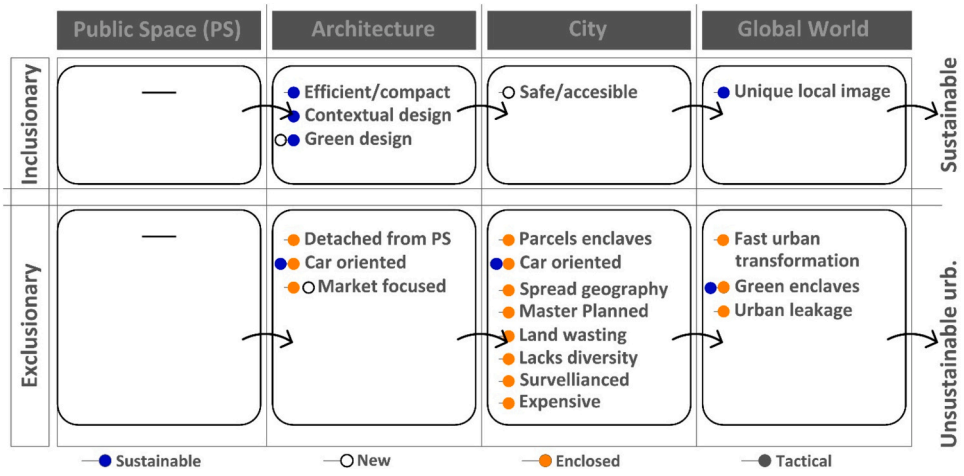


Fig. 3. Salient features across scales of residential estates (Sustainably City) on the outskirts of Dubai.

implemented regional strategy where the 'safe' is achieved through the existing police station, the 'green' results in a state-of-the-art recreation and landscape project, and the 'good' supports public transport and future housing for various income groups. The project has nonetheless faced opposition against the proposed residential component from the onset (Rosebank Gazette, 2016). Central to this issue is the building of 1457 (of 2162 originally planned) residential units and the influx of newcomers and contrasting building types next to a tranquil, low-density area, which could impact existing property prices negatively. Currently, the park suffers from a recurrent challenge in South Africa: deferred maintenance and access issues (interview with Landscape Architect, 2022). We consider the salient aspects of this project within our analytical framework for urban sustainability (Fig. 6).

As in the previous cases, sustainable and unsustainable cases can be made for this project. At the public space scale, its complexity in light of the maintenance and safety challenges of the Global South remains questionable. Its regional consideration is commendable and appropriate, but its absolute imposed design, which leaves no room for alternative building typologies or mix of uses, would lead to fast urban transformation and depreciation. A more gradual and varied urban transformation is desired that will take place (regardless) in the medium long term and that can be guided by revised town planning amendments.

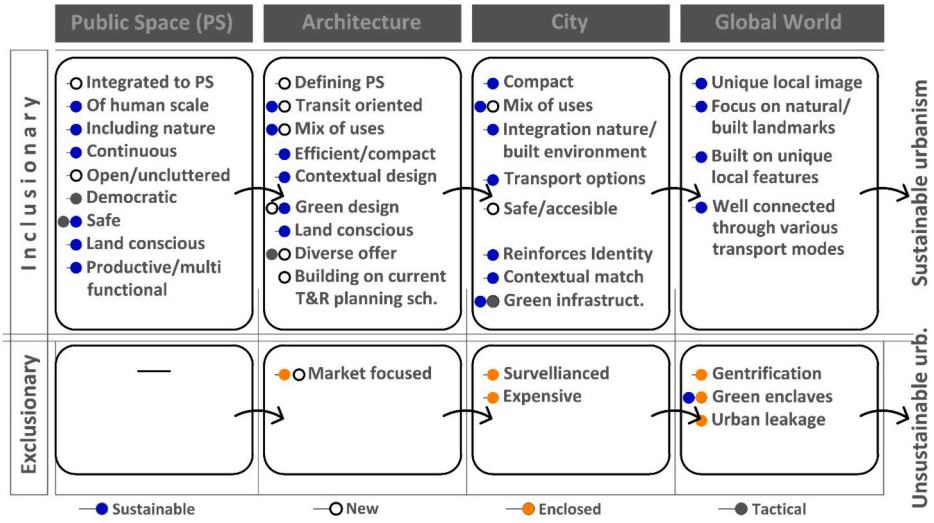


Fig. 4. Although compact and livable, Copenhagen has become unaffordable to most. Large new plans, like North Harbor, sets development in a prescribed direction leaving little room for gradual urban transformation.

Fig. 5. The re-naturalized stream is the central theme of Paterson Park, which includes ecological habitats, better water quality, better access, larger landscape areas, and community facilities.
Source: photographs by CBA Consulting, 2022.

In addition to the cases discussed above, many locations, building eco-cities rely on producing and reproducing large, often transient populations of low-paid workers,[5] forming a 'new urban poor' with workers' cities on the edges of flagship projects promoting urban sustainability (Caprotti, 2014). Similar to Dubai, reports from eco-cities in South Korea show patterns of increased social and techno-economic polarization and urban segregation, where the sophisticated sustainable enclaves mainly serve the high-income groups (Yigitcanlar & Lee, 2014). Moving from Asia to North America, comparable traits like separation from the outside community and internal security measures are reported in physical communities run by and for large corporations like Google and Facebook (The New York Times, 2018), who wish to promote their business by offering employers a good, safe and green life.

4.2. Ecological initiatives in the name of security

While the above examples from Dubai and Denmark illustrate the

[5] Not unlike the historical townships implemented as part of the apartheid spatial strategy in South Africa 1948–1994.

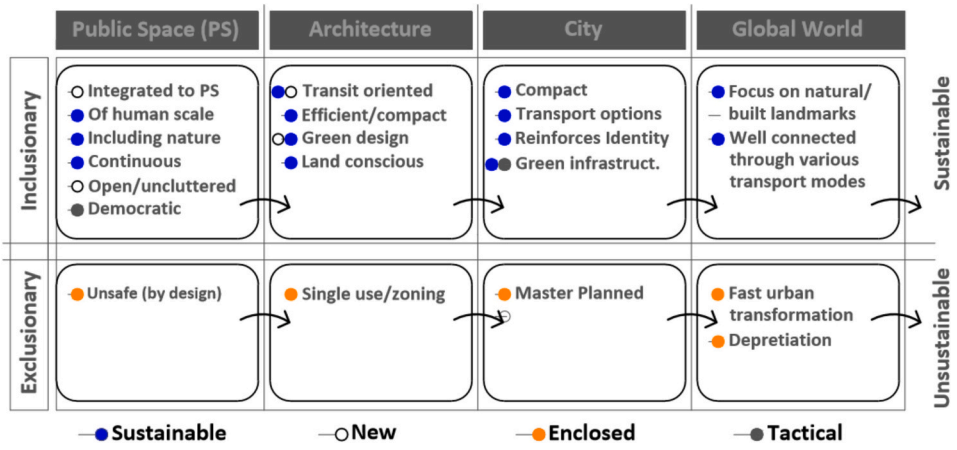


Fig. 6. Paterson Park's key features largely align with sustainable urbanism practices, but force rapid development instead of gradual urban transformation.

voluntary settlement of (wealthy) people attracted by a happy lifestyle in safe green spaces, other examples of urban ecological enclaves are less romantic. In China, for example, more forced interventions are taking place in the name of nature and ecological citizenship (May, 2009). Four hundred families have been relocated to the 'sustainable development demonstration village' of Huangbaiyu. Their lives have radically altered as their everyday practices have become subject to judgement, transformation and discipline by persons they have never met. This whole experiment was aimed to determine whether rural populations can be allowed urban privileges without putting the 'planet in peril', but in practice, existing resource distribution inequalities continue in the name of protecting the shared ecosystem (May, 2009). From a securitization lens, the case of Huangbaiyu illustrates extraordinary measures (relocations, changed lifestyles) justified by the threat (to our planet), and resulting in violation of rights and continued inequities, as opposed to the promised privileges. A case study from an Indian eco-city echoes these downsides, as local residents lost land ownership and faced social displacement with a breakdown of traditional village networks (Mehta & Singh, 2015).

Across examples of urban ecological initiatives run a forceful undercurrent of security, as expressed in Dubai, where climate change is portrayed as "a looming shadow hanging in the immediate periphery of life as we know it" calling for the adoption of lifestyles that accommodate the future and well-being of our planet (The Sustainable City, 2018). Or in Copenhagen, where concerns about "catastrophic cloudburst event[s]" (Gómez Martín et al., 2020), damage to personal property, and higher insurance premiums justify the proposed green solutions (Klimakvarter, 2018; Gómez Martín et al., 2020). The great difference, however, lies in the resulting response to these threats – and the point of perspective. For instance, urban ecological enclaves in Asia exemplified above are typically considered extreme from a Scandinavian perspective but lie within the normal political realm in their home countries, where other planning procedures and interpretations of democracy apply (Nyman & Zeng, 2016). That being said, a strong security rhetoric can, in all instances, help justify measures that give rise to negative side effects in the given context. In some contexts, 'extraordinary' means fast-tracking a decision that would have been accepted under normal circumstances. In other contexts, violations of rights already weakly enforced and highly unjust are not perceived as 'extraordinary'. Normal practice or not, injustices and enhanced inequities seem to surface across examples in the name of an environmentally safer zone, when a broader scale and perspective is applied.

4.3. *Displacement of ecological and climatic damage*

The growing urban population of people living inside and outside ecological enclaves demands the supply of eco-friendly and cheap products derived from their surrounding nature as a resource. Either way, their consumption puts pressure on nature to varying extents, including embodied energy, pollution, resource degradation and depletion. Compromises must be made to ensure the good and green life. For example, while reducing traffic overall, a car-free zone will to some degree, increase traffic and pollution outside the zone (EU Commission, 2004; Textbox 1) and is, therefore, a negative externality not compensated for. In Dubai, the risk of pollution leakage between areas is perceived quite differently and the concern is reversed, as the "tree-lined borders of The Sustainable City [acts] as the *first line of defense against pollutants* […] purifying the air coming *into* the city will be a breeze" (The Sustainable City, 2018, emphasis added). Here, it is the ecological enclave and not the surrounding area that is central, and the security rhetoric and military metaphor underline the vital importance of clean air, which must be protected by all means. However, this development is located 30 km from Dubai's financial centre, no public transport serves the area and car dependency (and pollution) is part and parcel of the development pattern.

Contrary to concerns about pollution leakage from (or into) defined eco-enclaves, increased absorption of excess surface water in a climate-smart neighborhood, as parts of Østerbro in Copenhagen (Klimakvarter, 2018; see Textbox 1), will aid drainage *from* the neighboring blocks. This will benefit all residents, including all taxpayers who indirectly fund the renovation of public infrastructure and buildings if damaged by flooding (e.g. Beredskabsstyrelsen, 2012). Similarly, the stream re-naturalization of Patterson Park addresses a real flooding threat for the area and neighborhoods downstream (Fig. 5), resulting from previous boxing of the Orange Grove headwaters combined with the increased intensity of climate-change-related events (Interview with Stormwater Engineer, 2022). Thus, while such initiatives mainly target and benefit local users, they can also result in positive synergies at larger scales rather than displacements.

5. Discussion and perspectives

Sustainable land use planning aims to identify risks and respond to societal challenges. However, these tasks are often hindered by various factors, including economic and political interests, lack of stakeholder collaboration, socioeconomic inequalities, scarce financial resources, and institutional inertia (Córdoba Hernández & Camerin, 2024). Furthermore, too often, many sustainable development actions focus on everything but nature. While public transport and energy-efficient architecture remain important, "these aspects alone are insufficient for reinventing urban life" (Córdoba Hernández & Camerin, 2024), which requires a vision for the prioritized preservation and integration of "natural green spaces and ways of life" (Longato et al., 2023) accessible and beneficial to all city residents.

As shown in the findings above, many urban ecological enclaves appear well-planned at the local scale, but lack a regional perspective, and are thereby not fully realizing their potential to combine the good, the safe and the green life beyond the enclaves themselves. From a sustainability perspective, urban ecological enclaves in all their shapes have relatively little to offer if the real challenge is "re-engineering and systemically retrofitting *existing* urban environments to reduce energy and water use, accelerate low-carbon technologies, and provide affordable energy for *all users*" (Hodson & Marvin, 2010, p. 311, emphasis added). Moreover, contrary to their intention, urban ecological enclaves risk enhancing social discrimination and inequity among the urban population by splitting segments of the population who can afford a clean conscience from those who bear the costs. Ecological enclaves can easily promote what Graham and Marvin (2001) defined as splintering urbanism; creating a geography of well-protected points of interest that bypass less valued places and people. However, such social costs at larger scales are largely ignored or merely accepted due to personal and environmental security concerns, which seem to justify such trade-offs.

We propose a planning approach to urban ecological enclaves that challenges and nuances the practices we see today. While trade-offs are difficult to avoid altogether, it is possible to minimize trade-offs by broadening perspectives spatially and discursively. To some degree, this is reflected in the case of Patterson Park, yet the trade-offs related to the depreciation of land, pressure on existing infrastructure, and change associated with higher densities remain contentious socio-economic aspects.

Specifically, and across locations, we suggest a planning approach in which the regional perspective dominates: upscaling of the planning area would better account for negative displacements, as a larger scale and scope lowers the risk of leakage (Angelsen & Wertz-Kanounnikof, 2008). From a regional perspective, it would be more constructive to pay attention to urban "edges" rather than the "enclaves", or plan and implement a connected network of green spaces that would support ecological connectivity and climatic benefits, but also an active lifestyle through connecting non-motorized transport routes and link up green recreational areas in the city (Pauleit et al., 2017). In theory and practice, it is ecologically more rational to densify a city and thereby reduce energy expenses, housing materials and infrastructure (Artmann et al., 2019), as opposed to the anthropocentric view of promoting luxury villas, individual family housing, or even the romantic farm life, which takes up space (from nature or production) and requires a car – or two. This is not to say that density should be imposed as the end goal itself without considering the supporting social-ecological infrastructure (McDonald et al., 2023). Instead, density should be the consequence of well-planned urban places that offer the convenience of amenities and services for a desirable and sustainable urban lifestyle that allows for natural components and species co-existence beyond humans (Vuong & Nguyen, 2024).

We emphasize the potential of existing isolated urban ecological enclaves to act as flagships for enhanced regional greening by providing valuable lessons and spreading best practices through concrete initiatives, as exemplified by the climate-resilient neighborhood in Copenhagen (Klimakvarter, 2018). There is a need for governance processes to guide the planning activities of city managers and ensure mechanisms of transparency and accountability to rethink how cities plan, transform, and learn, as promoted by Ponzini (2013), especially by promoting opportunities for the design of public spaces (Ponzini, 2013). Importantly, the price and effort to brand or certify a certain district can be high for the surrounding city. If the enclave becomes a forerunner spreading best practices, the investments will pay off on a wider scale, but if the eco-enclave in isolation achieves gold standards, while the less attractive parts of the city are left behind, collective rights for access to clean air and sound water management are compromised.

From a discursive angle, we suggest an approach where security framings are acknowledged, but not allowed to set the agenda. Attention should instead be directed at the central actors and their underlying interests, such as financial gain and branding (e.g. Yigitcanlar & Lee, 2014), without intermixing concerns about personal safety. While a collective concept of security is preferred as opposed to a divisible one (Hodson & Marvin, 2010), we suggest minimizing justifications rooted in security concerns as far as possible to mobilize much-needed deep-rooted cultural transitions. Appealing to alternative narratives around, for example, *resilience*[6] (in terms of adaptation, balance, and maintenance of ecosystem services, where cities form part of a regional ecosystem (Ernstson et al., 2010)), instead of *security* (threats, danger, protection), we could find more long-lasting and perhaps more just values and solutions based on trust and conviction to trump buffer zones and increased surveillance based on fear.

Overall, the multiple examples from different contexts brought forward in this paper show a pattern where the individual cases to some extent mirror the context they are located in by sharing the same type of governance or ideology (see however Piccin, 2012, on the Westernized ideologies and top-down approaches in Rio de Janeiro) and ultimately supporting and maintaining, the neoliberal economic world-view (Vuong & Nguyen, 2024). Arguably, large-scale eco-city projects require political stability and continuity of major strategies, and in a developing country context, such projects are not immune to political influence and might even be subjected to corruption (Yigitcanlar & Lee, 2014). This is also evident in the European Union, where due to environmental, cultural-historical, and institutional differences, decentralization offers flexibility for local needs and priorities but poses difficulties in coordinating and implementing EU-fostered territorial policies (Córdoba Hernández & Camerin, 2024). However, while projects should always strive to be politically feasible and culturally sensitive (e.g. Piccin, 2012), issues of scale and perspective are relevant across all cases, as is the need to critically reflect upon the rhetoric and justifications for promoting safer lives when economic burdens and ecological harms might fall upon others.

Lastly, the socioeconomic tradeoffs exemplified by increased inequity and segregation among urban residents could be minimized by focusing on the less attractive districts instead of the wealthier areas, which are often selected as green forerunners (e.g. Østerbro, Carlsberg and North Harbor in Copenhagen, Textbox 1). Upgrading the lower or middle-class neighborhoods provides a more even distribution of collective rights (e.g., fresh air, recreational areas, flood control, and proper drainage), as exemplified by Patterson Park. It could also help change their label from a *risky ghetto* to a *resilient green space* (Gellerupparken, 2018), keeping in mind that the original residents should be invited into the process and not forced out of their own neighborhood due to rising living expenses (Berlingske, 2016; May, 2009) or out of fear of depreciation like in the case of Patterson Park. Such social win-wins can only be achieved if both officials and citizens are able to utilize planning mechanisms effectively and efficiently (Camerin & Longato, 2024).

While many urban ecological enclaves can be said to represent strategic responses to environmental pressures (Hodson & Marvin, 2010), some enclaves seem to promote themselves as "sustainable" more as a political strategy appealing to the wealthy and influential segments of society than as a means to achieve global sustainability (cf. United Nations, 2015). It is not politically, economically or culturally (or environmentally) feasible to impose an (imperfect) "Copenhagen model" in many places worldwide since other regions have different histories, climates, and governance structures. Thus, reducing compromises and trade-offs between social and ecological goals depends widely on perspectives, starting points, and success criteria–but also on finite global natural resources. However, increased attention among politicians, planners and the public to scalar issues of economic worldviews, anthropocentric values, social equity, security framings and

[6] *Resilience* is widely used and discussed in fields from ecology (Oliver et al., 2015), urban ecology (Ernstson et al., 2010) to sociology (Sinclair et al., 2017).

displacements of damage is needed from deserts to Denmark to find a better balance of leading good, safe and green lives in the cities themselves.

This paper has set forth to provide a critical perspective on urban ecological enclaves from a human geography, spatial planning and design perspective. We exemplified the ecological and socioeconomic trade-offs of enclaves across scales and exemplified these trade-offs through case studies in different geographical regions. Our case studies illustrate the displacement of negative environmental effects and increased inequity due to these "isolated sustainability efforts". Through our framework, we sought to intensify awareness of the shortcomings and potentials of enclave developments, and advocate a regional perspective, the avoidance of security framings and the spreading of green initiatives into lower and middle-class neighborhoods. A shortcoming of our attempt is that many bad (and good) planning initiatives and the underlying reasons why they are (not) enduring could not be discussed and analysed at the length and complexity they deserve. With an emphasis on spatial scales and social perspectives, our contribution lies in exemplifying global tendencies that are causing a hampered and non-confrontational approach to sustainable development. Moving forward, we believe that more detailed case study approaches that acknowledge the positive and negative consequences of development, measured against the total urban population, will enable greater transparency about how to reach global sustainable development goals and keep within planetary boundaries. We recommend more case studies, especially in dysfunctional systems, that exemplify challenges but also provide recommendations on how to turn them into opportunities, which would inevitably include methods of breaking current dominant economic development worldviews through transformative change and socio-cultural transitions towards greater sustainability.

CRediT authorship contribution statement

Dario H. Schoulund: Writing – review & editing, Writing – original draft, Visualization, Software, Methodology, Investigation, Formal analysis, Conceptualization. **Christina A. Breed:** Writing – review & editing, Validation, Supervision, Project administration, Investigation. **Jens C. Pasgaard:** Writing – review & editing, Validation, Conceptualization. **Maya Pasgaard:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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