



Bánusz, Péter Edvin<sup>1</sup> – Tésits, Róbert<sup>2</sup>

# Territorial Characteristics of Energy Modernization: The Case of Panel Buildings in Pécs

## ABSTRACT

The energy efficiency of residential buildings is a key issue in contemporary urban development, as appropriate external renovations can result in a significant reduction in harmful emissions. In Pécs, a substantial proportion of the housing stock consists of panel-type apartment buildings, whose distribution across ten urban districts exhibits pronounced territorial differentiation. The aim of this paper is to examine the spatial distribution of energy modernization efforts in these panel buildings. A further objective is to identify the differentiating factors behind the disparities among districts and to propose development strategies for areas that have been partially or entirely excluded from modernization processes. The study primarily relies on secondary data derived from previous energy modernization assessments, provided by the municipal government. Following statistical processing, the data were visualized using geographic information system (GIS) software to reveal and interpret spatial differences. The analysis of influencing factors was complemented by insights gained from semi-structured interviews with the head of the city operations department. Field surveys were documented through notes and photographic records. The findings confirm earlier assumptions: western districts have the highest proportion of renovated buildings, southern districts represent transitional zones, while eastern districts remain the least modernized. The results also highlight territorial influencing factors that lead to significant deviations in the energy modernization status among the districts. The study concludes with recommendations for integrating panel buildings that have so far been omitted from energy modernization programs, outlining potential tools and approaches for their inclusion.

*Keywords: energy modernization, energy efficiency, panel buildings, Pécs, housing estates, urban development*

<sup>1</sup> Geographer, University of Pécs, Faculty of Sciences, H-7624 Pécs, Ifjúság u. 6. E-mail: [banuszpeter03@gmail.com](mailto:banuszpeter03@gmail.com), Orcid: <https://orcid.org/0009-0001-0520-6580>

<sup>2</sup> PhD, habil. Associate Professor, University of Pécs, Faculty of Sciences, Institute of Geography and Earth Sciences, H-7624 Pécs, Ifjúság u. 6. E-mail: [tesits.robert@gmail.com](mailto:tesits.robert@gmail.com), Orcid: <https://orcid.org/0000-0002-9575-3309>

## INTRODUCTION

In the second half of the 20th century, Pécs played a prominent role in economic development policies, which led to a significant wave of apartment block construction in the city from the 1960s until the political transition. The aim was to alleviate the housing shortage, primarily through the construction of quickly implementable panel buildings. Entire new districts were established using panel technology, while in existing areas such developments occurred only sporadically. Most of the panel buildings were constructed on the urban periphery, thereby expanding the built-up area. Megyerváros—today the largest district of Pécs—was previously an undeveloped area (Sipos, 2015a), whereas a small airport once operated where Uránváros is now located (Pilkhoffer, 2010).

Today, Pécs has become a spatially extensive city, with its districts separated from one another due to their formation in different historical periods. In the western part of the city, the tertiary sector, primarily linked to educational institutions, is dominant, while in Megyerváros residential functions prevail. It is apparent in the cityscape that the panel buildings in various districts have undergone modernization to differing degrees, and their locations have resulted in significant price disparities (Békés et al., 2016).

One of Pécs's strategic development goals is to improve the energy efficiency of panel buildings supported by several funding programs (Municipality of Pécs, 2023, 2024). These initiatives form part of a LIFE programme aimed at improving air quality. With the exception of one, all panel buildings in the city are at least thirty years old, and many are over sixty (Pilkhoffer, 2010). While numerous residential buildings have already undergone energy-related modernization, most of these were implemented in more affluent districts, often financed by the residents themselves. In contrast, less affluent communities could only afford upgrades through external funding (Hungarian Energy Efficiency Institute [HEEI], 2021).

Hungary's accession to the European Union brought the issue of climate neutrality to the forefront (European Commission [EC], 2011). According to studies, outdated residential buildings may account for up to one-third of greenhouse gas emissions (Horkai et al., 2018). As a result, the EU's energy strategy emphasizes the modernization of the building stock. While government subsidies had previously supported housing renovations, since the 2010s this responsibility has largely shifted to municipalities. Given that these municipal funds do not cover the full cost of renovations, only wealthier communities have typically been able to take advantage of them. Modernized buildings not only reduce utility costs but also increase property values (Ertl et al., 2021; Horváth et al., 2013).

Energy modernization has been receiving increasing attention both nationally and internationally. In addition to the environmental aspects of urban development, modernization efforts also have a significant impact on property values and creditworthiness (Hajnal et al., 2022; HEEI, 2024). Moreover, their social effects are substantial (Koltai et al., 2021). Understanding these processes requires energy modelling (Csoknyai, 2022; Bene et al., 2023) and typological classification of the residential building stock (Mándoki, 2024). In the context of urban dynamics in Pécs, the presence of the university is also a key influencing factor (Császár et al., 2021; Erdős et al., 2021).

The available data clearly reveal the spatial distribution of energy modernization, which enables a comparative analysis of the city's districts. It is important to note that Pécs played a prominent role in the national panel programme (2001–2006), covering one-third of the renovation costs through municipal funding, with the remaining expenses borne by the state and homeowners. As a result, initial modernization measures were implemented in many panel buildings. However, following the termination of this tripartite financing model, the pace of renovations slowed down.

Pécs now aims not only to improve air quality but also to develop a comprehensive database that supports prospective homebuyers by providing information on the modernization level and expected utility costs of selected properties. According to plans, this database would be updated annually, though its success depends on the availability of accurate baseline data.

## LITERATURE REVIEW

The issue of energy modernization in existing buildings has long been a subject of interest for professionals in regional and urban development, policymakers, and academic researchers alike. Energy modernization has several practical benefits, most notably the local improvement of air quality. The larger and more densely populated a settlement is, the more significant air quality improvements can be achieved through the renovation of outdated buildings and the proper design and implementation of new constructions.

In relation to these themes, our literature review has identified five distinct research directions. In addition to exploring the environmental and property market implications of residential building modernization, these studies examine the energy efficiency of panel-type apartment buildings and their role in urban development. Our review concludes with a logically structured assessment of studies focused on real estate in Pécs, highlighting the scholarly embeddedness of our current research objectives.

It is observable that before the political transition, research in this field was primarily carried out in Western Europe, as territorial and urban development in the socialist bloc was based on a different economic and political model, and climate change was not yet a central concern. In Hungary—and in Pécs specifically—the first investigations addressing not only the causes and effects of climate change but also individual quality of life began in the 1990s.

These studies were partly motivated by the fact that Hungary, following the signing of the Association Agreement, began aligning with the environmental policy frameworks of the European Union from the early 1990s onward. The first step was the PHARE programme (Heil, 1998), which supported the institutional, legal, financial, and infrastructural foundations of environmental protection; however, it did not yet provide funding for building energy modernization.

A major turning point came with Hungary's accession to the European Union in 2004, when the country signed several agreements aimed at reducing harmful emissions. One of the most important of these is the strategy to achieve a low-carbon economy by 2050 (EC, 2011). The strategic priorities published by the European Union in 2011 explicitly address residential buildings, mandating that

newly constructed homes be “low or zero energy,” while existing buildings must undergo substantial renovation to reduce emissions (EC, 2011). In response, a number of studies were published in the mid-2010s that outlined the toolsets necessary for implementing these 2011 directives (Boßmann et al., 2012; Cevik et al., 2015). These studies emphasized, among other findings, that poor exterior insulation of residential buildings significantly contributes to emissions, thereby making their modernization a top priority.

As a result of the EU’s energy modernization targets, further studies have emerged focusing on the modernization of residential, public, and commercial buildings. The earliest of these addressed not only the benefits of modernization but also the frameworks of financial support and regulation (Copenhagen Economics [CE], 2012). In Hungary, a growing body of research has also examined the outcomes of building modernization efforts, shedding light on the energy condition of the domestic residential building stock and its potential for modernization (Egedy, 2017).

Among the most recent findings, Bene et al. (2023) is particularly relevant to the present study, as it highlights the territorial disparities of certified energy performance data. The research consensus is that modernization has a substantial impact on energy savings, making such investments cost-effective and offering residents tangible economic benefits. Furthermore, these studies point out that a well-designed regulatory framework encourages homeowners to utilize available subsidies more confidently.

A clearly distinguishable thematic strand within the literature involves analyses of the relationship between property prices and energy modernization. Research in this area (Horváth et al., 2013) has primarily focused on international housing markets, but also notes significant price increases observed in Budapest following the renovation of panel buildings. This line of inquiry includes studies evaluating the impact of energy modernization on real estate prices (Ertl et al., 2021) and mortgage interest rates (Hajnal et al., 2022) in the Hungarian context. In line with expectations, the findings indicate that the more energy-efficient a residential building is, the higher its market value. Similar conclusions are drawn in studies examining university towns, which reveal the favorable position of higher-ranked settlements based on student mobility (Császár et al., 2021), the spatial and economic effects of higher education institutions (Erdős et al., 2021), and inter-municipal differences in housing prices (Békés et al., 2016).

Although panel-type apartment blocks are widespread across Europe, they are particularly characteristic of the former socialist bloc. These buildings offered several advantages, such as relatively fast and cost-effective construction. However, their disadvantages include the minimal external insulation and poor thermal performance of windows and doors—features that reflected the building standards of the time and the availability of cheap, Soviet-imported energy. Consequently, their “factory-standard” energy consumption is unfavorable, raising important questions regarding their modernization potential.

In recent decades, many studies in both Hungarian and international contexts have addressed panel buildings and their energy modernization (Egedy, 2000; Farkas et al., 1997; Szabó & Bene, 2019). Some of these investigations have focused on residential building typologies, with particular emphasis on panel structures (Mándoki, 2024). Others have explored the historical context and motivations behind

the panel construction boom (Horkai et al., 2018), or outlined possible future scenarios in relation to modernization strategies. The literature also emphasizes that panel buildings provide long-term housing for a significant share of the population, thus their modernization warrants priority attention (Hungarian Central Statistical Office [HCSO], 2016).

Urban development has recently gained growing attention in academic discourse. Many researchers are exploring the potential for upgrading the existing urban built environment. This includes so-called “smart city” research (Egedy, 2017), which integrates modern technologies such as smart ventilation systems to enhance building energy efficiency. The full-scale, one-phase modernization of panel buildings (Perényi, 2008) remains a topic more often addressed in theory than in practice, as renovations are typically implemented incrementally. Nevertheless, the renewal of residential buildings has numerous social and economic impacts. Studies extend beyond factors affecting quality of life (Koltai et al., 2021) to also include economic dimensions (CE, 2012), such as location-induced changes in property value.

The reviewed literature makes it clear that energy modernization of panel-type buildings is not only significant from environmental and economic perspectives, but also plays a vital role in urban development and social policy. Both international and domestic research highlights the benefits of modernization in terms of energy savings, improved quality of life, and increased property values, while also underlining the challenges posed by the outdated design of such widespread building types. Based on the findings, it is evident that the spatial distribution and impact of modernization interventions can vary considerably between districts—especially in cities like Pécs, where the majority of the housing stock comprises panel buildings. Accordingly, the objectives of this study—to map the energy modernization status of panel buildings in Pécs, visualize spatial disparities, analyze influencing factors, and formulate development policy recommendations—are grounded in the existing literature and aim to offer practical insights for local decision-makers by extending its conclusions.

## METHODS

The main methodological approach of this study relied on the secondary analysis of statistical data provided by the Department of Urban Management of the Mayor’s Office of the City of Pécs. As part of the initial surveys conducted under the LIFE project, the energy efficiency status of all panel-type apartment buildings within the administrative area of Pécs was recorded. Data collection was carried out by PTE Politechnika Ltd., commissioned by the municipality (Gyergyák et al., 2022). The base maps used for visualizing spatial distribution in the geoinformatics environment were also supplied by the Department of Urban Management. Due to the uneven distribution of panel buildings across districts, we applied percentage-based evaluations during data processing.

For spatial visualization, three geoinformatics software platforms were used. First, the base maps from AutoCAD 2022 were exported in .shp format. In the next step, residential buildings were selected and color-coded in ArcMap 10.8 based on their type and external modernization status. Final figure annotations were completed using Inkscape.

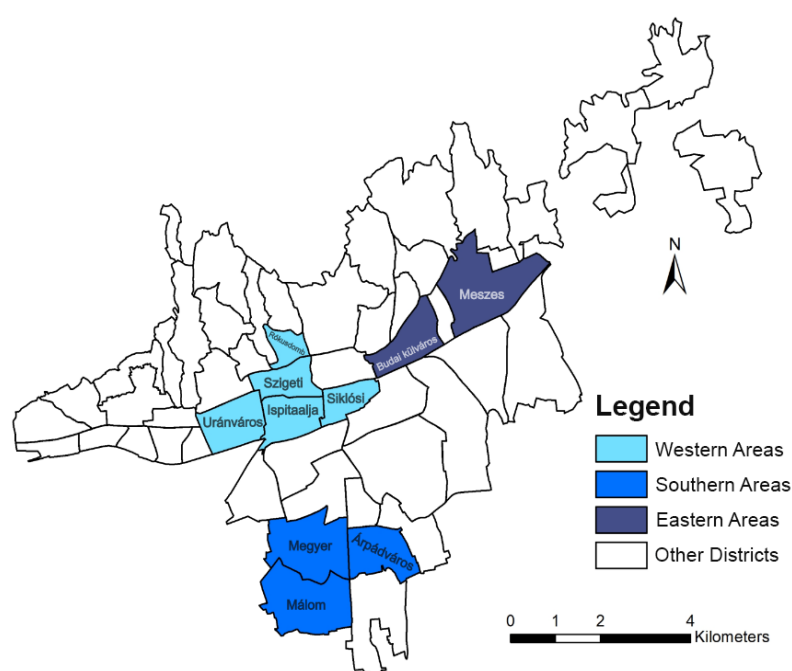
The empirical component of the study began with fieldwork, during which we documented cases of unique energy modernization or visual urban character through photographs. Observational notes were taken to support the evaluative analysis of the secondary statistical data. The results of the primary research were supplemented with semi-structured interviews conducted with the head of the Department of Urban Management. The interview guide addressed the LIFE project database, the role of spatial differentiation factors, and the future tasks and strategic goals of urban management.

The examined districts were categorized into three groups based on their spatial concentration: western, southern, and eastern areas (Figure 1). The dataset analyzed comprised 1,311 panel stairwells, encompassing a total of 26,558 housing units. These were distributed unevenly across the city. At one extreme, the Megyer district accounted for 55% of all panel stairwells, while the Budai Suburb had the lowest share at only 0.1% (Figure 2).

The external energy efficiency upgrades carried out resulted in a largely uniform picture across the ten examined districts. In most areas, nearly all buildings had undergone interventions such as external thermal insulation and/or window replacement, and the remaining districts closely approached this rate. It is worth noting that a 100% rate of external modernization does not preclude the future addition of even more efficient insulation or the replacement of existing windows—particularly in buildings where such interventions were completed more than two decades ago.

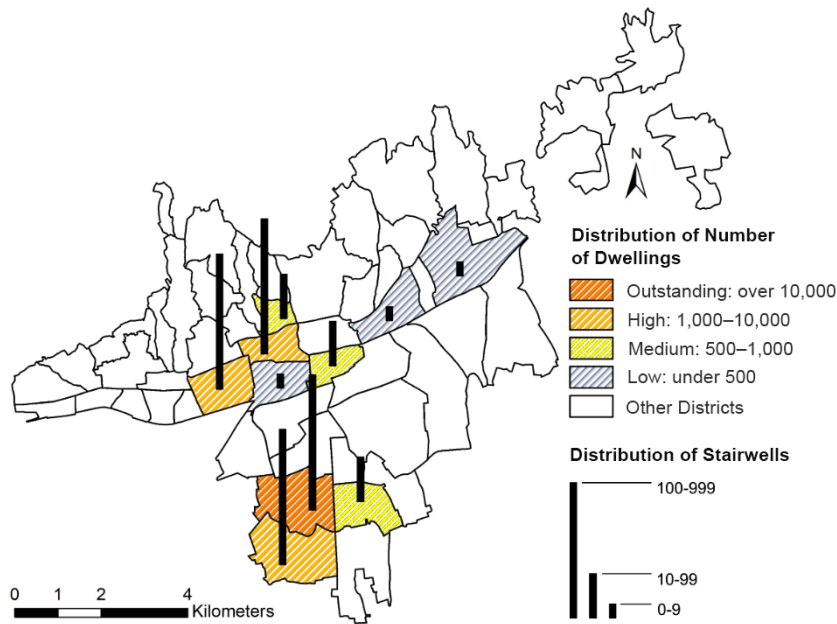
The results of the analysis were grouped into three categories corresponding to the western, southern, and eastern parts of the city. While the buildings show similar energy and technological characteristics across these zones, each area has distinct features rooted in historical, economic, and social development. Based on our hypothesis—founded on these socio-economic differences—we observed a declining trend in the proportion of energy-efficient upgrades from west (98%) to south (93%) and east (86%).

Figure 1. Spatial classification of districts containing panel-type residential buildings.



Source: edited by the authors

Figure 2. Spatial distribution of the number of panel-type dwellings and stairwells.



Source: edited by the authors

## RESULTS

### Factors Influencing the Energy Modernization Profile of the Western Areas

In the western part of the city of Pécs, there are five areas with panel-type apartment buildings. In descending order based on the number of flats, these are Uránváros, the Szigeti district, Rókusdomb, the Siklósi district, and Ispitaalja (a total of 8,627 flats in 352 stairwells). Compared to the other two examined areas, the western zone has the highest rate of energy-efficient renovations of panel buildings, with only 6 stairwells left unrenovated out of the 352.

#### Energy Efficiency Characteristics of Panel Buildings in Uránváros

The first panel-type apartment buildings were constructed here starting in 1961 (Pilkhoffer, 2010), meaning that the oldest buildings are now over 60 years old. As these were not only the first panel buildings in Pécs but in the entire country, they still suffer from several “initial design flaws.” In terms of the number of panel-type flats, Uránváros is the second largest after Megyer, with 4,093 flats in 133 stairwells. There are a total of eight different standard building designs in the district. Uránváros is well-designed, with a carefully planned layout: the structure is denser in the north and more open in the south. Its sound urban planning is further evidenced by the presence of a large central square (Szilárd Leó Park) and a 17-storey building that marks the district center. Ten-storey buildings line the outer edges of the district, clearly demarcating its boundaries.

Its transport infrastructure is advantageous; Nedtvich Andor Street (Highway 6) runs through it from west to east, providing quick access to the city center. In addition, several smaller roads help

relieve traffic from the main route (Figure 3). Among these, Veress Endre Street and Építők Road are particularly noteworthy, as they ensure smooth traffic flow and further enhance Úránváros's relative position among city districts. The local bus network further contributes to this favorable position, with direct connections available to nearly all other districts without transfers.

The area is well-served by economic services, including several large stores and its own market, as well as various sports facilities. Its institutional coverage is also outstanding, with several kindergartens, well-regarded primary and secondary schools, and university buildings. Due to the high age of its building stock, its favorable location and features, and the emergence of a more affluent population, all panel-type apartment buildings in the district have undergone external energy modernization. One consequence of this, however, is the disappearance of several unique visual elements, such as the three-dimensional window paintings once visible on the façades of four-storey buildings—today, these can only be seen on a few buildings. Despite the improvements brought by energy modernization, this visual uniformity must be mentioned as a drawback.

Figure 3. Energy efficiency distribution of buildings in Úránváros.



Panel-type apartment buildings that have undergone renovation are marked in green; other residential buildings are shown in grey. Source: edited by the author based on data from PTE Politechnika Ltd.

### Energy Efficiency Characteristics of Panel Buildings in the Szigeti District

Among the neighborhoods included in this study, together with Rókusdomb, this area is considered one of the most prestigious (Békés et al., 2016). The new four- and ten-storey panel buildings were mostly constructed as brownfield investments, replacing older single-storey houses. A noticeable difference between the western and eastern parts of the district is that the former was built according to more detailed development plans, while the latter developed more rapidly and less coordinately,

utilizing vacant plots (Figure 4). The district contains a total of 3,263 flats in 154 stairwells, making it the third largest panel-type apartment district in Pécs. Twelve different panel building types are found here, typically in four- and ten-storey designs. One notable example is the D-10 “TV Panel” designed by Ernő Tillai (Sipos, 2015b).

The district’s greatest economic advantage lies in the presence of nearby university faculties. On its western side, along Szigeti Street, stands the Faculty of General Medicine; in the central area, on Rókus Street, the Faculty of Pharmacy; and on its northwestern edge, along Ifjúság Street, a shared campus of the Faculty of Science and the Faculty of Humanities. The presence of these institutions is significant because they attract a large number of international students with stable financial backgrounds, who are willing to pay higher rents to local property owners (Császár et al., 2021). As a result, the service sector in the area has undergone dynamic development, with numerous cafés, restaurants, and entertainment venues now operating.

The district’s proximity to the city center also plays an important role in its overall development, as the downtown area is easily accessible on foot, offering additional economic and cultural services. Thanks to the university’s proximity and the district’s advantageous position within the city, the Szigeti district also demonstrates the characteristic trend of the western areas: full-scale external energy modernization across all panel buildings.

Figure 4. Energy efficiency distribution of panel-type apartment buildings in the Szigeti district.



Renovated panel buildings are shown in green; other types of residential buildings are shown in grey. Source: edited by the authors based on data from PTE Politechnika Ltd.

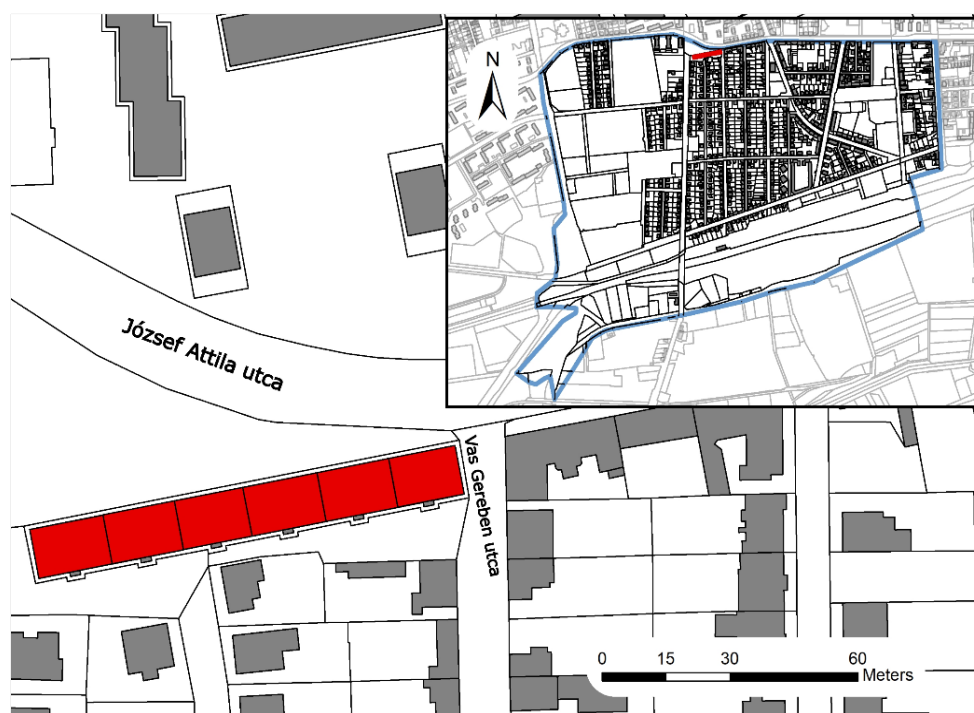
## Energy Efficiency Characteristics of Panel Buildings in Ispitaalja

The study area presents a rather peculiar and unique profile. Although its proximity to the Szigeti district might suggest the advantage of analyzing the two areas together, administrative district boundaries necessitate a separate evaluation in this case. The area is not characterized by large-scale housing estate development. The eastern part consists mainly of detached family houses, the southern boundary is marked by Pécs's railway station, and to the west there is a row of small and medium-sized enterprise (SME) facilities. Only in the northern part—adjacent to the Szigeti district—exists a contiguous block of panel buildings, comprising six stairwells and a total of 90 flats, built according to two different standard plans.

Given the proximity to the neighboring Szigeti district, many of its advantages are felt in Ispitaalja as well. Its favorable location within the city, and its closeness to numerous economic and cultural services, contribute to its popularity—even in the absence of external energy modernization. There is, however, a primary reason why such renovations have not occurred. The panel buildings stand directly alongside József Attila Street (Highway 6) (Figure 5), which causes significant noise pollution throughout the day. As a result, these buildings are typical examples of the “good to rent, but not to live in” category. The flats are primarily rented out short-term, mainly to university students (Erdős et al., 2021). Since tenants bear the extra heating costs, owners have little financial incentive to invest in energy modernization.

This is the only district where no such development—as indicated in the section title—has taken place. A functional advantage of this building block is that it provides noise protection for the family houses located directly behind it.

Figure 5. Energy efficiency distribution of panel-type apartment buildings in Ispitaalja, highlighted in red.



Source: edited by the authors based on data from PTE Politechnika Ltd.

## Energy Efficiency Characteristics of Panel Buildings in the Siklósi District

Among the study areas, this district is the closest to the city center, which is reflected in its design. Located in the eastern part of the district (Figure 6), the central market hall exemplifies its core urban role. Also situated here, on a shared campus, are two additional faculties of the University of Pécs—the Faculty of Law and Political Sciences and the Faculty of Business and Economics—which further enhance the district’s structural and functional importance within the city. North of Nagy Lajos Király Street (Highway 6), the area is dominated by office buildings and shopping centers, including ÁRKÁD, the largest commercial complex in Pécs.

The areas south of this main road are primarily residential, with eleven ten-storey buildings constructed according to three different standard plans, comprising a total of 501 flats. These buildings, like those in the Szigeti district, were developed as brownfield investments (Rozvány, 2003). The designers’ original concept was to create a modern socialist downtown to replace the older inner-city areas. However, the proximity to the main road also results in significant noise pollution, making the flats more suitable for short-term rental.

In line with the broader trends observed in the western districts, all buildings here have undergone external energy modernization, largely due to the district’s central location. Nevertheless, as in Uránváros, these renovations have led to a number of losses in the urban landscape. A case in point is the removal of the distinctive pyrogranite cladding from the iconic “pajama houses,” K-7 type buildings designed by Ernő Tillai (Sipos, 2015b), during the insulation process. The new cladding features a three-color wavy pattern, which, however, lacks the uniqueness of the original design. In addition to this visual uniformity, signs of erosion are already visible on the “new” surface, suggesting that further renovation work will likely be needed in the near future.

Figure 6. Energy efficiency distribution of panel-type apartment buildings in the Siklósi district.



Renovated panel buildings are shown in green, while other residential building types are shown in grey. Source: edited by the authors based on data from PTE Politechnika Ltd.

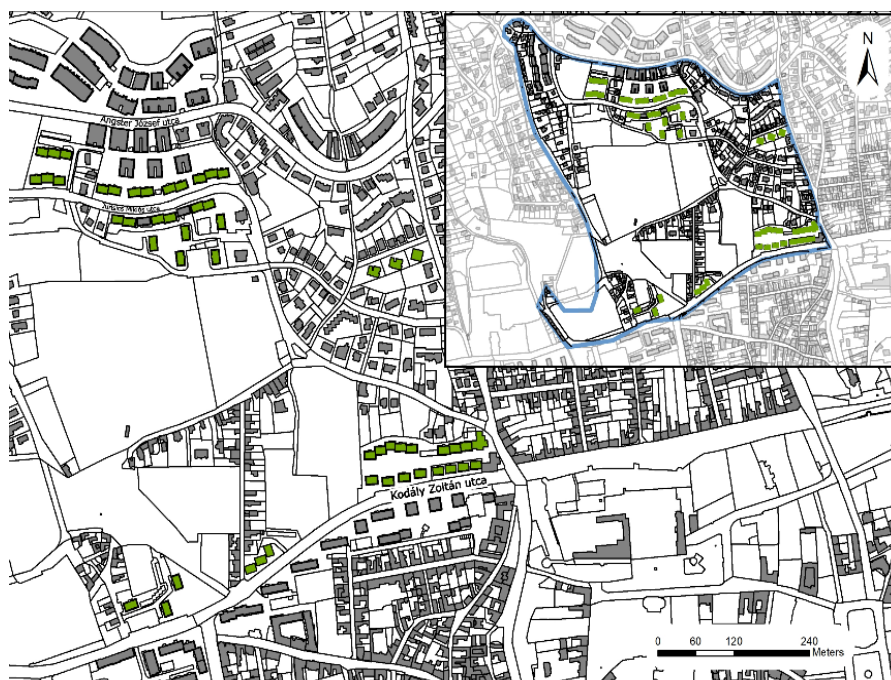
## Energy Efficiency Characteristics of Panel Buildings in the Rókusdomb District

Compared to other western districts, Rókusdomb stands out due to its higher elevation and greater social prestige. This area consists of relatively new buildings and offers several advantages, such as its proximity to the city center and its transitional character between the downtown and surrounding green areas. The district contains 680 flats across 48 stairwells, built according to six different panel design types.

Unlike Ispitaalja and the Siklósi district, Rókusdomb was originally developed as a high-prestige residential area. Thanks to its panoramic views and closeness to nature, it provides a desirable living environment. Among all panel-based districts, Rókusdomb contains the most expensive properties (Ertl et al., 2021). Another favorable feature is its generally good utility infrastructure, despite the fact that this may not apply to the more northern parts of the district. The area also hosts a kindergarten and a primary school, as well as the campus of the Faculty of Engineering and Information Technology of the University of Pécs (Figure 7).

Due to the district's higher elevation, access by car or public transport is more time-consuming, making transportation less convenient. Additionally, the availability of economic services lags behind that of other western areas. However, due to its advantageous location and relatively affluent residents, almost all panel buildings in Rókusdomb have undergone external energy modernization. Instances where parts of buildings were not insulated—such as some sections on Jurisics Miklós Street—are exceptional and likely the result of a lack of financial contribution from individual owners.

Figure 7. Energy efficiency distribution of panel buildings on Rókusdomb.



Renovated panel buildings are shown in green, while other types of residential buildings are shown in grey.

Source: edited by the authors based on data from PTE Politechnika Ltd.

## Factors Influencing Differences between the Western Areas

This section evaluates three key factors that fundamentally influence the spatial differences observed within the western areas. The first factor is the role of territorial prestige. While Rókusdomb holds a prominent status due to its excellent geographic conditions—reflected in the high rate of energy renovation of panel buildings—the areas tend to show decreasing prestige as one moves further south. A clear example is Ispitaalja, which exhibits the lowest renovation rate not only among the western districts but across all study areas.

The second factor is the role of economic services in shaping spatial differences. The more economic services are available in a district, the more attractive it becomes to wealthier homebuyers. Among the western areas, Uránváros, Szigeti, and Siklósi stand out with a wide range of high-quality economic services. Rókusdomb represents a unique case: despite its high-income residents and prestigious Mecsek Hills location, the district provides fewer economic services compared to the larger western neighborhoods. In Ispitaalja, the low level of economic service provision contributes to its moderate prestige and weaker appeal on the residential property market.

The third factor differentiating these areas is the quality of human services. In this respect, the Szigeti district is the most prominent due to its numerous educational institutions. Uránváros also occupies a favorable position, while the other three western districts fall significantly behind in this regard.

## Factors Influencing the Energy Efficiency of Southern Districts

In the southern part of Pécs, three districts contain panel-type apartment buildings: Megyer, Málom, and Árpádváros. These areas differ significantly in terms of their spatial characteristics, structure, and functions, all of which influence their overall energy efficiency. Altogether, these districts comprise 952 stairwells and 11,742 dwellings. Of these, 64 stairwells are still awaiting external refurbishment, resulting in a modernization rate of 93%, which is the second highest among the areas analyzed.

### Energy Efficiency Characteristics of Panel Buildings in the Megyer District

Megyer is not only the oldest but also by far the largest district in terms of both area and number of dwellings—not just in southern Pécs, but among all districts analyzed. It contains the highest number of panel-type apartment buildings, with 718 stairwells (Figure 8) and 24 different panel designs, encompassing a total of 14,435 dwellings. Construction of panel buildings began in 1972 and continued until the political transition in the early 1990s. Only one coherent building complex falls outside this timeframe: the 171-unit development on Littke József Street (Sipos, 2015b), which was completed in the 1990s.

The district clearly reflects thorough planning, with the original development plans having been fully realized. Due to its size, it is not surprising that Megyer also contains the largest number of panel buildings without any external energy efficiency upgrades (64 stairwells out of 718). Nevertheless, 91% of the buildings have undergone at least some form of energy-focused modernization, which

represents a relatively high rate compared to other districts. Similar to Rókusdomb, some exceptional cases exist—for example, a partially insulated apartment building on Maléter Pál Street.

As a large district, Megyer is well-equipped with services. It hosts several large supermarkets, its own market hall, and a wide range of other economic services. Thanks to the completed urban development plans, it also stands out in terms of institutional infrastructure—especially compared to Árpádváros—with numerous kindergartens, schools, and cultural facilities. Due to this comprehensive service provision and the infrastructural deficiencies of neighboring districts (particularly Árpádváros), Megyer serves not only its own residents but also those in adjacent areas.

Among the three southern districts, Megyer lies closest to the city center, making commuting relatively time-efficient for its residents. It also benefits from the most developed public transportation network in southern Pécs, with multiple bus lines connecting it not only to the city center but also to the eastern and western districts. The district's main transportation axis is Maléter Pál Street, which bisects the area in an east–west direction. Internally, Megyer can be further subdivided into four smaller units: the northern part centered on Diána Square, the central part around Apáczai Csere János Square, the eastern section near Árpád Fejedelem Secondary and Primary School, and the western unit around Testvérvárosok Square.

Figure 8. Energy efficiency distribution of panel buildings in Megyer.



Non-renovated panel buildings are marked in red, while renovated ones are shown in green. Source: edited by the authors based on data from PTE Politechnika Ltd.

### Energy Efficiency Characteristics of Panel Buildings in Málom

The southern district of Málom is unique in both its location and building stock. Two key features become evident when examining the area's layout (Figure 9). First, a residential zone of detached

houses stretches along a central main road, dividing the district. Second, due to this separation, the panel housing areas are split into two distinct parts. The northwestern section, situated along Malomvölgyi Street, is a flat area characterized by four-story buildings, each containing 15 apartments per stairwell, resulting in a highly homogeneous urban landscape.

In contrast, the eastern section along Illés Gyula Street presents a much more diverse urban structure, located on a plateau and featuring uniquely designed panel buildings. This includes not only four-story buildings but also ten-story *kc-524* type buildings (Sipos, 2015b), marked by alternating floor levels that break up architectural monotony. Furthermore, the area contains completely unique buildings such as the *AP-type* blocks (Sipos, 2015b), which hardly resemble conventional panel structures, and distinctive three-story buildings with gable roofs resembling airplane hangars.

Málom's diversity is reflected in the 24 different panel building types found in the district, comprising 196 stairwells and 2,737 apartments, making it the fourth largest district in terms of panel housing stock. One of its advantages, unlike Árpádváros, is its quiet, peaceful environment, with several shops and schools, giving it a favorable service position.

Its biggest disadvantage, however, is its distance from the city center, which makes access time-consuming—even on weekends with lighter traffic—and particularly problematic during weekday morning and afternoon rush hours due to frequent traffic congestion. These aspects are not negligible in the context of this study, as they can indirectly affect the value of real estate, the income status of residents, and ultimately the feasibility of energy-efficiency renovations. Despite being one of the younger districts—with most panel buildings constructed in the 1980s, apart from a few exceptions—all buildings in Málom have undergone external refurbishment.

Figure 9. Energy efficiency distribution of panel buildings in Málom.



The west–east division is clearly visible. Renovated panel buildings are marked in green, while other types of residential buildings are shown in grey. Source: edited by the authors based on data from PTE Politechnika Ltd.

### Energy Efficiency Characteristics of the Panel Buildings in Árpádváros

The third southern district examined is Árpádváros, which is also the youngest among them. It was originally planned to be much larger, but this was thwarted by the political transition around 1990. All of the apartment buildings still standing today were constructed in 1988, and all are panel-type buildings. A total of 38 stairwells were built, each in a four-story design, with 15 apartments per stairwell, providing 570 apartments in total. Only four different standardized building plans were used for these buildings, and even among them, the differences are mainly limited to the arrangement of the rooms. As a result, the district has a fairly homogeneous appearance, and even after renovations, the buildings differ only in their color. The fact that this is a “half-finished” district is clearly illustrated by the absence of other infrastructural elements around the residential buildings, such as kindergartens, schools, shops, or sports facilities (Sipos, 2015b). Due to this lack, residents must leave the district for most services, typically using those available in the nearby Megyer area. Since Árpádváros is located on the outskirts of the city, transportation has been problematic from the beginning. Buses run infrequently, so most residents rely on private vehicles. The district is also subject to considerable noise pollution; the traffic on Kanizsai Dorottya Street (Route 57), which runs along the northern edge (Figure 10), can be heard in many of the apartments during morning and afternoon rush hours. Despite its disadvantages and the relative youth of the buildings, all panel-type apartment buildings in the district have undergone external energy efficiency renovations. These improvements have led to reduced utility costs for residents, decreased emissions from the buildings, and an increase in property values.

Figure 10. Energy efficiency distribution of panel buildings in Árpádváros.



The proximity of the main road and the buildings' exposure to noise is clearly visible. Source: edited by the author based on data from PTE Politechnika Ltd.

### **Factors Influencing Differences in the Southern Areas**

In the southern areas, the primary factors from the perspective of this analysis are residential functions and the economic and human services that support them. There are two key factors across the three southern districts that determine the differences between them. The first factor is the distance from the city center. Two clear examples of this are Málom and Árpádváros. These districts feature lower-priced properties, as residents essentially “pay” for the cheaper housing with longer commuting times.

In contrast, the Megyer district is in a much more favorable position geographically, which is reflected in higher property prices. However, due to its large size, Megyer also has the highest absolute number of panel buildings that have not yet been renovated. The second factor is the level and quality of economic and human service infrastructure. In this regard, Megyer stands out, while Árpádváros lags behind due to previously initiated but stalled development projects. As a result, the neighboring districts are left to provide the necessary services for Árpádváros residents.

### **Factors Influencing the Energy Efficiency Profile of the Eastern Areas**

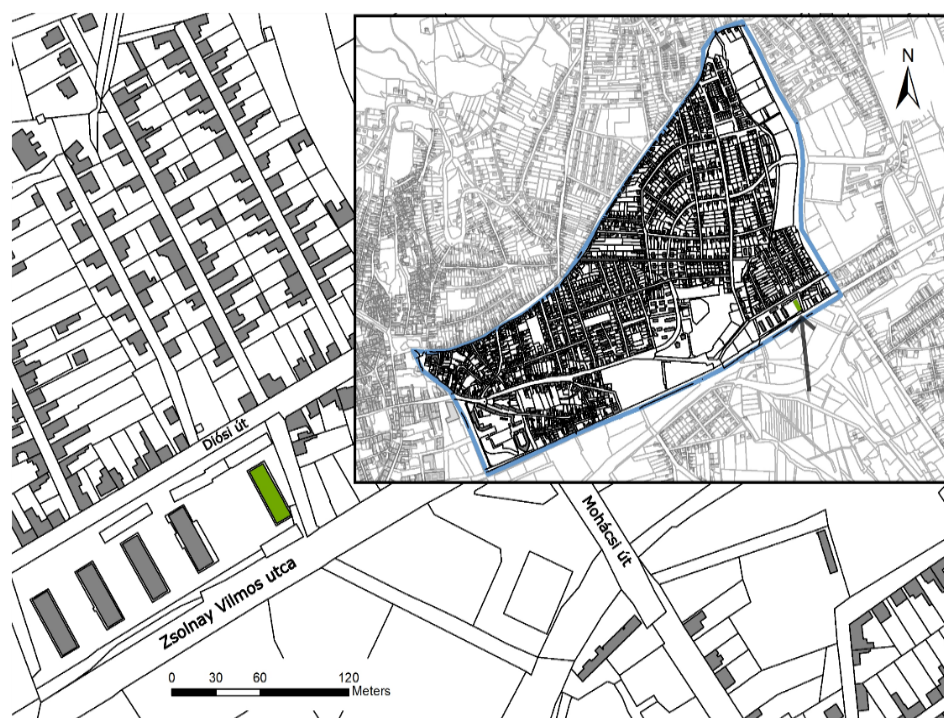
The two eastern districts contain the fewest panel-type apartment buildings—only seven stairwells based on three standard designs, comprising a total of 189 apartments. This area exhibited the lowest level of energy modernization, with a completion rate of 86%.

### **Energy Efficiency Characteristics of the Panel Buildings in the Budai Suburbs**

This area contains the smallest number of panel-type apartment buildings and is primarily characterized by single-family housing. Few apartment buildings were constructed here, most of which were built from brick (Méhes, 2022), while the only panel buildings are two four-story stairwells located at the southern edge of the district, housing a total of 30 apartments. The presence of panel buildings in this area can be seen more as a “colorful anomaly” rather than a defining feature of the district’s housing stock. All apartment buildings in the area are connected to the nearby thermal power plant.

The location of these apartments (Figure 11) can be seen as both advantageous and disadvantageous: they are situated directly along Zsolnay Vilmos Street (Route 6). On the positive side, several shops and a major bus transportation hub—Mohácsi út bus stop—are nearby, providing easy, direct access to many city districts without transfers. On the negative side, the constant noise pollution from the main road is a significant drawback. Despite these disadvantages, the two stairwells have undergone complete external energy modernization, thanks in part to the area’s aforementioned benefits.

Figure 11. In the Budai Suburb, external energy renovations have been carried out on two stairwells (indicated in green).



Source: edited by the author based on data from PTE Politechnika Ltd.

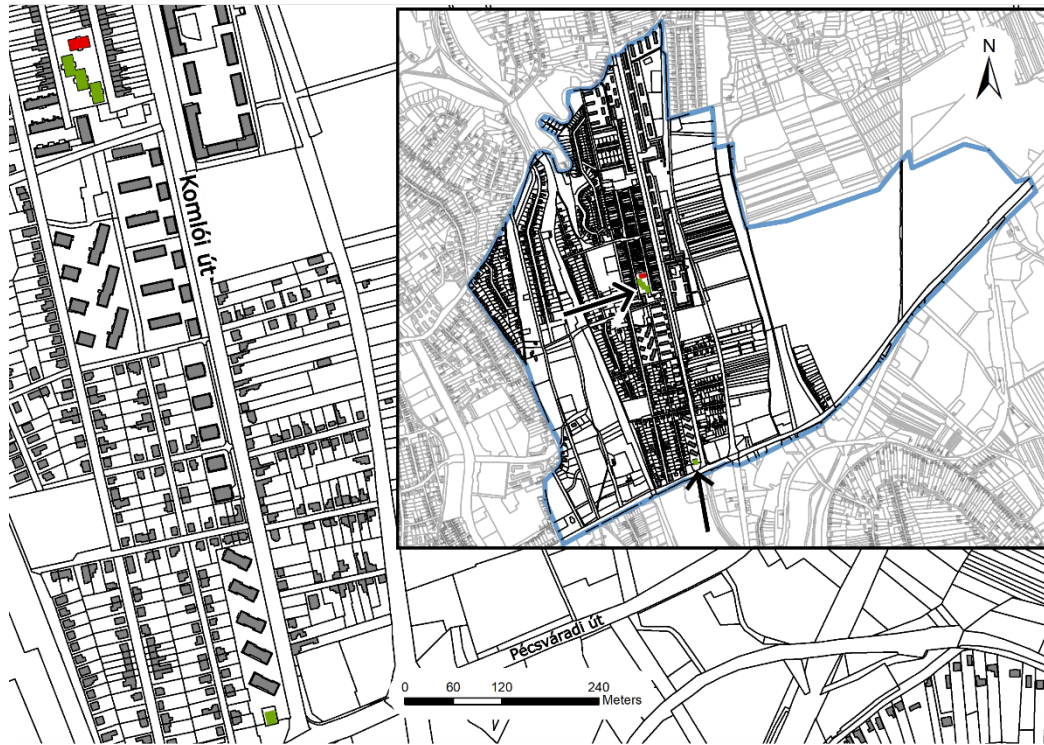
### Energy Efficiency Characteristics of the Panel Buildings in the Meszes District

Similar to the Budai Suburbs, panel-type apartment buildings are not characteristic of this district either; they are concentrated in only two small areas (Figure 12). The concentration of socially disadvantaged residents and the district's negative societal perception have suppressed demand on the real estate market (Egedy, 2001). The district's situation is further worsened by its distance from the city center and the relative lack of economic and human services. Based on two standard designs, five stairwells were constructed here, providing a total of 159 apartments. A distinctive feature of the panel buildings in this area is the irregular arrangement of balconies on the 8–10-story buildings located on Bocskai Street. Despite all these limiting factors, the renovation rate in the area has reached 80%. However, this figure still places the district among the lowest in terms of modernization, ranking ninth overall—just ahead of Ispitaalja.

### Factors Influencing Differences in the Eastern Areas

The eastern area has the smallest stock of panel-type apartment buildings, as the apartment buildings in the districts concerned were previously built from brick. Additionally, these eastern districts show the lowest rate of external energy modernization, influenced by two main factors. The first factor is their location in lower-prestige, almost peripheral areas within the city—this is especially characteristic of Meszes, while the Budai Suburbs benefit from a more favorable position in this regard. The second factor is the greater variety of housing options available in these districts. Many residents prefer solutions that better suit their individual needs, so panel buildings tend to play a less prominent role.

Figure 12. Energy renovation status of panel buildings in Meszes. Green indicates renovated buildings, red shows those not yet renovated, and grey represents other types of residential buildings.



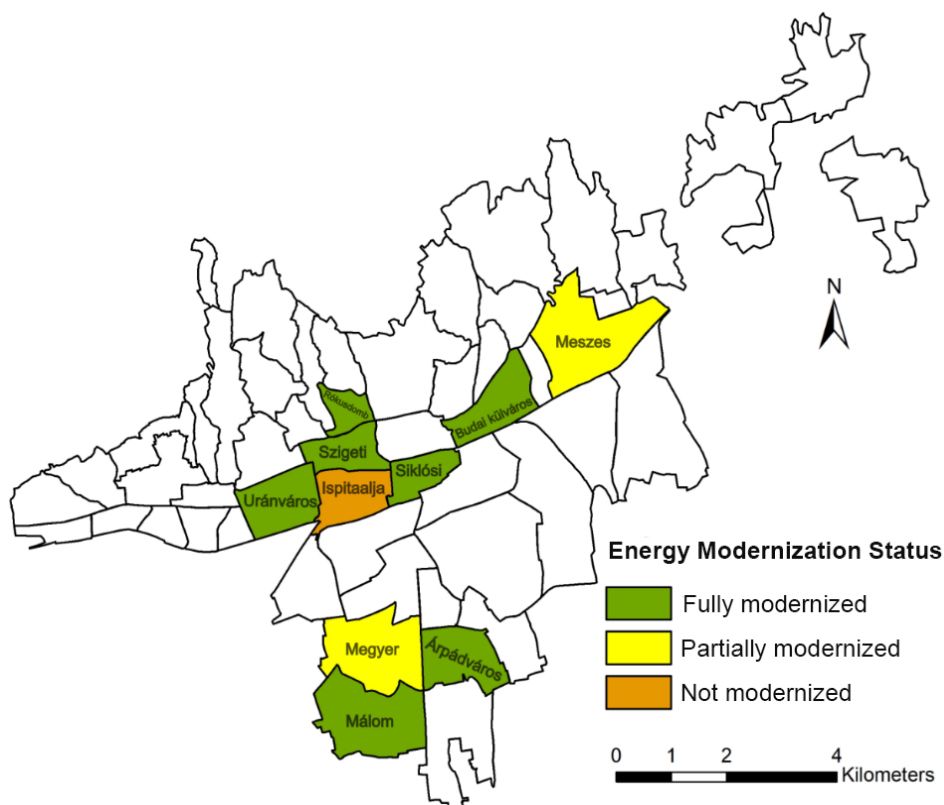
Source: edited by the author based on data from PTE Politechnika Ltd.

## CONCLUSIONS

In summary, the differences between the examined urban districts are primarily shaped by socio-economic conditions, their roles within the urban structure, and the varying presence of factors that incentivize renovations. The findings of this study not only reveal the spatial distribution of energy-efficient upgrades in prefabricated housing in Pécs, but also highlight the economic and social determinants that influence these developments. The disparities among the three studied areas cannot be explained solely by geographic location, but are rather the result of more complex territorial characteristics.

The high renovation rate in the western districts is linked to the presence of public institutions, university buildings, and services, as well as proximity to the city center and a more affluent population. In contrast, the lower ratio in the southern districts can be attributed to greater distance from the center, a large housing stock, the relatively recent construction of some buildings, and more limited access to services. In the eastern districts, the limited renewal is not only due to the smaller number of panel buildings but also to unfavorable social conditions (Figure 13).

Figure 13. Ranking of the examined districts based on the extent of external energy renovations of residential buildings.



Source: edited by the author.

Although the study confirmed initial expectations—that western districts show the highest, southern districts a moderate, and eastern districts the lowest renovation levels—data from three specific neighborhoods add nuance to this general pattern. All three areas contain at least one panel building that has not yet undergone external renovation. In the west, Ispitaalja is the only exception, likely influenced by the proximity of a major roadway. In the south, Megyer has unrenovated buildings, which can be linked to its large housing stock and the cost-efficiency challenges this presents. Statistically, these buildings are more likely to remain unrenovated, even if their proportion is similar to other districts. In the east, Meszes is the sole area affected, where distance from the city center and negative social perception likely play a role. In the remaining seven districts, all panel buildings have undergone external energy renovations, largely facilitated by building age and previous subsidy programs.

It can be concluded that over the past two decades, the majority of prefabricated housing in Pécs has undergone external energy-efficient upgrades. These primarily focused on facade insulation, though window replacements were also common—not only in privately owned units but also in communal areas such as stairwells. Thus, the most cost-effective renovations that offer substantial savings have largely been completed. For the remaining buildings, future upgrades are likely, depending on residents' willingness, financial capacity, and available funding sources.

Further reductions in harmful emissions are now more likely to result from internal system upgrades rather than exterior renovations. However, these interventions are significantly more expensive and often yield smaller energy savings, making them less common. Such upgrades are typically only undertaken in cases of urgent need—for instance, when outdated and undersized electrical wiring in stairwells must be replaced. It should also be noted that earlier renovations often used thinner insulation materials; in these cases, additional insulation layers could generate further savings.

By 2025, passive energy interventions alone are no longer sufficient. Replacing radiators or windows in isolation does not provide the necessary savings. Although household appliances have become more energy-efficient in recent decades, their number has increased substantially, leading to higher overall electricity consumption. Thus, reducing energy use now largely depends on changes in residents' habits. Key examples include the efficient use of radiators—such as lowering indoor temperatures instead of opening windows for cooling—and avoiding unnecessary use of electronic devices like televisions.

While external renovations contribute to environmental goals, they also raise concerns from an urban design perspective, particularly due to the homogenization of building appearances. Renovation projects often removed distinctive architectural elements meant to preserve the unique character of streetscapes, which were typically not rebuilt due to cost. For example, the pyrogranite cladding of the former K-7 “pajama buildings” on Szalay András Street has disappeared (Sipos, 2015b). Nonetheless, some characteristic features—such as the unique balconies of ten-story buildings with “TV balconies”—have retained their form-shaping role to this day.

The findings of this study reinforce previous academic literature from multiple angles. Districts that enjoy structural or social advantages tend to undergo more renovations, while areas lagging behind in this regard typically face multidimensional socio-economic challenges—not merely a lack of upgrades. This further confirms the correlation between a property's location and its market value.

Based on these results, the majority of prefabricated housing has already undergone external energy-efficient renovations, meaning that future municipal support should be targeted primarily at the remaining unrenovated buildings. To achieve this, direct engagement with building managers and informing homeowners about potential savings and financial benefits would be advisable.

## REFERENCES

- Békés, G., Horváth, Á., & Sápi, Z. (2016). Lakóingatlanárak és települési különbségek [Housing Prices and Settlement-Level Differences]. *Közgazdasági Szemle*, 63(12), 1289–1323. <http://dx.doi.org/10.18414/KSZ.2016.12.1289>
- Bene, M., Ertl, A., & Horváth, Á. (2023). A magyarországi lakóingatlan-állomány energia igényének becslése [Estimating the Energy Demand of the Hungarian Housing Stock]. *Hitelintézeti Szemle*, 22(3), 123–151. <https://doi.org/10.25201/HSZ.22.3.123>
- Boßmann, T., Eichhammer, W., & Elsland R. (2012). *Concrete Paths of the European Union to the 2°C Scenario: Achieving the Climate Protection Targets of the EU by 2050 through Structural Change*,

- Energy Savings and Energy Efficiency Technologies*. Fraunhofer ISI. <https://publica.fraunhofer.de/handle/publica/296067>
- Cevik, S., Turna, F., & Erdogdu, M. (2015). Energy Efficiency and Policy Mix in the European Countries. *European Journal of Sustainable Development Research*, 1(1), 53–62.
- Copenhagen Economics. (2012). *Multiple benefits of investing in energy efficient renovation of buildings*. <https://renovate-europe.eu/wp-content/uploads/2015/10/Multiple-benefits-of-EE-renovations-in-buildings-Full-report-and-appendix.pdf>
- Császár, Zs., Teperics, K., & Köves, K. (2021). Nemzetközi hallgatói mobilitás a magyar felsőoktatásban [International student mobility in the Hungarian higher education]. *Modern Geográfia*, 16(2), 67–87. <https://doi.org/10.15170/MG.2021.16.02.04>
- Csoknyai, T. (2022). *A magyarországi lakóépület-állomány energetikai modellezése, a korszerűsítés lehetőségei* [Energy Modeling of the Hungarian Housing Stock and Retrofit Opportunities, Summary of the Doctoral Dissertation, Budapest University of Technology and Economics]. [https://real-d.mtak.hu/1472/1/dc\\_2011\\_22\\_tezisek.pdf](https://real-d.mtak.hu/1472/1/dc_2011_22_tezisek.pdf)
- Egedy, T. (2000). A lakótelepek helyzete Németország és Magyarország lakáspiacán [The Situation of Housing Estates in the Housing Markets of Germany and Hungary]. *Tér és Társadalom*, 14(2–3), 147–157. <https://doi.org/10.17649/TET.14.2-3.582>
- Egedy, T. (2001). A társadalmi kirekesztés és a lakótelepek [Social Exclusion and Housing Estates]. *Tér és Társadalom*, 15(1), 91–110. <https://doi.org/10.17649/TET.15.1.789>
- Egedy, T. (2017). Városfejlesztési paradigmák az új évezredben – a kreatív város és az okos város [Urban Development Paradigms in the New Millennium – The Creative City and the Smart City]. *Földrajzi Közlemények*, 141(3), 254–262. [http://www.foldrajzitorsasag.hu/downloads/foldrajzi\\_kozlemenyek\\_2017\\_141\\_evf\\_3\\_pp\\_254.pdf](http://www.foldrajzitorsasag.hu/downloads/foldrajzi_kozlemenyek_2017_141_evf_3_pp_254.pdf)
- Erdős, K., Szabó, N., Veréb, M., & Varga, A. (2021). A Pécsi Tudományegyetem térségi gazdasági hatásainak vizsgálata a GMR-Magyarország modellel [The Regional Economic Impacts of the University of Pécs Analyzed Using the GMR-Hungary Model]. *Területi Statisztika*, 61(1), 48–78. <https://doi.org/10.15196/TS610103>
- Ertl, A., Horváth, Á., Mónus, G., Sáfian, F., & Székely, J. (2021). Az energetikai jellemzők és az ingatlanárak kapcsolata [The Relationship Between Energy Characteristics and Housing Prices]. *Statisztikai Szemle*, 99(10), 923–953. <https://doi.org/10.20311/stat2021.10.hu0923>
- European Commission. (2011). *Az alacsony szén-dioxid-kibocsátású, versenyképes gazdaság 2050-ig történő megvalósításának ütemterve* [Roadmap for a Competitive, Low-Carbon Economy by 2050]. <https://eur-lex.europa.eu/legal-content/HU/TXT/PDF/?uri=CELEX%3A52011DC0112>
- Farkas, J., Vajda, Á., & Vita, L. (1997). A budapesti lakáspiac, 1990–1995 [The Budapest Housing Market, 1990–1995]. *Statisztikai Szemle*, 75(3), 220–239. [https://www.ksh.hu/statszemle\\_archive/1997/1997\\_03/1997\\_03\\_220.pdf](https://www.ksh.hu/statszemle_archive/1997/1997_03/1997_03_220.pdf)
- Gyergyák, J., Lenkovics, L., & Cakó, B. (2022). *Részletes koncepcióterv a lakóépületek energiahatékonyságának vizsgálatára és megvalósíthatósági tanulmányok elkészítésére* [Detailed

- Concept Plan for Assessing the Energy Efficiency of Residential Buildings and Preparing Feasibility Studies]. PTE Politechnika Kft.
- Hajnal, G., Palicz, A., & Winkler, S. (2022). Az energetikai minősítés hatása a kínálati lakás-árakra és hitelkamatokra [The Impact of Energy Ratings on Asking Prices and Mortgage Rates]. *Hitelin-tézeti Szemle*, 21(4), 29–56. <https://doi.org/10.25201/HSZ.21.4.29>
- Heil, P. (1998). A Phare-program Magyarországon [The Phare Programme in Hungary: Large-Panel Residential Buildings and Near-Zero Energy Regulation]. *Marketing & Menedzsment*, 32(6), 8–13.
- Horkai, A., Sugár, V., & Talamon, A. (2018). Nagypaneles technológiával épült lakóépületek és a közel nulla energetikai szabályozás [Large-Panel Residential Buildings and the Nearly Zero-Energy Regulation]. *Tavaszi Szél*, 3(1), 119–136.
- Horváth, Á., Kiss, H., & Mclean, A. (2013). Hat-e a lakóingatlanok árára az energiahatékonyság? [Does Energy Efficiency Affect Residential Property Prices?]. *Közgazdasági Szemle*, 60(9), 1025–1042. <https://www.kszemle.hu/tartalom/cikk.php?id=1413>
- Hungarian Central Statistical Office. (2016). *Miben élünk? A 2015. évi lakásfelmérés főbb eredményei* [What Do We Live In? Main Results of the 2015 Housing Survey]. [https://www.ksh.hu/docs/hun/xftp/idoszaki/pdf/miben\\_elunk15\\_2.pdf](https://www.ksh.hu/docs/hun/xftp/idoszaki/pdf/miben_elunk15_2.pdf)
- Hungarian Energy Efficiency Institute. (2024). *A Magyar Energhatékonyági Intézet javaslata a lakossági energiahatékonysági beruházások megvalósításához kiírt Otthonfelújítási Hitelprogramhoz* [Proposal by the Hungarian Energy Efficiency Institute for the Home Renovation Loan Programme for Residential Energy Efficiency Investments]. <https://mehi.hu/szakmai-velemenyek/a-magyar-energhatekonysagi-intezet-javaslat/>
- Koltai, L., Szabó, T., Tóth, K., & Varró, A. (2021). *A legrosszabb energiahatékonyságú hazai lakóépületek felújításának gazdasági és társadalmi hatásai* [Economic and Social Impacts of Renovating the Least Energy-Efficient Residential Buildings in Hungary]. Hétfa Kutatóintézet. [https://hetfa.hu/wp-content/uploads/2022/09/HE%CC%81TFA\\_Tanulma%CC%81ny\\_Habitat.pdf](https://hetfa.hu/wp-content/uploads/2022/09/HE%CC%81TFA_Tanulma%CC%81ny_Habitat.pdf)
- Mándoki, R. (2024). *Típus-lakóépületek Magyarországon* [Standard-Type Residential Buildings in Hungary]. *Építés – Építészettudomány*, 52(1–2), 147–169.
- Méhes, K. (2022). *A Zsolnay városrész dzsentrifikációja* [The Gentrification of the Zsolnay District, BSc Thesis, University of Pécs].
- Municipality of Pécs. (2023). *Fenntartható Városfejlesztési Stratégia 2021–2027* [Sustainable Urban Development Strategy 2021–2027]. [https://pecs.hu/app/uploads/2024/04/FVS\\_Pecs\\_240206.pdf](https://pecs.hu/app/uploads/2024/04/FVS_Pecs_240206.pdf)
- Municipality of Pécs. (2024). *Pályázati felhívás-útmutatója. „Lakossági energiamegtakarítás és épületfelújítási, állagmegóvási munkák támogatása”* [Call for Proposals and Guidelines: “Support for Residential Energy Savings and Building Renovation and Maintenance Works”].
- Perényi, L. (2008). *A „pécsi” panel felújításának építészeti eszközei* [Architectural Tools for the Renovation of “Pécs-Type” Panel Buildings, Doctoral Dissertation, University of Pécs]. <https://pea.lib.pte.hu/server/api/core/bitstreams/613acad5-8ce6-445c-a5ad-4d985af4c946/content>

- Pilkhoffer, M. (2010). Egy pécsi lakótelep. Uránváros kiépülése [A Housing Estate in Pécs: The Development of Uránváros]. In Fischer F., Hegedüs K., Rab V. (Eds.), *A történelem szálai. Tanulmánykötet Vonyó József 65. születésnapjára* (pp. 347–358). Publikon Kiadó.
- Rozvány, Gy. (2003). A Baranya Megyei Építőipari Vállalat története [The History of the Baranya County Construction Company]. *Pécsi Szemle*, 6(3), 80–89.
- Sipos, B. (2015a). *Pécs–Kertváros. Egy új városrész kiépülése 1972-től napjainkig* [Pécs–Kertváros: The Development of a New Urban District from 1972 to the Present]. Pécsi Tudományegyetem Bölcsészettudományi Kar Tudományos Diákköri Tanács. [https://btk.pte.hu/sites/btk.pte.hu/files/Kari\\_tud\\_diakkori\\_tanacs/specimina\\_operum4\\_ebook\\_9789636427474.pdf](https://btk.pte.hu/sites/btk.pte.hu/files/Kari_tud_diakkori_tanacs/specimina_operum4_ebook_9789636427474.pdf)
- Sipos, B. (2015b). *Pécs, Megyeri-Kertváros építéstörténete 1972–1977* [Construction History of Pécs, Megyeri-Kertváros (1972–1977)]. Szegedi Tudományegyetem Móra Ferenc Szakkollégium.
- Szabó, B., & Bene, M. (2019). Budapesti lakótelepek a panelprogram előtt és után [Budapest Housing Estates Before and After the Panel Programme]. *Területi Statisztika*, 59(5), 526–554. [https://www.ksh.hu/statszemle\\_archive/terstat/2019/2019\\_05/ts590504.pdf](https://www.ksh.hu/statszemle_archive/terstat/2019/2019_05/ts590504.pdf)

*Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licen-  
ce-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

*This open access article may be used under the international license terms of Creative Commons  
Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>





Sixaba, Zinzi<sup>1</sup> – Tyobeka, Thabelo<sup>2</sup>

# Primitive Pleasures: Historical Pathways in Coastal Tourism Development in the Eastern Cape, South Africa

## ABSTRACT

Research on South African coastal tourism has been limited, and the Eastern Cape coast, in particular, remains understudied. This study aims to enhance understanding of coastal tourism in the Eastern Cape by employing a historical approach and drawing on archival materials and existing literature. It examines tourism growth during the colonial and apartheid periods, focusing on the evolution of coastal tourism in Port Alfred and Kenton-on-Sea. The findings reveal that both towns developed as recreational and seaside holiday destinations primarily for the white settler community, with attractions centered around the coastal environment, especially beaches and rivers that supported various activities. The study demonstrates how Port Alfred and Kenton exemplify English-style seaside resort towns. The analysis sheds light on the relationship between colonial tourism encounters and apartheid, highlighting the racial segregation of leisure spaces.

*Keywords: coastal tourism, Kenton-on-Sea, Port Alfred, tourism histories, colonial, apartheid*

---

<sup>1</sup> Postdoctoral fellow, Tourism Department, Nelson Mandela University, Gqeberha, South Africa, Email: [zinzi.sixaba@mandela.ac.za](mailto:zinzi.sixaba@mandela.ac.za)

<sup>2</sup> Associate Lecturer, Events and Tourism Management, Cape Peninsula University of Technology, Cape Town, South Africa, Email: [tyobekat@cput.ac.za](mailto:tyobekat@cput.ac.za)

## INTRODUCTION

Coastal and Marine Tourism (CMT) is among the fastest-growing sectors in the tourism industry and is recognized as an economic driver that supports local communities and regional income (Suryani et al., 2022). CMT has become a significant force in global tourism, offering both economic benefits and recreational opportunities. It encompasses activities such as beachgoing, water sports, and encounters with marine wildlife, making CMT a key component of the blue economy with notable effects on economic growth and job creation (Rogerson & Rogerson, 2019b; UNWTO, 2020). The global rise of CMT has two main impacts: boosting local economies and raising environmental concerns, as damage to marine habitats threatens the sustainability of tourism.

It is stated that “the concept of coastal tourism embraces the full range of tourism, leisure, and recreationally oriented activities in the coastal zone and the offshore coastal waters. These include coastal tourism development (accommodation, restaurants, food industry, and second homes) and the infrastructure supporting coastal developments (retail businesses, marinas, and activity suppliers)” (Hall, 2001, p. 602). Research also shows that CMT plays a crucial role in driving economic growth, creating jobs, and improving community well-being connected to these destinations (Dimitrovski et al., 2021). According to Leposa (2020), CMT is estimated to contribute 26% to the global marine economy, providing approximately 8.6 million jobs. The cruise tourism sector alone supports roughly 1.2 million jobs and adds \$150 billion annually to the global economy (Patterson, 2021).

This study examines the evolution of coastal tourism in Port Alfred and Kenton. It adopts a historical approach and, methodologically, draws on archival materials and existing literature as sources. Specifically, the study aims to demonstrate how colonialism and apartheid affected the development of tourism, emphasizing themes of segregation and the marginalization of indigenous people in these coastal towns. These settlements were selected for examination because of their historical importance as popular holiday destinations for white settlers within the Albany district, which formed part of the Cape Colony. The Albany district was an economic hub due to its developed agricultural sector and its central position between the two major cities, Port Elizabeth (now known as Gqeberha) and East London. Overall, the study seeks to fill a knowledge gap in the historical development of small-town tourism in coastal areas, particularly in the context of South Africa’s history of colonization and apartheid.

## LITERATURE REVIEW

### International Research on Coastal Tourism

Coastal tourism has long been a central focus of international tourism research, making it one of the oldest topics studied by geographers. It remains a significant aspect of tourism geography (Meyer-Arendt, 2018). Over time, various themes within coastal tourism research have emerged, including the organization of seaside resorts, changes in coastal landscapes, and studies of the environmental impacts of coastal tourism (Meyer-Arendt, 2018). In the Global North, research on coastal development

has primarily focused on Europe, particularly the United Kingdom (Rogerson, 2019b). Studies in this region have explored climate adaptation, sustainable management of coastal tourism, and policy implementation to reduce environmental impacts. For example, the REST-COAST project illustrates how nature-based coastline restoration supports climate change adaptation in European regions, including the Baltic, North, Atlantic, and Mediterranean seas (European Climate Adaptation Platform, 2024). Innovation, new technologies, and strong institutional support often drive coastal tourism growth in the Global North. Countries in this region have well-developed strategies and sustainable tourism policies, resulting in high numbers of international tourists.

Most countries in the Global South are turning to coastal tourism to boost their economies (Meyer-Arendt, 2018). However, coastal tourism in these regions faces challenges, including inadequate infrastructure, financial constraints, and environmental sustainability issues. CMT research emphasizes the importance of sustainable tourism management practices in these areas, particularly regarding natural sites and cultural heritage (Quader et al., 2024). Rogerson (2020) provides an overview of the policy challenges faced by the Indian Ocean Rim Association (IORA), which comprises 21 countries, most of which are in the Global South. IORA members recognize CMT as a vital sector and have developed the IORA Action Plan (2022–2027). Rogerson (2020) notes that although CMT is a valuable resource and offers growth opportunities for tourism, it faces numerous obstacles that threaten its sustainable development. These include inadequate planning for coastal area development and management, governance issues, limited involvement of communities and marginalized groups in policymaking, restricted innovation, access to finance, enterprise development, insufficient data for monitoring, and risks posed by climate change. Globally, the tension between economic gains and environmental challenges underscores the urgent need for sustainable approaches to CMT.

## **Coastal Tourism in South Africa**

In South Africa, only a few studies have been conducted on coastal tourism over the past 20 years (Rogerson & Rogerson, 2020). Current research on South African coastal regions addresses various issues, with contributions emerging from multiple disciplinary perspectives (Rogerson & Rogerson, 2019a). From a policy standpoint, frameworks such as the Integrated Coastal Management Act (ICMA) demonstrate South Africa's commitment to sustainable coastal tourism development. Enacted under the National Environmental Management Act (NEMA) of 2008, the ICMA aims to reduce environmental impacts and ensure the sustainable management of coastal resources (Department of Environmental Affairs, 2014). The legislation regulates coastal development and activities to prevent habitat destruction, pollution, and overuse of marine resources, balancing tourism growth with environmental preservation.

Many ecological challenges threaten South Africa's coastal tourism, posing risks to its long-term sustainability (Mgadle et al., 2022). Additional policy initiatives include Operation Phakisa, which focuses on marine and coastal tourism. It is a strategic framework designed to unlock economic potential by improving infrastructure, encouraging sustainable tourism practices, and involving local

communities (DEA, 2014). Operation Phakisa has influenced South Africa's tourism policy, particularly in coastal areas. Launched in 2014, this government program aims to capitalize on opportunities in the ocean economy by promoting sustainable development along the coast, including tourism, marine resources, and infrastructure (Department of Tourism, 2015). The initiative emphasizes the importance of comprehensive coastal zone management, with goals such as job creation, economic growth, and conservation in South Africa's coastal and marine environments. As stated by the Department of Environmental Affairs (2014), a primary objective is to promote the sustainable and responsible use of marine resources, particularly in tourism and fisheries. Furthermore, Operation Phakisa encourages local community involvement in decision-making while prioritizing skill development and training to ensure that tourism's economic benefits are shared fairly (UNDP, 2016). Notably, the Operation Phakisa framework aligns with international sustainability goals, such as the United Nations' Sustainable Development Goal (SDG) 14, which aims to conserve and sustainably use oceans, seas, and marine resources for development (United Nations, 2015).

In South Africa, although with limited representation, coastal and marine tourism has been included in historical tourism research. Bickford-Smith (2009) examines the development of South Africa's coastal cities, analyzing coastal leisure spaces, particularly in major urban areas such as Cape Town and Durban. Additionally, Gupta (2015) explores 'leisure port spaces,' which are connected to the historical origins of cruise tourism. The most recent study, conducted in Mossel Bay, Western Cape, investigates local historical changes that have shaped and reshaped this town's coastal settlement. It examines the growth of colonial tourism in Mossel Bay and the city's unique tourism economy during apartheid (Rogerson & Rogerson, 2023). Another area of historical tourism scholarship on coastal tourism focuses on themes of space and place, emphasizing the development of coastal resorts. Rogerson & Rogerson (2020) provide insights into the evolution of seaside resorts in South Africa, with particular attention to Hermanus in the Western Cape.

Racism is deeply rooted in South African tourism (Rogerson, 2024). Research examining the histories of coastal tourism highlights racism and the politics of beaches in South Africa's major coastal cities. Specifically, Rogerson (2017) analyses the segregation of tourism landscapes along racial lines on South African beaches during apartheid. Additionally, Bank (2015) examines the links among landscape, race, and identity in the Eastern Cape, with particular emphasis on city beaches and recreational areas in East London.

In 1652, the Dutch East India Company set up a refreshment station at the Cape, which grew into an important trading hub (Worden, 2012). Coastal cities such as Cape Town, Gqeberha, and Durban developed into economic and cultural centers, reflecting the influence of colonialism and commerce (Bickford-Smith, 2009). From the colonial era to today, coastal regions in South Africa have been contested spaces (Mafumbu et al., 2022). Starting in 1948, apartheid policies segregated access to the coast, reserving many beaches, such as Clifton and Muizenberg in Cape Town, for white people and denying marginalized groups opportunities for leisure. Colonial and apartheid laws were used to forcibly remove and displace Black people from their ancestral coastal lands. For example, along the Eastern Cape coast between the 1890s and 1930s, Black individuals were forcibly removed to make way for holiday cottages and tourism developments such as the Haven Hotel (Wildman,

2005). Similarly, the apartheid government evicted and displaced Black residents from coastal land in Ngqushwa, Eastern Cape (Mafumbu et al., 2022). Furthermore, Bank (2015, p. 2) offers a historical analysis of the Eastern Cape coastline, stating that the “Eastern Cape’s coastline has enjoyed a special place in the imagination and identity politics of white English-speaking people who have looked to the coast as a critical space of relaxation, recreation, and recuperation.” For nearly two centuries, white farmers, traders, and townsfolk from the Eastern Cape interior frequently traveled to the coast for vacations (Bank, 2015). The Wild Coast of the Transkei, in particular, was seen by white visitors as a landscape of exceptional beauty and wilderness, and they built cottages along the coast (Wildman, 2005). These were traditionally simple and modest holiday homes, with families returning year after year, generation after generation, until many were removed at the end of apartheid in 1994.

Tourism analysis in the post-apartheid era has focused heavily on promoting inclusivity and restoring cultural heritage. Therefore, historiographical research on tourism offers important insights into how historical injustices continue to shape modern tourism policies and practices. In this context, this paper explores an overlooked knowledge gap in historical tourism studies by using various archival materials to uncover the histories of tourism development in the coastal towns of the Eastern Cape.

## METHODS

Historians’ focus on archival texts and voices offers a valuable model, as these sources help researchers remain close to the “constructedness” of evidence about tourism (Pirie, 2025, p. 459). Expanding coastal tourism research is essential, and this paper contributes to the growing body of work applying historical perspectives to the study of coastal tourism. Methodologically, it combines existing literature with archival sources. Both elements provide historical context for the coastal tourism histories of the resort towns of Port Alfred and Kenton in the Albany District, Eastern Cape, South Africa.

Archival sources were obtained from the Cory Library at Rhodes University in Makhanda. The consulted materials included historical books, journals, industry documents, newspapers, letters, and written affidavits. Selection criteria focused on material relevance, the time period, and the geographical area. Data analysis involved organizing the materials chronologically and thematically, guided by existing literature. The study covers the colonial period from the 1820s through the late apartheid years of the 1980s.

## RESULTS

### History of Albany District

The Albany District was located on the eastern side of the Cape Province. The area was initially called Zuurveld by European colonists. It is known as the most fertile and well-watered land bordering the coast (Philipps, 1834). Multiple conflicts and wars have shaped the history of the Albany District.

Figure 1. Map of the Albany District 1856



Source: Barry Lawrence Ruderman Antique Maps Inc. (2025).

Figure 2. Map of the Eastern Cape



Source: SA-Venues.com. (1999–2025).

White colonists took control of the land, and African residents in the area were forced to retreat, eventually becoming labour tenants on white-owned farms within the colony (Crais, 1992). The original inhabitants of the district were the Khoi-Khoi and Xhosa peoples. The dispossession of African people from Zuurveld by Colonel Graham took place in 1811 to establish a British settlers' district (Campbell, 1897). The white population of the Albany District included residents from Grahamstown, Bathurst, Port Alfred, and Kenton, as well as farmers from Salem, Southwell, and Alexandria (Publicity Association, 1928); these towns are reflected in Figures 1 and 2.

### **The Growth of Port Alfred as a Popular Coastal Town**

The discovery of Port Alfred is linked to Portuguese narratives. Portuguese sailors are said to have often visited Kowie for their slave-hunting missions (Turpin, 1964). However, these accounts are questionable, as some suggest that Diaz was the founder of Port Alfred (Grahamstown Historical Society, 1971). Later, a survivor of the Grosvenor shipwreck reached Kowie in 1782. By 1811, the area was settled by white settlers, who named it Port Kowie in October 1821, before it was renamed Port Frances in 1825 after the wife of Colonel Henry Somerset. The name was later changed to Port Alfred in honour of Queen Victoria's second son, Alfred, who visited the district but never the town (Grahamstown Historical Society, 1971; Bailes, 2010). Port Alfred was known by several names, including Kowie Town, Port Kowie, Port Heathcote, Richmond, Victoria, and Port-O-Grahamstown (Bailes, 2010). The small town began to develop in 1915, driven by a boom in land sales and the availability of over 100 building sites, as Port Alfred's European population grew rapidly (Bailes, 2010).

During the late 18th century, Port Alfred had the potential to become one of South Africa's busiest harbors (Grahamstown Historical Society, 1971). There was strong enthusiasm for building a harbor to serve the Albany District settlement, driven by Port Alfred's central location relative to the 1820 white settlers in the Albany region and its position between East London and Port Elizabeth (Langley, 1982). The Albany settlers wanted to create a harbor that would be more accessible than Port Elizabeth (Grahamstown Historical Society, 1971). Reports indicated that the Port Elizabeth harbor could not keep up with increasing trade demands, leading to the proposal that a harbor in Port Alfred would be ideal (Grahamstown Historical Society, 1971). The construction of Kowie Harbour has been described as "the story of the Kowie harbor, sadly enough, is one of wrecked ships, lost fortunes, broken hearts, and disappointment for everyone who had a hand in its affairs" (Turpin, 1964, p. 1) and "...the history of the river has been one of failure" (Turpin, 1964, p. 2). Several companies, including the Kowie Navigation Company, founded in 1843, were formed to develop the harbor (Bailes, 2010). The construction of a stone-lined harbor channel in 1841 allowed high-masted sailing ships to land, boosting the town's economic and recreational appeal. Today, Port Alfred is a tourist destination with roots in the colonial era, where development was closely tied to infrastructure improvements and harbor construction efforts.

## Historical Development of Coastal Tourism in Port Alfred

After facing setbacks in developing Port Alfred into a fully functional harbor, it gained popularity as a resort town, particularly among colonial settlers in the Albany District. The landscape and climate attracted many visitors. Most activities included swimming and walking along Shelly Beach. In the early days, Port Alfred lacked bathing facilities, and visitors would change into their swimwear behind dunes and shrubs (Bailes, 2010). It was not until 1894 that the local Council took charge of recreational activities and built bathing facilities. As Port Alfred continued to attract more visitors each year, existing recreational amenities became insufficient, especially during the Christmas season. Although the local Council hesitated to invest in additional facilities, by 1914 more amenities were eventually added (Bailes, 2010). Figure 3 shows a bathing pavilion that was built and operated for a fee, offering refreshments and surfboard rentals (Publicity Association, 1928).

Additionally, the Kowie River became a popular spot for fishing and boating. Visitors enjoyed canoeing or rowing on the river, as well as the tea gardens and picnic areas set up along the riverbank (Publicity Association, 1928). These activities laid the foundation for the town's tourism appeal, which centered on its accessible coastal environment (Booyens & Visser, 2020).

Over time, Port Alfred grew in popularity and became recognized across the Union of South Africa as a charming resort. The opening of a railway line in 1884 created new opportunities for leisure tourism. At that time, the town had only one boarding house and two hotels for lodging. The oldest and most famous hotel was the Styles Hotel, later known as the Grand Hotel, which was favored by visitors from throughout the Union of South Africa. It is said to have offered adequate accommodation facilities (Bailes, 2010).

During the Anglo-Boer War, a conflict between the British Army and the Boer states, the Boer Commandos invaded the Cape Colony, prompting many farmers in the Albany District to evacuate and establish refugee camps in Port Alfred. After the war ended in 1902, the Council bought 30 tents to rent to visitors for camping. As shown in Figure 4, the municipality charged 7 pence weekly for smaller tents and a shilling for larger ones. Port Alfred was divided into the East and West banks, with tents set up on the eastern bank. Unfortunately, the site was unstable and too low, causing the entire campsite to wash away during Christmas in 1909. Visitors had to find refuge at the town hall and in local homes, leading to the suggestion of building wooden bungalows (Bailes, 2010).

The founding of the Golf Club in 1916 marked another major step in the development of tourism in Port Alfred, attracting many visitors (Bailes, 2010). By 1928, accommodation options had grown, with the town having 13 hotels and 3 boarding houses (Publicity Association, 1928). A traveler in the 1930s described Port Alfred as: "to spend a holiday in Kowie is to apply an antidote to the poison of hard living. The charm of the old world is still upon the Kowie, Bathurst, and the district. The people seeking happiness find it in contentment" (Bailes, 2010).

The historical growth of racially segregated spaces remains a key area of research for South African human geographers (Rogerson, 2025). Apartheid enforced racial discrimination in tourism, reflected in segregated leisure areas and hospitality services, such as racially divided beaches and unwelcoming environments in areas designated for Black people (Rogerson & Rogerson, 2025).

In Port Alfred, as in other South African coastal towns, tourism was organized to restrict access for certain racial groups (Rogerson & Rogerson, 2020). Despite these limitations, Port Alfred continued to attract white tourists who valued the river and ocean views and the range of local entertainment options. The Kowie River and beaches remained popular tourist spots during this period, but access was restricted to specific groups (Rogerson, 2021). Under apartheid, recreational beach swimming was also segregated, with Black people using the East Bank, which was deemed unsafe for swimming, while the West Bank was reserved solely for white visitors.

Figure 3. Bathing Pavilion in Port Alfred



Source: Bailes (2010)

Figure 4. Municipal Charges for Tourism Facilities

## Municipality of Port Alfred

### CHARGES: BATHING LAGOON.

Bathing Tickets, 1d. Book of Tickets, 30 for 2/-.  
Annual Bathing Tickets for Families (to be registered) including Private Dressing Room, £1/10/0  
Monthly ditto, ditto ..... 7/6  
Private Dressing Room (per bather) .... 3d. each

Costumes, Towels etc., supplied at low charges.

### CHARGES ON BEACH:

Public Rooms ..... 1d. each per bathe  
Private Rooms ..... 3d. each per bathe

### CHARGES FOR CAMPING GROUND:

Hire of Stand .. 7/- for Season or 10/- per Month  
*Water and Sanitary conveniences provided.*

### MARKET HOURS:

Every Wednesday & Saturday, commencing at 7 a.m.  
December and January ..... 6.30 a.m.

### PUBLIC LIBRARY:

Hours: From 2.30 p.m. to 6 p.m. during Summer Months, to 5 p.m. during Winter Months, daily except Wednesday.

Subscription: Half-yearly, 10/-; Monthly, 3/6 for 1st Month, 2/6 for Renewals; Weekly, 1/6.  
Free Reading Room attached.

Municipal Buildings (Public Hall, Public Library, Town Clerk's, School Board and Market Offices)  
on East Quay.

For all Municipal information apply to  
W. ROSE, Town Clerk.

Source: Bailes (2010)

## **Kenton: The Holiday Village**

Kenton is located between two estuaries, the Bushmans and Kariega Rivers, and is a seaside resort about 130 km north of Port Elizabeth. In its early days, Kenton was quite primitive, as the absence of a bridge connecting the two rivers meant that holidaymakers relied solely on ferries and ox wagons. The Bushmans River Mouth has been recognized as a holiday resort since the 1910s. By the 1930s, Kenton had established itself as a small village governed by a Local Areas Committee, and in 1941, it gained Village Management Board status. One of the first signs of development was the construction of a bridge linking the two rivers, which sparked a boom in property development during the 1950s and 1960s (Meiring, 1989). The history of Kenton-on-Sea is closely linked to the Butt family, who immigrated from Sussex, England, and settled in Kenton. Additionally, a later Mr. Tilt is credited with naming it Kenton-on-Sea because of his origins in Kent, a county in southeastern England (Meiring, 1989). It is said that Mr. Tommy Tilt owned the area of Kenton, having purchased land from Mr. Charles Butt (Meiring, 1989).

## **Tourism Development in Kenton**

Kenton was a favorite holiday spot for white settlers, mainly farmers from the Albany District. Each December holiday season, preparations were made for a six-week vacation by the sea. Their ox wagons would be filled with large tins of jam, batches of biscuits, bottles of lemon syrup, and ginger beer. The bags, sails, and tents were stored underneath the wagons, and poultry and sheep were also brought along to provide fresh eggs and meat, as there were no shops in Kenton; supplies had to be brought from the farms.

There were three camping sites: one near the Kariega River Mouth and two at the Bushmans River. Early campers in Kenton enjoyed simple pleasures such as swimming, walking along the beach, and fishing. Mr. Charles Butt rented the camping sites at a rate of a shilling a day (Meiring, 1989).

Upon Mr. Charles Butt's death, his lands were sold to Mr. Tilt, who stopped camping to encourage others to buy plots and build vacation homes. However, many campers were unhappy about having to purchase plots, as some had been camping in Kenton with their families for nearly 50 years and saw no need to buy land. Although campers were removed, they were eventually forced to purchase land (Meiring, 1989).

In 1935, Mr. Tilt sold his land to Mr. Pudney, marking the start of Kenton's rise in popularity. The Pudneys put much effort into marketing Kenton, using posters and brochures to promote it as "the finest holiday playground and fisherman's eldorado in the Union" (Meiring, 1989, p. 35). Eventually, a boarding house was opened, which later became known as the Kenton Hotel. By the 1940s, Kenton reportedly hosted about 1,200 visitors during the December holiday season (Meiring, 1989).

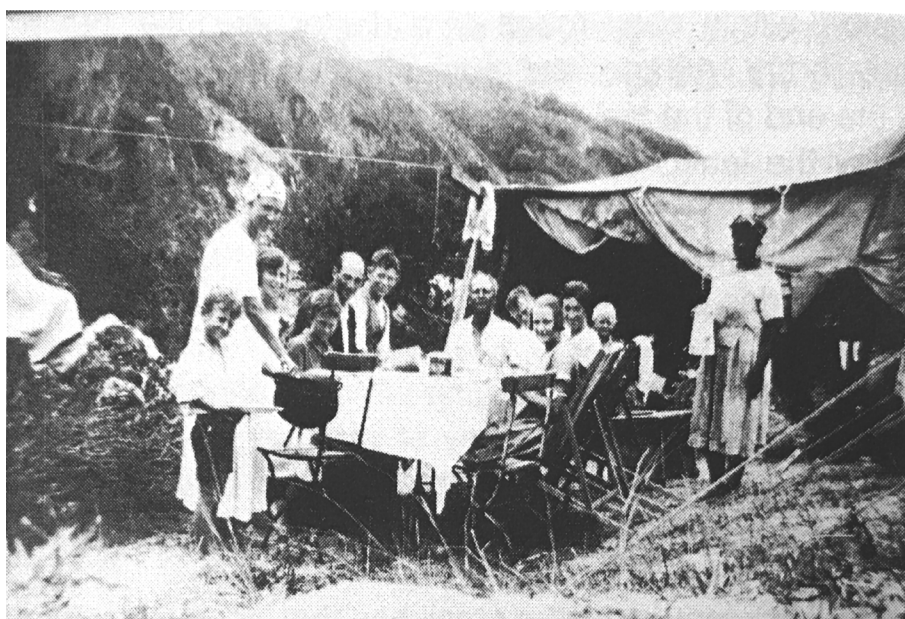
## Tourism as a Destructive Creation in Kenton

Postcolonial perspectives on tourism argue that the industry served as a way for white colonial interests to insert themselves into Africa, claim it as their own, marginalize and ignore indigenous people, and treat them as objects (Pirie, 2025, p. 454). Specifically, the coast historically marked the first point of conflict between white settlers and African populations. The colonial era was characterized by a deliberate separation of African people from the South African coast. It is emphasized that “Resorts became a tool for fostering and spreading the ‘civilized’ values of the colonial elite, for protecting the health and curing the ailments of colonizers, and providing them with a pre- and post-retirement haven” (Borsay, 2022, p. 420).

During apartheid, spatial planning prevented Black individuals from settling near the coast, limiting their access to marine resources (Mafumbu et al., 2022). Tourism can therefore be linked to the living histories of colonial conquest and apartheid. This study explores the underlying dynamics and consequences of coastal tourism development in Kenton during the apartheid era. The section briefly discusses the presence of the Black community in Kenton, focusing on forced removals, relocation, resettlement, and socio-economic conditions.

Scholars such as Devine and Ojeda (2017) have shown how tourism is connected to land dispossession using a critical geography approach. Their work highlights themes of enclosure and extraction, erasure and commodification, “destructive creation,” and (neo)colonialism. These scholars explain “how tourism drives violent practices of land privatization and dispossession, extracts natural and cultural resources, erases existing histories and people from the landscape, and ‘destructively creates’ new socio-natures, identities, and commodities based on partial power-laden tourism imaginaries” (Devine & Ojeda, 2017, p. 606).

Figure 5. White Campers With Their Black Servants at a Camping Site in Kenton.



Source: Meiring (1989)

Much of the Black community in Kenton consisted of servants catering to the needs of white European campers visiting the area, as shown in Figure 5. Once white Europeans built their holiday homes, their African servants were allowed to live in the ‘commonage’ provided by their employers. The township in Kenton where the Black community lived has been designated an ‘emergency camp’ since 1954, meaning the apartheid government considered it temporary and had no plans to provide proper facilities for the Black residents. Living conditions for the Black community in Kenton were dire, with issues such as overcrowding, lack of water and sanitation, unemployment, low wages, limited access to secondary education, and high rent payments to the Bantu Affairs Administration Board (BAAB). Additionally, apartheid police harassed Black residents in the township. In response, the Black community organized a protest in May 1985 to present a list of complaints, but they were met with tear gas and rubber bullets, leading to the arrest of 107 community members (Glenmore Forced Removals, Box PR.10301). Southall (1983) argues that apartheid policies affected every part of South African society, oppressing Black people through intimidation and police violence and stripping them of control over their lives.

Kenton—described as one of the most painful sagas in South Africa’s resettlement history—saw 1,500 Black and Colored people at Klipfotein Farm receive notices to gather their belongings as they were relocated to a township to be built in Glenmore (Meiring, 1989). The Black community in Kenton had faced threats of removal since their ‘temporary transit camp’ was established by workers in the 1950s. Lacking official residency permission, they built homes north of the town of Kenton. In 1963, it was recognized as an emergency camp under the Prevention of Illegal Squatting Act. The land attracted the interest of local property developers, and according to a newspaper article, “the site where the Africans live is a valuable piece of ground.” Consequently, the municipality planned to sell the land after displacing the community, with the area designated for recreational development (The Herald, 8 August 1989).

Forced removals were common in the Eastern Cape’s coastal towns and cities, and by the 1960s, they were also occurring in East London. About 8,000 families were displaced from the East and West Bank and relocated to Mdantsane, a Xhosa-dominated township created in Ciskei’s homeland (Bank, 2015). In Kenton, forced removal began on April 2, 1979, when families were relocated from Klipfotein to Glenmore (The Herald, 8 August 1989). In Glenmore, they were promised three-room houses, a borehole for water, and employment as unskilled workers. In a letter, Mr. M. G. Whisson describes Glenmore as an “area 40 km from Grahamstown, a remote and rural place, known as one of the worst parts of the Eastern Cape, a hot and inhospitable wilderness” (Glenmore Forced Removals, Letter, Box PR.10301).

The removal and relocation were planned by the South African Government’s Department of Plural Relations. The government sent 50 trucks to move the families, their furniture, and livestock. Reports indicate that the families refused to move and were devastated when the government bulldozed their houses, and their belongings were loaded into trucks (Meiring, 1989). In some affidavits, families reported, “We did not want to leave Klipfotein. It was insisted that we must leave. Harassed by the police, I witnessed the knocking down of some houses... when the truck was about to load our furniture, there was a document I was told to make a cross—I did so—but I did not know what it

meant, it was not explained to me. I believe there was no alternative but to sign it” (Glenmore Forced Removals, Affidavit, Box PR.10301).

Additionally, others reported: “wonke umntu owaye hlala eKlipfotein wemka khona engafuni ukuya eGlenmore...ukufika kwethu apha safelwa zinkomo sophukelwa zimpahla zethu neBhokwe nayo naye into esasi nayo” [Every person who lived in Klipfotein left unwillingly for Glenmore, and upon arrival, our livestock died and our furniture was damaged and broken] (Glenmore Forced Removals, Affidavit, Box PR.10301).

Several anti-apartheid groups, such as the Black Sash and the Institute of Race Relations, advocated against these forced removals, taking legal action and filing appeals to the Department of Tourism. The Klipfotein farm was near the Diaz Cross, along the beach from Bushmans River, which is recognized as a national monument. However, the response to these appeals was discouraging (The Herald, 14 April 1984). Indeed, Kenton illustrates a racialized landscape in which indigenous people were removed from their land to create a paradise for white holidaymakers.

## CONCLUSIONS

Tourism studies can benefit from deeper engagement with historical research (Rogerson & Sixaba, 2024). The historical development of small-town tourism is barely documented (Rogerson & Rogerson, 2024). Therefore, it is crucial to fill this knowledge gap by recording tourism growth in coastal towns, especially in the Eastern Cape, where tourism research is limited. This study has tracked the historical changes in coastal tourism in Port Alfred and Kenton-on-Sea, analyzing the social, political, and economic forces that have shaped these areas. Using a historical geography approach, it demonstrates how these towns were established as spaces for white settlers during the colonial and apartheid periods, highlighting themes of segregation, displacement, and the exclusion of indigenous peoples.

The South African coastline is a contested space, shaped by the violent histories of colonization and apartheid. Its legacies are still visible today in South Africa’s coastal towns and cities, affecting patterns of coastal development and tourism. The history of wars in the Albany district during the colonial period contributed to the dispossession of the indigenous Xhosa and Khoi people, leading to the development of these coastal towns as exclusive enclaves for white recreation and leisure, with limited access for Black people. The forced removals in Kenton further reinforced these exclusions.

The study’s findings show that both towns became popular holiday destinations for white British settlers, especially from the 1820s. These towns grew in prominence among settlers due to their seaside appeal, which was the main attraction. However, the development of these towns also involved the marginalization of the Black community. The forced removals in Kenton highlighted the violent nature of apartheid policies that prioritized white leisure over Black livelihoods. During apartheid, racial policies limited access to the coast, with most beaches reserved for whites only. Black people were marginalized and denied leisure opportunities. For example, in Port Alfred, beaches designated for Black people were unsafe for swimming, reflecting systemic racism.

In the future, a more just and sustainable approach to tourism development is essential. Highlighting the stories of marginalized communities in tourism history can promote reconciliation and foster a more equitable industry. Furthermore, policies that restore access and economic opportunities to groups that were formerly excluded can help ensure that Eastern Cape coastal tourism develops in a way that respects its history and upholds social fairness.

## REFERENCES

- Bailes, D. (2010). *Looking back at Port Alfred*. D. Bailes.
- Bank, L. (2015). Frontiers of freedom: Race, landscape, and nationalism in the coastal cultures of South Africa. *Anthropology Southern Africa*, 38(3–4), 248–268. <https://doi.org/10.1080/23323256.2015.1088790>
- Barry Lawrence Ruderman Antique Maps Inc. (2025). *Antique map categories*. [www.raremaps.com](http://www.raremaps.com)
- Bickford-Smith, V. (2009). Creating a city of the tourist imagination: The case of Cape Town, ‘The fairest cape of them all’. *Urban Studies*, 46(9), 1763–1785. <https://doi.org/10.1177/0042098009106013>
- Booyens, I., & Visser, G. (2020). Tourism-led local economic development in South Africa: A case study of Port Alfred. *African Journal of Hospitality, Tourism and Leisure*, 9(6), 1060–1075.
- Borsay, P. (2022). Spas and seaside resorts. In *The Oxford handbook of tourism history*. Oxford University Press.
- Campbell, C. T. (1897). *British South Africa: A history of the colony of the Cape of Good Hope from its conquest 1795 to the settlement of Albany by the emigration of 1819 [AD 1795–AD 1825] with Notices of Some of the British Settlers of 1820*. J. Haddon & Company.
- Crais, C. C. (1992). *White supremacy and black resistance in pre-industrial South Africa: The making of the colonial order in the Eastern Cape, 1770–1865* (Vol. 72). Cambridge University Press.
- Devine, J. & Ojeda, D. (2017). Violence and dispossession in tourism development: A critical geographical approach. *Journal of Sustainable Tourism*, 25(5), 605–617. <https://doi.org/10.1080/09669582.2017.1293401>
- Department of Environmental Affairs (DEA). (2014). *South Africa’s ocean economy: A national opportunity*. Government of South Africa.
- Department of Tourism. (2015). *Operation Phakisa: Unlocking the economic potential of the ocean*. Government of South Africa.
- Dimitrovski, D., Lemmetyinen, A., Nieminen, L., & Pohjola, T. (2021). Understanding coastal and marine tourism sustainability: A multi-stakeholder analysis. *Journal of Destination Marketing & Management*, 19, 100554. <https://doi.org/10.1016/j.jdmm.2021.100554>
- European Climate Adaptation Platform. (2024). *Nature-based coastal restoration contributing to climate change adaptation*. <https://climate-adapt.eea.europa.eu>

- European Commission. (2024). *European Capital of Smart Tourism initiative*. <https://transport.ec.europa.eu>
- Glenmore Forced Removals, Box PR.10301. Various Folders: 46–99. 1979–1985.
- Grahamstown Historical Society. (1971). *Annals of the Grahamstown Historical Society*. Vol. 1, No. 3.
- Gupta, P. (2015). Consuming the coast: Mid-century communications of port tourism in the Southern African Indian Ocean. *Comunicação Midia e Consumo*, 12(35), 149–170. <https://doi.org/10.18568/1983-7070.1235149-170>
- Hall, C. M. (2001). Trends in ocean and coastal tourism: The end of the last frontier? *Ocean & Coastal Management*, 44(9–10), 601–618. [https://doi.org/10.1016/s0964-5691\(01\)00071-0](https://doi.org/10.1016/s0964-5691(01)00071-0)
- Langley, W. R. C. (1982). *The Buffalo I. (1871–1889): A History of the First Steam Tug in East London and the Last in Port Alfred*. [publisher not identified].
- Leposa, N. (2020). Problematic blue growth: A thematic synthesis of social sustainability problems related to growth in the marine and coastal tourism. *Sustainability Science*, 15(4), 1233–1244. <https://doi.org/10.1007/s11625-020-00796-9>
- Mafumbu, L., Zhou, L., & Kalumba, A. M. (2022). Exploring coastal access in South Africa: A historical perspective. *Sustainability*, 14(7), 3971. <https://doi.org/10.3390/su14073971>
- Meiring, J. (1989). *The Kenton story & the people of Kenton-on-Sea*.
- Meyer-Arendt, K. (2018). Tourism geographies: Geographic research on coastal tourism. *Tourism Geographies*, 20(2), 358–363. <https://doi.org/10.1080/14616688.2018.1434815>
- Mgadle, A., Dube, K., & Lekaota, L. (2023). Conservation and sustainability of coastal city tourism in the advent of sea level rise in Durban, South Africa. *Tourism in Marine Environments*, 17(3), 179–196. <https://doi.org/10.3727/154427322x16599399156575>
- Organisation for Economic Co-operation and Development (OECD). (2021). *Managing tourism development for sustainable and inclusive recovery*. OECD Publishing.
- Patterson, C. (2021). *Protocols being developed for resumption of cruise operations*. Jamaica Information Service.
- Philipps, T. (1834). *Advantages of emigration to Algoa Bay and Albany, South Africa*, Effingham Wilson.
- Pirie, G. (2022). Tourism histories in Africa. In Zuelow, E. G., & James, K. J. (Eds.), (2025), *The Oxford handbook of tourism history* (pp. 447–467). Oxford University Press.
- Quader, M. S., Hassan, H. M. K., & Mahbub, T. (2025). Sustainable coastal and marine tourism in Bangladesh: A qualitative evaluation. *Tourism and Hospitality Management*, 31(2), 81–97. <https://doi.org/10.20867/thm.31.2.9>
- Rogerson, C. M. (2020). Coastal and marine tourism in the Indian Ocean Rim Association States: Overview and policy challenges. *Geo Journal of Tourism and Geosites*, 29(2), 715–731. <https://doi.org/10.30892/gtg.29226-501>

- Rogerson, C. M. (2024). Traces of the past: The Bantu world and black South African travel mobilities in the 1930s. *African Journal of Hospitality, Tourism and Leisure*, 2, 359–366.
- Rogerson, C. M. (2025). The Inhospitable city: Historical racial segregation in Johannesburg c. 1890–1970. *Modern Geografía*, 20(1), 83–106. <https://doi.org/10.15170/mg.2025.20.01.05>
- Rogerson, J. M. (2017). ‘Kicking sand in the face of apartheid’: Segregated beaches in South Africa. *Bulletin of Geography. Socio-economic Series*, 35, 93–109. <https://doi.org/10.1515/bog-2017-0007>
- Rogerson, J. M. (2019). The evolution of accommodation services in a coastal resort town: Hermanus, South Africa. *African Journal of Hospitality, Tourism and Leisure*, 8(5), 1–16.
- Rogerson, C. M., & Rogerson, J. M. (2019). Emergent planning for South Africa’s blue economy: Evidence from coastal and marine tourism. *Urbani Izziv*, 30, 24–36. <https://doi.org/10.5379/urbani-izziv-en-2019-30-supplement-002>
- Rogerson, C. M., & Rogerson, J. M. (2020a). Resort development and pathways in South Africa: Hermanus 1890–1994. In: Rogerson, J., Visser, G. (Eds.), *New directions in South African tourism geographies. Geographies of Tourism and Global Change* (pp. 15–32). Springer, Cham. [https://doi.org/10.1007/978-3-030-29377-2\\_2](https://doi.org/10.1007/978-3-030-29377-2_2)
- Rogerson, C. M., & Rogerson, J. M. (2020b). Coastal tourism in South Africa: A geographical perspective. In: Rogerson, J., Visser, G. (Eds.), *New directions in South African tourism geographies. geographies of tourism and global change*. Springer, Cham. (pp. 227–247). [https://doi.org/10.1007/978-3-030-29377-2\\_13](https://doi.org/10.1007/978-3-030-29377-2_13)
- Rogerson, J. M., & Rogerson, C. M. (2023). Historical geographies of coastal tourism: Mossel Bay, South Africa c. 1850–1988. *Bulletin of Geography. Socio-economic Series*, 61, 7–17. <https://doi.org/10.12775/bgss-2023-0022>
- Rogerson, C. M., & Rogerson, J. M. (2024). The evolution of small town spa resorts in the Global South: The historical pathway of Montagu, South Africa. *Modern Geografía*, 19(3), 99–116. <https://doi.org/10.15170/mg.2024.19.03.08>
- Rogerson, C. M., & Rogerson, J. M. (2025). Racial discrimination in tourism: The record of apartheid Cape Town. *Modern Geografía*, 20(3), 47–67. <https://doi.org/10.15170/mg.2025.20.03.03>
- Rogerson, C. M., & Sixaba, Z. (2024). Rural tourism in South Africa’s apartheid bantustans: An historical view. *Modern Geografía*, 19(4), 67–83. <https://doi.org/10.15170/mg.2024.19.04.04>
- SA-Venues.com. (1999–2025). *Eastern Cape Regional Map*. [www.sa-venues.com/maps/easterncape/physical.php](http://www.sa-venues.com/maps/easterncape/physical.php)
- Southall, R. J. (1983). *South Africa’s Transkei: The political economy of an “independent” bantustan*. Monthly Review Press.
- Suryani, A., Soedarso, S., Rahmawati, D., Saifulloh, M., & Agustin, D. S. Y. (2022). A Community marine tourism as a business sector: Challenges faced by local community. *International Journal of Business Studies*, 6(2), 198–217. <https://doi.org/10.32924/ijbs.v6i2.235>

- The Grahamstown, Bathurst, and Port Alfred Publicity Association and the South African Railways and Harbours. (1928). *Grahamstown, Bathurst, and Port Alfred: A Descriptive handbook*. Hortors. *The Herald* (Port Elizabeth Newspaper), various issues, 1984 –1989.
- Turpin, E. W. (1964). *Basket work harbour: The story of the Kowie*. Howard Timmins.
- United Nations Development Programme (UNDP). (2016). *Community-based tourism as a driver of sustainable development*. The United Nations Development Programme.
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations.
- United Nations World Tourism Organization (UNWTO). (2020). *International tourism highlights, 2020 edition*. The United Nations Development Programme.
- Wildman, K. (2005). *The Beach: The Making & Remaking of Coffee Bay (1945–2005)* [Masters dissertation]. University of Cape Town.
- Worden, N. (2012). *The making of modern South Africa: Conquest, apartheid, democracy* (5th ed.). Wiley-Blackwell.

*Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licen-  
ce-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

*This open access article may be used under the international license terms of Creative Commons  
Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>





Naidoo, Shaylen<sup>1</sup>

# Planetary Boundaries in the South African School FET Geography Curriculum

## ABSTRACT

This study examines the representation of the planetary boundaries framework within the South African Further Education and Training (FET) Phase Geography curriculum. Using a mixed-methods interpretive design combining lexical frequency analysis and critical curriculum interpretation, the research quantified the frequency and co-occurrence of terms associated with the nine planetary boundaries. The findings show that while the curriculum foregrounds sustainability and addresses issues such as freshwater systems and climate, it fails to explicitly embed the scientific concepts that underpin planetary thresholds. Critical domains such as biogeochemical cycles, atmospheric aerosol loading, and ocean acidification are largely absent. Interpreted through a critical curriculum theory lens, these silences restrict learners' capacity to situate local environmental challenges within global systemic risks, thereby undermining the development of transgressive learning and planetary consciousness. The findings contribute to international debates on how geography education can foster planetary literacy and systemic reasoning in diverse educational contexts. The study concludes that explicitly incorporating planetary boundaries and fostering systemic reasoning in learning outcomes would strengthen Geography's role in cultivating the critical knowledge and competencies required to navigate the Anthropocene.

*Keywords: planetary boundaries, South Africa, geography, curriculum, environment, sustainable development, education*

---

<sup>1</sup> University Lecturer, The Independent Institute of Education, Emeris Sandton, Faculty of Education, 112 Grayston Drive, Sandton 2196 South Africa, Email: [shaynaidoo@emeris.ac.za](mailto:shaynaidoo@emeris.ac.za), <https://orcid.org/0000-0001-9291-5176>

## INTRODUCTION

The urgency of twenty-first-century environmental crises demands educational strategies that cultivate a critical understanding of environmental processes and sustainability challenges (Agbedahin & Lotz-Sisitka, 2019; Steffen et al., 2018; Drijfhout et al., 2015; Gandolfi et al., 2024; Lade et al., 2020; Lovejoy & Nobre, 2018). Anthropogenic impacts on socio-ecological systems require that Geography learners engage with the interconnections between the lithosphere, atmosphere, hydrosphere, and biosphere to understand resource limits and safe operating spaces within the planetary boundaries framework (Enke & Budke, 2023; Lenton et al., 2008; Miao et al., 2022; Mwendwa, 2017; Wittlich et al., 2023; Naidoo & Heath, 2024). This approach situates local issues—such as Cape Town’s ‘Day Zero’ crisis or Vaal River and Baynespruit River eutrophication—within systemic global risks, moving beyond reductionist stewardship discourses to recognise humanity as a constitutive agent of environmental change (Cai et al., 2016; Drijfhout et al., 2015; Feldmann & Levermann, 2015; Zuma, 2017; Gandolfi et al., 2024; Lade et al., 2020; Lovejoy & Nobre, 2018; Sandin et al., 2015; Walker et al., 2019; Ziervogel et al., 2010).

Geography, at the interface of the biophysical and social sciences, is well positioned to develop systemic understanding and planetary consciousness (see Enke & Budke, 2023; Miao et al., 2022; Mwendwa, 2017; Wittlich et al., 2023; Naidoo, 2024; Naidoo & Heath, 2024; Lotz-Sisitka et al., 2021a). Yet the South African school curriculum emphasises anthropocentric framings and underplays integrative ecological reasoning (see Naidoo, 2025; Lotz-Sisitka et al., 2021a). This limits learners’ capacity to conceptualise environmental thresholds and systemic risk, undermining engagement with sustainability in the Further Education and Training (FET) Phase (see Lotz-Sisitka et al., 2021b).

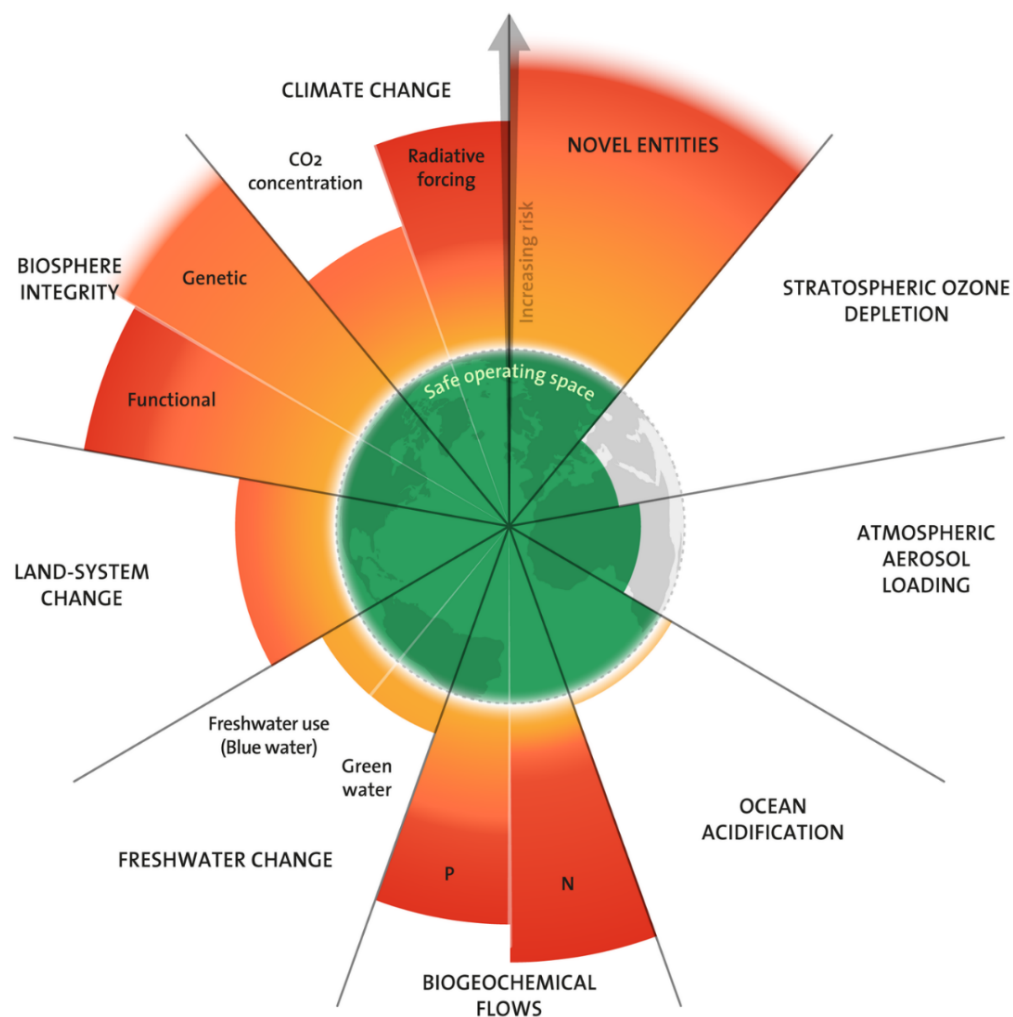
South African learners are disproportionately exposed to environmental crises, including climate instability, water scarcity, biodiversity loss, and land degradation, which exacerbate vulnerabilities in marginalised communities (Kutywayo et al., 2022; UNICEF, 2023). Embedding the planetary boundaries framework introduces scientifically grounded thresholds that define humanity’s safe operating space while framing hazards as emergent from complex socio-ecological interactions (Steffen et al., 2015; Steffen et al., 2018; Rockström, 2015; Rockström et al., 2023; 2024). This enables learners to situate local vulnerabilities within global systemic risk and to foster threshold-based reasoning essential for equitable civic engagement and futures-oriented decision-making (Vogel et al., 2015; UNESCO, 2020; IPCC, 2019a). Against this context, the study appraises the Geography FET Curriculum and Assessment Policy Statement (CAPS) document (DBE, 2011) through the planetary boundaries lens. The analysis adopts a progressive learning pathway—from descriptive recognition, through integrative understanding, to threshold-oriented reasoning—to evaluate the curriculum’s potential to foster planetary literacy. By examining content and epistemological orientation, the study identifies both silences and possibilities within the curriculum, highlighting its potential to support ecologically grounded and transgressive educational praxis.

## LITERATURE REVIEW

### Conceptual Foundations of the Planetary Boundaries Framework

The planetary boundaries framework identifies nine Earth system processes whose destabilisation threatens the conditions that support human societies (Steffen et al., 2015; Rockström et al., 2023). These include climate change, biosphere integrity, land-system change, freshwater use, biogeochemical flows, ocean acidification, atmospheric aerosol loading, stratospheric ozone depletion, and novel entities (Richardson et al., 2023; Rogelj et al., 2019). The category of novel entities—synthetic chemicals, plastics, and other anthropogenic compounds—extends beyond conventional pollution by capturing systemic risks whose long-term impacts remain uncertain (Richardson et al., 2023). Each boundary marks a safe operating space; recent assessments show that seven of the nine have already been exceeded, with ocean acidification the most recently transgressed and aerosol loading already breaching regional limits (Richardson et al., 2023). Figure 1 below illustrates the seven crossed boundaries as of 2025, as presented by the Stockholm Resilience Centre at Stockholm University.

Figure 1. The 2025 Update to the Planetary Boundaries.



Source: Azote for Stockholm Resilience Centre, 2025

Biosphere integrity remains of particular concern, with human appropriation of net primary production surpassing the proposed limit. These pressures highlight the need to interpret environmental issues from an interconnected Earth system perspective. In South Africa, pressures on freshwater availability, biodiversity integrity, and climate variability reflect local manifestations of global transgressions (Sinha & Kumar, 2019; Skowno et al., 2021; SANBI, 2018; Engelbrecht et al., 2015). For Geography learners, the framework supports linking local challenges—such as droughts or floods, river eutrophication, and biodiversity loss—to broader systemic risks, thereby fostering systems-based reasoning (Vogel et al., 2015; Lotz-Sisitka et al., 2021a).

### **International Cases on the Planetary Boundaries Framework in Education**

Few national curricula adopt the planetary boundaries framework explicitly, yet its principles appear in Education for Sustainable Development initiatives (UNESCO, 2020; IPCC, 2019a; 2019b). Studies show its value for both higher education and school-level transformation (Leal Filho et al., 2021; Nyerere et al., 2021; Miao et al., 2022; Mwendwa, 2017; Wittlich et al., 2023). European curricula, such as those in France and Spain, include sustainability themes but omit explicit planetary boundary terminology (Enke & Budke, 2023). German cases indicate growing use of planetary health and sustainability frameworks, though again without explicit reference to planetary boundaries (Wittlich et al., 2023). In China and the United States, the emphasis remains on sustainability competencies rather than threshold- or boundary-based reasoning (Miao et al., 2022). Tanzania reflects similar patterns, with environmental education present yet lacking systemic frameworks (Mwendwa, 2017). These examples point to a global gap between policy aspirations and curriculum practice. For South Africa, reform would require a phased progression—from basic recognition of environmental issues to integrative understanding and, ultimately, to threshold-based reasoning in the FET Phase (Shumba et al., 2021).

### **The Environmental Crisis and Curriculum Reform in South Africa**

South Africa illustrates how global boundary transgressions manifest in concentrated form. Freshwater scarcity is acute, demonstrated by the Day Zero crisis in Cape Town and the continued eutrophication of the Vaal River and the Baynespruit River as examples (Ziervogel et al., 2010; Dabrowski & De Klerk, 2013; De Klerk, 2016; Zuma, 2017; Ziervogel, 2019; Mashaba et al., 2025). Biodiversity integrity is also under threat, particularly within the fynbos biome (Ramarumo, 2022; Van Wilgen et al., 2022). Climate change compounds these pressures through rising temperatures and intensified extreme events (Mahlalela et al., 2020; Ndlovu et al., 2021; Engelbrecht et al., 2025). These impacts fall most heavily on marginalised communities, underscoring the ethical need for education that foregrounds socio-ecological justice. Geography education is well placed to support this work, helping learners understand the interconnections between human and physical geography (Lotz-Sisitka et al., 2016, 2021a, 2021b; Naidoo & Heath, 2024; Naidoo, 2024). Rogerson's (2025)

work on Johannesburg’s rooftop agriculture illustrates how local socio-ecological practices can be framed within global sustainability transitions. Such studies demonstrate the need for geography education to cultivate spatial and systemic reasoning, enabling learners to recognise how local actions relate to planetary-scale dynamics.

## **Curriculum Policy Intentions and Pedagogical Practice in South African School Geography**

The Geography FET CAPS (DBE, 2011) integrates Theoretical and Applied Geography across Physical and Human Geography topics (Naidoo, 2024). While this structure offers coherence, research identifies gaps in its engagement with the systemic imperatives of Education for Sustainable Development and Education for Climate Change (Lotz-Sisitka et al., 2021; Naidoo & Heath, 2024; Naidoo, 2024; Thenga, 2025). Policy frameworks, including the *National Climate Change Response White Paper* (South Africa, 2011) and the *National Climate Change Adaptation Strategy* (South Africa, 2019), emphasise education’s role in building resilience. South Africa’s commitments under the United Nations Framework Convention on Climate Change (UNFCCC) *Action for Climate Empowerment* (ACE) framework further require the integration of climate change education into formal schooling (Naidoo & Heath, 2024; Taviv et al., 2008). UNESCO’s (2020) *Education for Sustainable Development Roadmap* similarly advocates embedding critical, systemic sustainability into curricula.

Despite these intentions, research highlights disjunctions between policy and practice. Climate change content in CAPS-aligned FET Phase Geography textbooks is often superficial, with limited attention to systems thinking or feedback mechanisms (Thenga, 2025). Pre-service teachers remain insufficiently prepared to address complexity and interdependence, reflecting broader shortcomings in teacher education (Naidoo & Heath, 2024). Geography continues to occupy a peripheral role in international and national sustainability initiatives, despite its potential to advance planetary literacy (Wilmot & Van der Merwe, 2025). Fragmented engagement with sustainability has led to calls for integrating technological tools, including artificial intelligence, to align content with adaptation and sustainability needs (Naidoo, 2024). Transformative pedagogies offer a path forward by embedding ecological systems thinking into the core of teaching practice rather than treating environmental content as supplementary (Lotz-Sisitka et al., 2016; 2024). The *Fundisa for Change* programme demonstrates the potential of professional development to strengthen teacher capacity in Education for Sustainable Development (Lotz-Sisitka et al., 2021a; Schudel et al., 2021; Naidoo & Heath, 2024). Its absence in formal DBE policy, however, underscores the need for systemic alignment between professional development and curriculum reform.

## METHODS

### Research Design and Methods

This study adopts a mixed-methods interpretivist design that integrates qualitative critical curriculum analysis with quantitative lexical and frequency analysis, emphasising the socially constructed nature of knowledge and the importance of understanding phenomena from the perspectives of the actors and texts involved (Creswell & Poth, 2018). The study employs lexical analysis (Hanks, 2013), a form of quantitative text analysis, to conduct a systematic and critical examination of the South African FET Phase Geography curriculum (DBE, 2011). Grounded in the principles of critical curriculum theory, this methodology is designed to move beyond a simple qualitative reading and provide a data-driven assessment of the curriculum's content (Hanks, 2013). The study triangulated the data with Manning and Schutze's (1999) statistical natural language processing framework to quantitatively analyse word usage and frequency; this approach identifies the prominence of key concepts from the planetary boundaries framework while also revealing underlying conceptual patterns and omissions. This integration of lexical analysis with critical curriculum theory provides a robust and replicable method for evaluating how the curriculum implicitly and explicitly constructs knowledge and values related to planetary sustainability, which is a core goal of critical content analysis (Krippendorff, 2012). While interpretivism underpins the interpretive reading of curriculum discourse, the quantitative lexical analysis provides empirical evidence of conceptual emphasis and silences. This integration of qualitative and quantitative strands is consistent with mixed-methods curriculum research (Creswell & Poth, 2018).

### Data Source and Analytical Procedure

The primary data source is the official Geography FET CAPS policy document published by the DBE (DBE, 2011). This document is treated as a data corpus for lexical analysis. The analytical procedure comprised both quantitative and qualitative components, consistent with a mixed-methods interpretive design. The quantitative component entailed a lexical frequency and co-occurrence analysis of the Geography FET CAPS document (DBE, 2011). This analysis systematically quantified the presence and distribution of key terms associated with the nine planetary boundaries and produced graphical representations of their relative frequencies. These data provided an empirical foundation for identifying patterns of conceptual inclusion and omission within the curriculum. The qualitative component, grounded in critical curriculum theory, involved interpretive analysis of the curricular discourse to elucidate the epistemological orientations revealed by the quantitative findings. In this way, the lexical data served as a heuristic tool to guide deeper qualitative interpretation, enabling a dialectical synthesis between measurable textual patterns and their underlying discursive meanings. This integration ensured both methodological triangulation and epistemic coherence in evaluating how the curriculum constructs and legitimises knowledge related to planetary sustainability. The analytical procedure is structured to conduct a systematic lexical analysis of the curriculum document

(Manning & Schutze, 1999; Hanks, 2013). This process involves tokenising the text and quantifying the frequency of terms.

1. Text pre-processing: The document is publicly available in PDF format. Punctuation, numbers, and common English stop words (e.g., ‘the,’ ‘is,’ ‘and’) were removed to focus the analysis on substantive content. The remaining words were lemmatised to their root forms (e.g., ‘boundaries’ becomes ‘boundary’) to ensure that all variations of a concept are counted together.
2. Term frequency analysis: A term frequency analysis was performed to quantify the occurrence of key terms within the curriculum (Manning & Schutze, 1999). This analysis was twofold. First, a deductive approach was used, with a pre-defined list of keywords developed from the nine planetary boundaries (viz., climate change; novel entities, e.g., synthetic organic pollutants, radioactive materials, microplastics; stratospheric ozone depletion; atmospheric aerosol loading; ocean acidification; biogeochemical flows, specifically phosphorus and nitrogen cycles; freshwater use; land-system change; and biosphere integrity, including both genetic and functional diversity). The term frequency for each of these terms was calculated to measure the explicit attention given to each boundary within the document. The frequency of these terms provided insight into the curriculum’s emphasis on systemic thinking, which is a core component of the planetary boundaries framework.
3. Lexical co-occurrence and collocation: A lexical co-occurrence analysis was conducted to identify how key terms are used in context by examining which words frequently appear near the planetary boundaries keywords. This procedure served two main purposes. First, it helped to evaluate epistemological coherence by determining if Physical Geography terms (e.g., ‘climate’) and Human Geography terms (e.g., ‘society,’ ‘development’) were consistently used together, indicating a systemic or integrated approach to human-environment relationships. Second, it allowed for the assessment of normative dimensions by identifying collocations with ethical terms (e.g., ‘stewardship,’ ‘responsibility’) to gauge the curriculum’s explicit or implicit attention to ethical considerations.

This procedure provides a quantitative and reproducible method for a critical and systematic assessment of how the curriculum constructs knowledge and values (Hanks, 2013). The use of term frequency and other lexical analysis techniques, as outlined by Papp-Zipernovszky et al. (2022), allows for a direct measurement of the curriculum’s focus on key concepts, complementing qualitative insights with empirical data. This approach is well established within content analysis and corpus linguistics for its ability to provide objective, data-driven insights into large textual bodies (Krippendorff, 2012).

## **RESULTS**

### **Framing of Geography and its Intended Aims**

Geography is presented as a discipline concerned with both human and physical environments, united by a spatial perspective. The FET Phase curriculum specifies: “Geography is the study of human and

physical environments. ... The concept that unifies Geography is space. All geographical phenomena have a spatial dimension and operate in a continuously changing environment” (DBE, 2011, p. 8).

Alongside this framing, the document explicitly articulates sustainability and environmental responsibility as educational goals. The curriculum mandates “a commitment towards sustainable development ... [and] making and justifying informed decisions and judgements about social and environmental issues” (DBE, pp. 8–9). Yet, as the term frequency analysis below demonstrates, these aims are only partially realised in the detailed curricular content.

### Quantitative Frequency Distribution of Planetary Boundary Terms (As Part of a Mixed-Methods Analysis)

Figure 2 below shows the frequency at which each of the nine boundaries appeared in the documents after the term frequency analysis was conducted.

Figure 2. Term Frequency of Planetary-Boundary Keywords in the South African FET Geography CAPS (DBE, 2011); n = counts after pre-processing and lemmatisation.

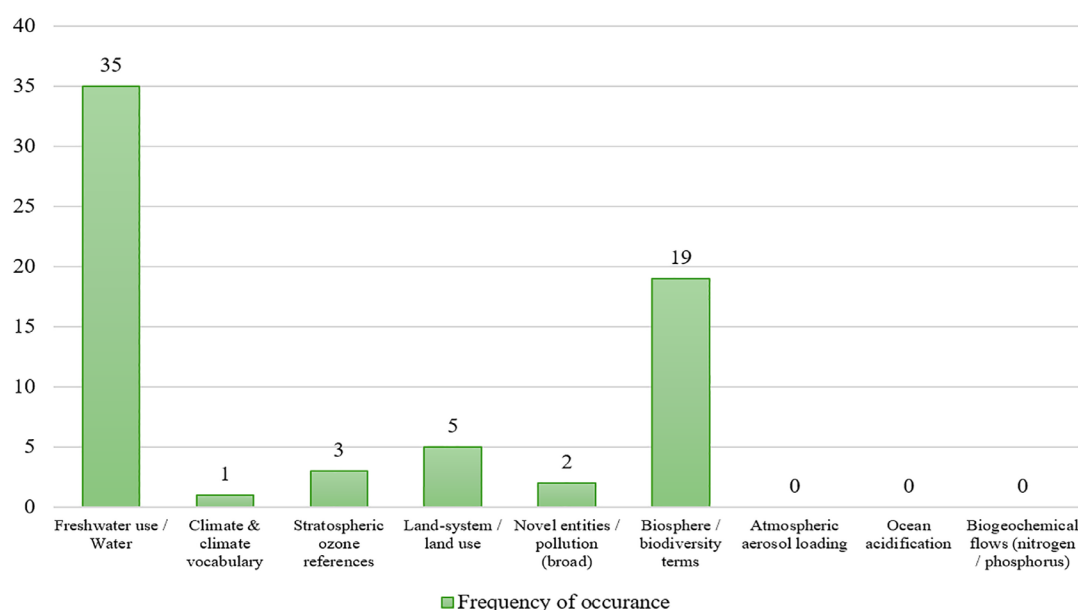
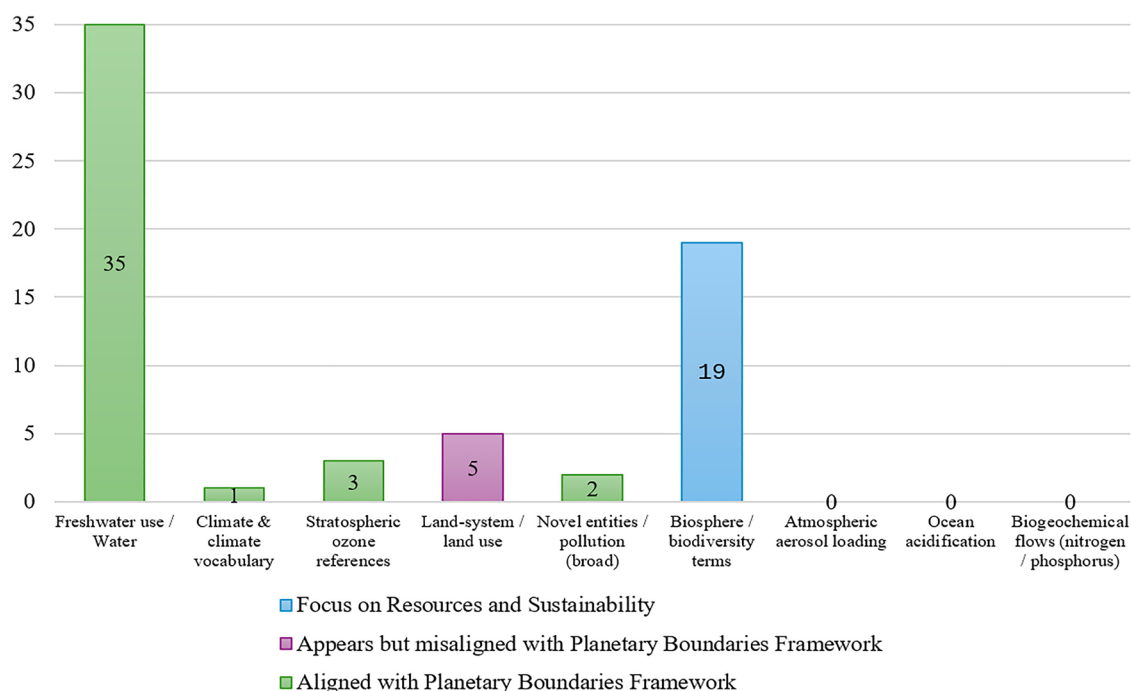


Figure 3 presents the alignment between the observed term occurrences and the planetary boundaries framework. The table indicates that the boundaries relating to freshwater use, climate change, stratospheric ozone depletion, and novel entities show clear correspondence with the wider planetary boundaries discourse. Terms associated with the biosphere, however—largely framed through references to soil—are positioned within a resource- and sustainability-oriented discourse rather than within a systemic understanding of biosphere integrity. Finally, all terms linked to land-system change are misaligned with the planetary boundaries framework, as they are predominantly situated within socio-economic framings rather than ecological or threshold-based conceptualisations.

Figure 3. Alignment of Curriculum Term Occurrences with the Planetary Boundaries Framework



## Freshwater Use

*Water* emerges as one of the most strongly emphasised planetary boundary domains within the curriculum, with a frequency of  $n = 35$  occurrences (DBE, 2011, p. 21). In Grade 10, Term 1, under the topic “The Atmosphere” (DBE, 2011, p. 21), water is introduced as a subtopic, namely “water in the atmosphere in different forms, such as water vapour and liquid” (DBE, 2011, p. 21). Later in the same grade, Term 4, the topic “Water Resources” (DBE, 2011, p. 26) explicitly foregrounds water as a curricular theme. Geography teachers are guided to employ websites such as World Water at <http://www.worldwater.org/data.html> and the Department of Water Affairs at <http://www.dwa.gov.za> as supplementary resources to deepen learners’ understanding (DBE, 2011, p. 26).

This Term 4 topic is structured around subtopics including “Water in the World: different forms of water in the world: liquid, solid and gas; the hydrological cycle; [and] occurrence of salt water and fresh water: oceans, rivers, lakes, ground water and atmosphere” (DBE, 2011, p. 26). In addition, “Water Management in South Africa: rivers, lakes and dams in South Africa; factors influencing the availability of water in South Africa; challenges of providing free basic water to rural and urban communities in South Africa; the role of government – initiatives towards securing water: inter-basin transfers and building dams; role of municipalities: provision and water purification; and strategies towards sustainable use of water – role of government and individuals” is emphasised (DBE, 2011, p. 26).

At Grade 12 level, Term 1, water reappears under the topic “Geomorphology” (DBE, 2011, p. 43). Teachers are directed to utilise further websites, including the USGS Water Cycle page (USGS, n.d.), the Department of Water Affairs website (DWAf, n.d.), Ritter’s *Fluvial Systems – Drainage*

*Patterns* (Ritter, n.d.), and the *Mass Movements* Slideshare presentation (Slideshare, n.d.), as well as resources on “rivers in the local environment (fieldwork) and GIS” (DBE, 2011, p. 43). Within this topic, the subtopic “Drainage Systems in South Africa” introduces learners to concepts such as “drainage basin, catchment area, river system, watershed, tributary, river mouth, source, confluence, water table, surface run-off and groundwater” (DBE, 2011, p. 43). Furthermore, “Catchment and River Management: importance of managing drainage basins and catchment areas; impact of people on drainage basins and catchment areas; and case study of one catchment area management strategy in South Africa” is explicitly stipulated (DBE, 2011, p. 43).

The curriculum also prescribes assessment integration: the Grade 10 end-of-year examination should include “Section B: Question 3: Short objective type questions for 15 marks to cover content on Population and Water Resources [and] Water resources for 30 marks [and a] Question 4: Short objective type questions for 15 marks to cover content on Population and Water Resources [and] Water resources for 30 marks” (DBE, 2011, p. 56).

## **Climate Change**

*Climate change* occurs  $n = 1$  time in the curriculum. In Grade 10, Term 1, within the topic “The Atmosphere” (DBE, 2011, p. 21), it appears as “the impact of climate and climate change on Africa’s environment and people – deserts, droughts, floods and rising sea levels” (DBE, 2011, p. 21). Although the term itself is rarely used, an implicit connection is drawn through the preceding focus on “the Greenhouse Effect – impact on people and the environment; global warming: evidence, causes, and consequences, with reference to Africa” (DBE, 2011, p. 21). This structuring suggests that climate change is subsumed under broader atmospheric processes rather than treated as a distinct planetary boundary.

## **Stratospheric Ozone Depletion**

*Ozone* occurs  $n = 3$  times in the curriculum. In Grade 10, Term 1, again under “The Atmosphere” (DBE, 2011, p. 21), learners encounter “the ozone layer – in the stratosphere; causes and effects of ozone depletion; and ways to reduce ozone depletion” (DBE, 2011, p. 21). Within the same subtopic, “Composition and Structure of the Atmosphere,” the stratosphere is specifically referenced  $n = 2$  times: “the composition and structure of the atmosphere: troposphere, stratosphere, mesosphere and thermosphere; the ozone layer – in the stratosphere” (DBE, 2011, p. 21). This demonstrates that ozone depletion is recognised explicitly, albeit with limited conceptual extension to systemic planetary implications.

## **Land-System Change**

The term *land* occurs  $n = 5$  times in the curriculum. In Grade 12, Term 2, under the topic “Rural Settlement and Urban Settlement” (DBE, 2011, p. 45), land is referenced through multiple subtopics. These include “land use in rural settlements”; “social justice issues in rural areas, such as access to resources and land reform”; and “internal structure and patterns of urban settlements: land use zones; concept of urban profile; and factors influencing the morphological structure of a city; ... and; changing urban patterns and land use in South African cities” (DBE, 2011, p. 45).

Teachers are guided towards the use of additional resources, namely “atlases; media information; <http://www.statssa.gov.za>; topographic and orthophoto maps; vertical photographs or satellite images (such as Google Earth); and telephone directory for types of economic activities in a settlement” (DBE, 2011, p. 45). The focus here is on socio-economic dimensions of land use rather than the ecological implications of land-system change as a planetary boundary.

## **Novel Entities**

*Pollution* occurs  $n = 2$  times in the curriculum. In Grade 12, Term 1, under the subtopic “Urban Climates” (DBE, 2011, p. 42), there is reference to the “concept of pollution domes – causes and effects” (DBE, 2011, p. 43). In Grade 10, Term 4, under the subtopic “The World’s Oceans,” learners encounter the “relationship between oceans and people: pollution, overfishing and desalination” (DBE, 2011, p. 26). Within the Geography FET CAPS document (DBE, 2011), pollution is referenced in limited and localised contexts, yet the planetary boundary of novel entities is entirely absent. The curriculum refers to pollution domes and marine pollution, but these framings correspond to traditional environmental degradation rather than the broader systemic category of novel entities, which includes plastics, synthetic compounds, and persistent organic pollutants. The planetary boundary of novel entities—which differs conceptually from conventional pollution and represents emerging global risks with uncertain ecological outcomes (Richardson et al., 2023; Rockström et al., 2023)—is therefore excluded from the curriculum’s epistemic framing. This omission narrows learners’ understanding of the complex, globalised nature of anthropogenic environmental change. Critical curriculum theory would interpret this as an ideological narrowing of pollution knowledge, whereby systemic and global threats are excluded from curricular legitimacy.

## **Biosphere Integrity**

*Biosphere* and *integrity* appear  $n = 0$  times in the curriculum. However, related inferences can be drawn. In Grade 11, Term 4, under the topic “Resources and Sustainability” (DBE, 2011, p. 36), learners are introduced to “concepts of sustainability and sustainable use of resources” (DBE, 2011, p. 36). Soil emerges prominently in this section, with subtopics such as “Soil and Soil Erosion; how soils are formed; soil as a resource; causes of soil erosion: human, animal, physical, and past and present;

evidence of soil erosion in South Africa; effects of soil erosion on people and the environment; and management strategies to prevent and control soil erosion” (DBE, 2011, p. 36).

The Grade 11 end-of-year examination further integrates this emphasis, stipulating: “Section B: Question 3: Short objective type questions for 15 marks to cover content on Development and Resources and sustainability; Development for 30 marks; [and] Resources and sustainability for 30 marks [and a] Question 4: Short objective type questions for 15 marks to cover content on Development and Resources and sustainability; Development for 30 marks; [and] Resources and sustainability for 30 marks” (DBE, 2011, p. 57).

Soil is also foregrounded in Grade 12, Term 3, under the topic “Economic Geography of South Africa” (DBE, 2011, p. 47), specifically in the subtopic “Agriculture” (DBE, 2011, p. 47) as “factors that favour and hinder agriculture in South Africa, such as climate, soil, land ownership and trade” (DBE, 2011, p. 47). Biodiversity—encompassing species, genetic, and functional diversity—is absent. Ecological knowledge is thereby reduced to soil as a resource and soil erosion. This reflects a utilitarian orientation rather than systemic concern for biosphere integrity. In critical curriculum theory terms, the omission constitutes a silence, as biodiversity knowledge is excluded despite its centrality to planetary sustainability.

### Biogeochemical Flows

*Biogeochemical*, *nitrogen*, and *phosphorus* occur  $n = 0$  times in the curriculum. While agriculture and food security are discussed in Grade 12, as “the importance of food security in South Africa – influencing factors; and case studies related to food security in South Africa” (DBE, 2011, p. 47), the underlying scientific cycles that regulate biogeochemical flows are excluded. Teachers are directed to support the topic with resources and content from “food security: <http://www.fanrpan.org>” (DBE, 2011, p. 47). Learners are therefore not exposed to the notion that human disruption of nitrogen and phosphorus cycles constitutes a planetary boundary. This omission limits systemic comprehension of agricultural-environmental interdependencies.

### Ocean Acidification

*Acidification* occurs  $n = 0$  times in the curriculum. Oceans are taught primarily in Grade 10, Term 3, under the topic “Water Resources,” through the subtopic “The World’s Oceans: oceans as sources of oxygen, food and energy; ocean circulation – warm and cold currents; ocean currents and their importance for fishing, trade and tourism; relationship between oceans and people: pollution, overfishing and desalination; and strategies for managing the world’s oceans” (DBE, 2011, p. 26). In Grade 11, Term 1, oceans are revisited in “The Atmosphere” (DBE, 2011, p. 30), specifically “the role of oceans in climate control in Africa; El Niño and La Niña processes and their effects on Africa’s climate” (DBE, 2011, p. 30). Additionally, oceanography appears under “Geographical Skills and Techniques” (DBE, 2011, pp. 29–30), where learners apply GIS to “climatology and meteorology,

as well as oceanography, using satellite images” (DBE, 2011, p. 29). However, the critical planetary concern of ocean acidification is omitted. This represents a major scientific gap in the curricular representation of ocean systems.

### **Atmospheric Aerosol Loading**

*Aerosols* or equivalent terminology occurs  $n = 0$  times in the curriculum. However, the “importance of the atmosphere; the composition and structure of the atmosphere: troposphere, stratosphere, mesosphere and thermosphere” (DBE, 2011, p. 21) is covered in Grade 10, Term 1, which focuses on the characteristics of the different layers of the Earth’s atmosphere. In Grade 12, Term 1, under the subtopic “Urban Climates” (DBE, 2011, p. 42), urban air quality is framed narrowly through “concept of pollution domes – causes and effects” (DBE, 2011, p. 42). Teachers are advised to use supplementary materials such as “atlases; media information; <http://www.weathersa.co.za> for weather prediction, satellite images and synoptic weather charts; and <http://www.weathersa.co.za>” (DBE, 2011, p. 41). While this introduces learners to meteorological and climatic resources, aerosols as a systemic planetary boundary remain absent. This omission exemplifies a broader absence of air chemistry systems knowledge within the curriculum.

It is important to note, however, that lexical frequency patterns do not, in themselves, provide definitive evidence of epistemological or ideological intent within the curriculum. While the uneven distribution of planetary-boundary terminology highlights patterns of emphasis and omission, lexical analysis identifies what is present or absent at the level of explicit wording rather than the underlying rationales for those patterns. Accordingly, any interpretive claims emerging from these data should be understood as indicative rather than determinative.

## **CONCLUSIONS**

The curriculum places strong emphasis on freshwater use, while other planetary boundaries—land-system change, biogeochemical flows, ocean acidification, and atmospheric aerosol loading—are absent. This imbalance reflects what Agbedahin and Lotz-Sisitka (2019) identify as uneven embedding of Education for Sustainable Development and Education for Climate Change. The effect is an epistemic narrowing that privileges local, utilitarian framings over the global, systemic dynamics central to the planetary boundaries framework (Richardson et al., 2023; Steffen et al., 2015). Because lexical analysis highlights patterns of presence and absence without revealing curricular intent, the interpretations offered here are analytically informed rather than conclusive. Critical curriculum theory is therefore used to situate these patterns within wider discursive tendencies. The absence of specific terms such as nitrogen, phosphorus, acidification, and aerosols points to more than limited vocabulary, although such gaps must be interpreted cautiously. Read alongside critical curriculum theory, these silences indicate a tendency to privilege certain forms of environmental knowledge, highlighting Lotz-Sisitka et al. (2024, p. 549) call for “more radical learning-centred transformation ... in the sustainability

sciences.” This reflects broader ideological decisions about which knowledges are legitimised (Sanjakdar & Apple, 2024). Consequently, the Geography FET CAPS (DBE, 2011) reproduces an anthropocentric, resource-based orientation rather than fostering relational understandings suitable for the Anthropocene (Le Grange, 2017; O’Donoghue, 2014).

Climate change receives only a single reference in the curriculum (DBE, 2011), a notable omission given contemporary evidence on tipping points (Lenton et al., 2008; Cai et al., 2016; Drijfhout et al., 2015). Projected warming and increased extremes in Africa (Engelbrecht et al., 2015; Engelbrecht et al., 2025) are not reflected in the curriculum. This limits learners’ capacity to grasp non-linear and potentially irreversible Earth system changes (Steffen et al., 2018; Feldmann & Levermann, 2015) and reduces opportunities for anticipatory education relevant to events such as the Durban floods and the Day Zero drought (Enqvist & Ziervogel, 2019; Marcus & Spocter, 2025; Ziervogel, 2019). Although freshwater use is more extensively covered, the framing is predominantly technocratic, focusing on hydrological cycles and fluvial geomorphology. This approach neglects governance and justice dimensions central to South Africa’s inequitable water landscape (Enqvist & Ziervogel, 2019; Sinha & Kumar, 2019). Research on land-use impacts (Dabrowski & De Klerk, 2013; De Klerk, 2016; Mashaba et al., 2025) shows that water systems are shaped by social and ecological interactions. These perspectives remain absent, reinforcing the marginalisation of situated knowledge noted by O’Donoghue et al. (2019).

The omissions and selective emphases in the Geography FET CAPS (DBE, 2011) raise the question of how geography education might be reconfigured to prepare learners for planetary challenges. Transgressive learning, as developed by Lotz-Sisitka et al. (2016; 2024), offers one option. It seeks to unsettle dominant epistemologies and promote dialogical, justice-oriented pedagogies that engage directly with socio-ecological crises. Integrating planetary boundaries into the curriculum could help learners situate local issues—such as drought in the Eastern Cape (Mahlalela et al., 2020) or biodiversity loss in the Vhembe Biosphere Reserve (Ramarumo, 2022)—within wider Earth system processes (Rockström et al., 2023; Lade et al., 2020). Comparable work on South African urban and heritage spaces shows the value of linking local socio-spatial dynamics with global systems (Rogerson, 2024), reinforcing the need for curriculum reform that is both contextually grounded and globally oriented.

International research similarly positions geography curricula as important for addressing climate and sustainability challenges (Miao et al., 2022; Enke & Budke, 2023). Yet, South African studies continue to identify gaps in how climate change is presented to school children (Lotz-Sisitka et al., 2021a; Thenga, 2025; Naidoo & Heath, 2024). Learners report concern about climate impacts but lack curricular tools to connect personal experience with systemic change (Kutywayo et al., 2022; UNICEF, 2023). A curriculum structured around planetary boundaries could strengthen alignment with UNESCO’s (2020) *Education for Sustainable Development Roadmap* by supporting both understanding and agency. Such engagement is also political. Lotz-Sisitka et al. (2021b) argue for reclaiming education’s transformative potential, positioning learners as co-creators of futures rather than passive recipients of content. Embedding justice-oriented and transgressive pedagogies along with the planetary boundaries thinking would enable geography education to contribute to what

Rockström (2015, p. 7) calls a “great transition” towards more sustainable trajectories. Similar gaps appear across European, Asian, and African curricula (Enke & Budke, 2023; Miao et al., 2022; Mwendwa, 2017), underscoring the wider relevance of embedding systemic Earth-system thinking within school geography.

To align geography education with contemporary imperatives, curriculum reform should include explicit learning pathways informed by the planetary boundaries framework. This involves revising policy texts, designing assessments that require integrative analysis, and strengthening teacher education to support systems-oriented pedagogy. South African case studies such as Day Zero, Durban floods, eutrophication of rivers, or invasive species in the fynbos can scaffold learners from basic description to threshold reasoning. Linking sustainability values to measurable Earth-system processes would better equip learners for informed civic participation and futures-oriented decision-making (Rockström, 2015).

The analysis shows that while the Geography FET CAPS addresses climatic systems, hydrospheric processes, and biodiversity, these topics are not framed within a coherent planetary boundaries logic. This limits learners’ ability to understand interdependence within Earth systems and reflects a broader epistemic constraint that encourages fragmented knowledge. Nonetheless, the curriculum could foster planetary consciousness if reoriented around planetary boundaries as a conceptual anchor. Such a shift would support the DBE's commitment to responsible citizenship and strengthen South Africa’s contribution to global debates on navigating the Anthropocene (Rogerson, 2024; 2025; Marcus & Spoeter, 2025).

Finally, while lexical analysis offers systematic insight into explicit content, it cannot reveal the full epistemological or ideological orientations of curriculum design. Interpretive claims therefore draw on wider theoretical frameworks and do not assume authorial intent. The study also does not examine how teachers mediate or adapt the curriculum, nor how learners engage with sustainability concepts. Further research combining textual, classroom-based, and learner-focused inquiry can provide a more comprehensive understanding of how planetary boundaries and Earth-system thinking are enacted in South African geography education.

## REFERENCES

- Agbedahin, A. V., & Lotz-Sisitka, H. (2019). Mainstreaming education for sustainable development: Elaborating the role of position-practice systems using seven laminations of scale. *Journal of Critical Realism*, 18(2), 103–122. <https://doi.org/10.1080/14767430.2019.1602975>
- Azote for Stockholm Resilience Centre. (2025). *The 2025 update to the Planetary boundaries* [Infographic]. Stockholm Resilience Centre. <https://www.stockholmresilience.org/research/planetary-boundaries.html>
- Cai, Y., Lenton, T. M., & Lontzek, T. S. (2016). Risk of multiple interacting tipping points should encourage rapid CO<sub>2</sub> emission reduction. *Nature Climate Change*, 6, 520–525. <https://doi.org/10.1038/nclimate2964>

- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Dabrowski, J. M., & De Klerk, L. P. (2013). An assessment of the impact of different land use activities on water quality in the upper Olifants River catchment. *Water SA*, 39(2), 231–244. <https://doi.org/10.4314/wsa.v39i2.6>
- DBE. (2011). *Curriculum and Assessment Policy Statement: Further Education and Training Phase Grades 10–12 Geography*. Government of South Africa. <https://www.education.gov.za/LinkClick.aspx?fileticket=sdwEoyM0nY0%3D&tabid=570&portalid=0&mid=1558>
- De Klerk, A. R. (2016). *A comparative ecotoxicological study of two major South African river systems: A catchment-scale approach for improved risk assessment and environmental management through the integration of abiotic, biotic, biochemical and molecular endpoints* [Doctoral dissertation]. Stellenbosch University. <https://core.ac.uk/download/pdf/188223798.pdf>
- Department of Water Affairs (DWAF). (n.d.). *South African rivers*. <http://www.dwaf.gov.za>
- Drijfhout, S., Bathiany, S., Beaulieu, C., Brovkin, V., Claussen, M., Huntingford, C., Scheffer, M., Sgubin, G., & Swingedouw, D. (2015). Catalogue of abrupt shifts in Intergovernmental Panel on Climate Change climate models. *Proceedings of the National Academy of Sciences*, 112(43), 5777–5786. <https://doi.org/10.1073/pnas.1511451112>
- Engelbrecht, F. A., Steinkopf, J., Chang, N., Biskop, S., Malherbe, J., Engelbrecht, C. J., Grab, S., le Roux, A., Vogel, C., Padavatan, J., & Thatcher, M. (2025). Extreme event attribution using km-scale simulations reveals the pronounced role of climate change in the Durban floods. *Communications Earth & Environment*, 6(1), 506. <https://doi.org/10.1038/s43247-025-02460-5>
- Engelbrecht, F., Adegoke, J., Bopape, M. J., Naidoo, M., Garland, R., Thatcher, M., McGregor, J., Katzfey, J., Werner, M., Ichoku, C., & Gatebe, C. (2015). Projections of rapidly rising surface temperatures over Africa under low mitigation. *Environmental Research Letters*, 10(8), 085004. <https://doi.org/10.1088/1748-9326/10/8/085004>
- Enke, K. A., & Budke, A. (2023, August). Preparing students for a changing world: How geography curricula in Europe are tackling climate change. *Frontiers in Education*, 8, 1216780. <https://doi.org/10.3389/feduc.2023.1216780>
- Enqvist, J. P., & Ziervogel, G. (2019). Water governance and justice in Cape Town: An overview. *Wiley Interdisciplinary Reviews: Water*, 6(4), e1354. <https://doi.org/10.1002/wat2.1354>
- Feldmann, J., & Levermann, A. (2015). Collapse of the West Antarctic Ice Sheet after local destabilization of the Amundsen Basin. *Proceedings of the National Academy of Sciences*, 112(46), 14191–14196. <https://doi.org/10.1073/pnas.1512482112>
- Gandolfi, H. E., Rushton, E. A., Silva, L. F., & da Silva Carvalho, M. B. S. (2024). Teacher educators and environmental justice: Conversations about education for environmental justice between science and geography teacher educators based in England and Brazil. *Cultural Studies of Science Education*, 19(2), 257–286. <https://doi.org/10.1007/s11422-024-10212-8>
- Hanks, P. (2013). *Lexical analysis: Norms and exploitations*. MIT Press.

- IPCC. (2019a). *Global warming of 1.5°C*. IPCC. [https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15\\_Full\\_Report\\_HR.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Full_Report_HR.pdf)
- IPCC. (2019b). *Special report on the ocean and cryosphere in a changing climate*. IPCC. <https://www.ipcc.ch/srocc/>
- Krippendorff, K. (2012). *Content analysis: An introduction to its methodology* (4th ed.). SAGE Publications.
- Kutywayo, A., Chersich, M., Naidoo, N. P., Scorgie, F., Bottoman, L., & Mullick, A. (2022). Climate change knowledge, concerns and experiences in secondary school learners in South Africa. *Jàmbá: Journal of Disaster Risk Studies*, 14(1), a1162. <https://journals.co.za/doi/abs/10.4102/jamba.v14i1.1162>
- Lade, S. J., Steffen, W., De Vries, W., Carpenter, S. R., Donges, J. F., Gerten, D., Hoff, H., Newbold, T., Richardson, K., & Rockström, J. (2020). Human impacts on planetary boundaries amplified by Earth-system interactions. *Nature Sustainability*, 3(2), 119–128. <https://doi.org/10.1038/s41893-019-0454-4>
- Le Grange, L. (2017). Environmental education after sustainability. In *Post-sustainability and environmental education: Remaking education for the future* (pp. 93–107). Springer International Publishing. [https://doi.org/10.1007/978-3-319-51322-5\\_7](https://doi.org/10.1007/978-3-319-51322-5_7)
- Leal Filho, W., Sima, M., Sharifi, A., Luetz, J.M., Salvia, A.L., Mifsud, M., Olooto, F.M., Djekic, I., Anholon, R., Rampasso, I. and Kwabena Donkor, F. (2021). Handling climate change education at universities: An overview. *Environmental Sciences Europe*, 33(1), 1–19. <https://doi.org/10.1186/s12302-021-00552-5>
- Lenton, T. M., Held, H., Kriegler, E., Hall, J. W., Lucht, W., Rahmstorf, S., & Schellnhuber, H. J. (2008). Tipping elements in the Earth's climate system. *Proceedings of the National Academy of Sciences*, 105(6), 1786–1793. <https://doi.org/10.1073/pnas.0705414105>
- Lotz-Sisitka, H., Ali, M.B., Mphepo, G., Chaves, M., Macintyre, T., Pesanayi, T., Wals, A., Mukute, M., Kronlid, D., Tran, D.T. and Joon, D. (2016). Co-designing research on transgressive learning in times of climate change. *Current Opinion in Environmental Sustainability*, 20(1), 50–55. <https://doi.org/10.1016/j.cosust.2016.04.004>
- Lotz-Sisitka, H., Le Grange, L., & Mphepo, G. (2024). Engaged sustainability science and place-based transgressive learning in higher education. *South African Journal of Science*, 120(9/10). <https://www.ajol.info/index.php/sajsci/article/view/280729>
- Lotz-Sisitka, H., Mandikonza, C., Misser, S., & Thomas, K. (2021a). Making sense of climate change in a national curriculum. In I. Schudel, I., Songqwaru, Z., & Tshiningayamwe, S. (Eds.), *Teaching and learning for change* (1st ed., pp. 92–111). African Minds. <http://hdl.handle.net/10962/435193>
- Lotz-Sisitka, H., Rosenberg, E., & Ramsarup, P. (2021b). Environment and sustainability education research as policy engagement: (Re-)invigorating ‘politics as potential’ in South Africa. *Environmental Education Research*, 27(4), 525–553. <https://doi.org/10.1080/13504622.2020.1759511>

- Lovejoy, T. E., & Nobre, C. (2018). Amazon tipping point. *Science Advances*, 4, eaat2340. <https://doi.org/10.1126/sciadv.aat2340>
- Mahlalela, P. T., Blamey, R. C., Hart, N. C. G., & Reason, C. J. C. (2020). Drought in the Eastern Cape region of South Africa and trends in rainfall characteristics. *Climate Dynamics*, 55(9), 2743–2759. <https://doi.org/10.1007/s00382-020-05413-0>
- Manning, C., & Schütze, H. (1999). *Foundations of statistical natural language processing*. MIT Press.
- Marcus, T., & Spocter, M. (2025). Citizen concerns about and responses to the water crisis in a high-income suburb in Cape Town, South Africa. *Modern Geografía*, 20(3), 127–146. <https://doi.org/10.15170/MG.2025.20.03.07>
- Mashaba, P. N., Myburgh, W. J., & Panagos, M. D. (2025). Spatio-temporal changes in the riparian vegetation associated with the Grassland Biome section of the Olifants River, Mpumalanga, South Africa. *Water SA*, 51(3), 215–227. <https://doi.org/10.17159/wsa/2025.v51.i3.4114>
- Miao, S., Meadows, M. E., Duan, Y., & Guo, F. (2022). How does the geography curriculum contribute to education for sustainable development? Lessons from China and the USA. *Sustainability*, 14(17), 10637. <https://doi.org/10.3390/su141710637>
- Mwendwa, B. (2017). Learning for sustainable development: Integrating environmental education in the curriculum of ordinary secondary schools in Tanzania. *Journal of Education for Sustainable Innovation*, 3(1), 76–86. <https://doi.org/10.56916/jesi.v3i1.1174>
- Naidoo, S. (2024). Imagining a South African climate change adaptation-aligned school curriculum using generative artificial intelligence. *Journal of Geography Education in Africa*, 7, 117–140. <https://doi.org/10.46622/jogea.v7i1.5427>
- Naidoo, S. (2025). Non-representational theory in the South African Geography FET CAPS. *African Journal of Teacher Education and Development*, 4(1), a105. <https://doi.org/10.4102/ajoted.v4i1.105>
- Naidoo, S., & Heath, G. (2024). Representation of climate change adaptation in Geography Education modules at the University of KwaZulu-Natal (UKZN). *Journal of Geography Education in Africa*, 7, 41–61. <https://doi.org/10.46622/jogea.v7i1.4991>
- Ndlovu, M., Clulow, A. D., Savage, M. J., Nhamo, L., Magidi, J., & Mabhaudhi, T. (2021). An assessment of the impacts of climate variability and change in KwaZulu-Natal Province, South Africa. *Atmosphere*, 12(4), 427. <https://doi.org/10.3390/atmos12040427>
- Nyerere, J., Kapfudzaruwa, F., Fadaïro, O., Odingo, A., Manchisi, J., & Kudo, S. (2021). Higher education and the Education for Sustainable Development in Africa (ESDA) programme. In *Sustainable development in Africa: Fostering sustainability in one of the world's most promising continents* (pp. 179–199). Springer. [https://doi.org/10.1007/978-3-030-74693-3\\_11](https://doi.org/10.1007/978-3-030-74693-3_11)
- O'Donoghue, R. (2014). Re-thinking education for sustainable development as transgressive processes of educational engagement with human conduct, emerging matters of concern and the common good. *Southern African Journal of Environmental Education*, 30(7), 7–26. <https://doi.org/10.4314/sajee.v30i0.121961>

- O'Donoghue, R., Kibuka-Sebitosi, E., Tshiningayamwe, S., & Palmer, C. (2019). Navigating non-sense by exemplifying situated life experience and intergenerational heritage knowledge in Education for Sustainable Development learning spaces. *Southern African Journal of Environmental Education*, 35. <http://hdl.handle.net/10962/388122>
- Papp-Zipernovszky, O., Mangen, A., Jacobs, A., & Lüdtke, J. (2022). Shakespeare sonnet reading: An empirical study of emotional responses. *Language and Literature*, 31(3), 296-324. <https://doi.org/10.1177/09639470211054647>
- Ramarumo, L. J. (2022). *Threatened plant species in Vhembe Biosphere Reserve, Limpopo Province, South Africa: Problems and prospects of conservation and utilisation* [Doctoral dissertation]. University of Fort Hare. <https://core.ac.uk/download/pdf/539813088.pdf>
- Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Drüke, M., Fetzer, I., Bala, G., von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., Nogués-Bravo, D., Petri, S., Porkka, M., Rahmstorf, S., Schaphoff, S., Thonicke, K., Tobian, A., Virkki, V., Wang-Erlandsson, L., Weber, L., & Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, 9(37), eadi8005. <https://doi.org/10.1126/sciadv.adh2458>
- Ritter, M. (n.d.). *Drainage patterns*. University of Wisconsin – Stevens Point. [http://www.uwsp.edu/geo/faculty/ritter/geog101/textbook/fluvialsystems/drainage\\_patterns.html](http://www.uwsp.edu/geo/faculty/ritter/geog101/textbook/fluvialsystems/drainage_patterns.html)
- Rockström, J. (2015). Bounding the planetary future: Why we need a great transition. *Great Transition Initiative*, 9, 1–13.
- Rockström, J., Donges, J. F., Fetzer, I., Martin, M. A., Wang-Erlandsson, L., & Richardson, K. (2024). Planetary boundaries guide humanity's future on Earth. *Nature Reviews Earth & Environment*, 5(11), 773–788. <https://doi.org/10.1038/s43017-024-00597-z>
- Rockström, J., Gupta, J., Qin, D., Lade, S. J., Abrams, J. F., Andersen, L. S., Armstrong McKay, D. I., Bai, X., Bala, G., Bunn, S. E., Ciobanu, D., & Richardson, K. (2023). Safe and just Earth system boundaries. *Nature*, 619(7968), 102–111. <https://doi.org/10.1038/s41586-023-06083-8>
- Rogelj, J., Forster, P. M., Kriegler, E., Smith, C. J., & Séférian, R. (2019). Estimating and tracking the remaining carbon budget for stringent climate targets. *Nature*, 571(7765), 335–342. <https://doi.org/10.1038/s41586-019-1368-z>
- Rogerson, C. M. (2024). *Planning Urban Regeneration through Heritage Tourism: The Case of Klip-town, South Africa*. *Modern Geografía*, 19(2), 71–89. <https://doi.org/10.15170/MG.2024.19.02.05>
- Rogerson, J. M. (2025). *Rooftop Agriculture in the Urban Global South: The Experience of Johannesburg*. *Modern Geografía*, 20(2), 1–19. <https://doi.org/10.15170/MG.2025.20.02.01>
- SANBI. (2019). *National Biodiversity Assessment 2018: The status of South Africa's ecosystems and biodiversity. Synthesis report for policymakers and business*. SANBI. [https://www.sanbi.org/wp-content/uploads/2024/06/2019\\_NBA-Synthesis-report.pdf](https://www.sanbi.org/wp-content/uploads/2024/06/2019_NBA-Synthesis-report.pdf)

- Sandin, G., Peters, G. M., & Svanström, M. (2015). Using the planetary boundaries framework for setting impact-reduction targets in LCA contexts. *The International Journal of Life Cycle Assessment*, 20(12), 1684–1700. <https://doi.org/10.1007/s11367-015-0984-6>
- Sanjakdar, F., & Apple, M. W. (2024). *Engaging critical pedagogy in education*. Routledge. <https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9781003307570&type=googlepdf>
- Schudel, I., Lotz-Sisitka, H., Songqwaru, Z., & Tshiningayamwe, S. (2021). Engaging Education for Sustainable Development as quality education in the Fundisa for Change programme. In I. Schudel, I., Songqwaru, Z., & Tshiningayamwe, S. (Eds.), *Teaching and learning for change* (pp. 3–21). African Minds. <http://hdl.handle.net/10962/435031>
- Shumba, O., Mandikonza, C., & Lotz-Sisitka, H. (2021). Advancing assessment thinking in education for sustainable development with a focus on significant learning processes. In I. Schudel, I., Songqwaru, Z., & Tshiningayamwe, S. (Eds.), *Teaching and learning for change* (pp. 201–222). African Minds. <http://hdl.handle.net/10962/435031>
- Sinha, P., & Kumar, R. (2019). A review on management of water resources in South Africa. *International Journal of Conservation Science*, 10(4), 821–840. [https://ijcs.ro/public/IJCS-19-74\\_Sinha.pdf](https://ijcs.ro/public/IJCS-19-74_Sinha.pdf)
- Skowno, A. L., Jewitt, D., & Slingsby, J. A. (2021). Rates and patterns of habitat loss across South Africa's vegetation biomes. *South African Journal of Science*, 117(1–2), 1–5. <https://doi.org/10.17159/sajs.2021/8182>
- Slideshare. (n.d.). *Mass movements*. <http://www.slideshare.net/migratorycoconut/chapter-81-massmovements>
- South Africa. (2011). *National Climate Change Response White Paper* [White paper]. Government Printers. [https://www.gov.za/sites/default/files/gcis\\_document/201409/nationalclimatechangeresponsewhitepaper0.pdf](https://www.gov.za/sites/default/files/gcis_document/201409/nationalclimatechangeresponsewhitepaper0.pdf)
- South Africa. (2019). *National Climate Change Adaptation Strategy*. Government Printers. [https://www.dffe.gov.za/sites/default/files/docs/nationalclimatechange\\_adaptationstrategy\\_uel0noverber2019.pdf](https://www.dffe.gov.za/sites/default/files/docs/nationalclimatechange_adaptationstrategy_uel0noverber2019.pdf)
- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter, S. R., De Vries, W., De Wit, C. A., & Folke, C. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1259855. <https://doi.org/10.1126/science.1259855>
- Steffen, W., Rockström, J., Richardson, K., Lenton, T. M., Folke, C., Liverman, D., Summerhayes, C. P., Barnosky, A. D., Cornell, S. E., Crucifix, M., & Donges, J. F. (2018). Trajectories of the Earth System in the Anthropocene. *Proceedings of the National Academy of Sciences*, 115(33), 8252–8259. <https://doi.org/10.1073/pnas.1810141115>
- Taviv, R., Mwakasonda, S., & Witi, J. (2008, October 1–3). Developing the greenhouse gas inventory for South Africa [Conference presentation]. 16th Annual International Union of Air Pollution

- Prevention and Environmental Protection Associations Regional Conference, Nelspruit, South Africa. <http://hdl.handle.net/10204/2502>
- Thenga, M. (2025). Barriers and opportunities in implementing climate change education in the FET Phase Geography curriculum in South Africa. *Journal of Geography Education in Africa*, 8, 1–15. <https://doi.org/10.46622/jogea.v8i1.5382>
- UNESCO. (2020). *Education for sustainable development: A roadmap*. UNESCO Publishing. <https://unesdoc.unesco.org/ark:/48223/pf00000374802>
- UNICEF. (2023). *Climate, energy and environment landscape analysis for children in South Africa (CEELAC)*. UNICEF South Africa. <https://www.unicef.org/southafrica/media/8536/file/ZAF-climate-energy-environment-landscape-analysis-children-SA-2023.pdf>
- USGS. (n.d.). *The water cycle*. <https://ga.water.usgs.gov/edu/watercycle.html>
- Van Wilgen, N. J., Faulkner, K. T., Robinson, T. B., South, J., Beckett, H., Janion-Scheepers, C., Measey, J., Midgley, G. F., & Richardson, D. M. (2022). Climate change and biological invasions in South Africa. In *Invasive species and global climate change* (pp. 158–187). CABI. doi:10.1079/9781800621459.0009
- Vogel, C., Schwaibold, U., & Misser, S. (2015). Teaching and learning for climate change – the role of teacher materials and curriculum design in South Africa. *Southern African Journal of Environmental Education*, 31(2), 78–97. <https://scispace.com/pdf/teaching-and-learning-for-climate-change-the-role-of-teacher-3bocyh9s2u.pdf>
- Walker, X. J., Baltzer, J. L., Cumming, S. G., Day, N. J., Ebert, C., Goetz, S., Johnstone, J. F., Potter, S., Rogers, B. M., Schuur, E. A., & Turetsky, M. R. (2019). Increasing wildfires threaten historic carbon sink of boreal forest soils. *Nature*, 572(7770), 520–523. <https://doi.org/10.1038/s41586-019-1474-y>
- Wilmot, D., & Van der Merwe, C. D. (2025). South African Geography educators' contributions to Geography Education: A perspective from the 35th International Geographical Congress, Dublin City University, Ireland, August 2024. *Journal of Geography Education in Africa*, 8, 33–47. <https://doi.org/10.46622/jogea.v8i1.5434>
- Wittlich, C., Mönter, L., & Lathan, H. (2023). Planetary health and Education for Sustainable Development: An integrative approach with focus on climate change-related human health risks and their thematisation in school contexts. *Journal of Education for Sustainable Development*, 17(2), 200–217. <https://doi.org/10.1177/09734082241238087>
- Ziervogel, G. (2019). Unpacking the Cape Town drought: Lessons learned (pp. 1–29). African Centre for Cities. [https://www.africancentreforcities.net/wp-content/uploads/2019/02/Ziervogel-2019-Lessons-from-Cape-Town-Drought\\_A.pdf](https://www.africancentreforcities.net/wp-content/uploads/2019/02/Ziervogel-2019-Lessons-from-Cape-Town-Drought_A.pdf)
- Ziervogel, G., Shale, M., & Du, M. (2010). Climate change adaptation in a developing country context: The case of urban water supply in Cape Town. *Climate and Development*, 2(2), 94–110. <https://doi.org/10.3763/cdev.2010.0036>

Zuma, V. T. (2017). *Determination and characterisation of trace metals and persistent organic pollutants in Baynespruit River, Sobantu, KwaZulu-Natal, South Africa* [Unpublished doctoral thesis]. University of South Africa. <https://ir.unisa.ac.za/handle/10500/23624>

*Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licence-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

*This open access article may be used under the international license terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>





Ibrahimova, Gulzar<sup>1</sup>

# Middle East Geopolitics Under Trump's Second Presidency: Implications for Iran's Nuclear Program

## ABSTRACT

The resurgence of Donald Trump's presidency in 2025 has introduced new complexities into U.S.–Iran relations and global nuclear diplomacy. This article examines the strategic implications of the Trump administration's renewed “maximum pressure” policy on Iran's nuclear program. Building on the precedent of Washington's 2018 withdrawal from the JCPOA, the research investigates how coercive diplomacy, military threats, and intensified sanctions influence Tehran's nuclear trajectory and regional security dynamics. It considers how the U.S. approach, characterized by strict enforcement of sanctions and diplomatic pressure, may affect Tehran's nuclear activities, regional security, and the functioning of multilateral negotiation mechanisms. The analysis also explores the role of regional actors and international institutions in shaping the evolving strategic landscape. The main objective of this study is to assess the impact of Trump's second presidency on nuclear diplomacy with Iran and to evaluate the potential consequences for regional and global security architecture.

*Keywords: Iran, nuclear program, Middle East, regional security, United States, foreign policy, nuclear diplomacy.*

---

<sup>1</sup> Full Professor, Vice-rector of Baku Eurasian University, Ak. H.Aliyev street, 135 A, AZ1110 Baku, Azerbaijan, E-mail: [gulzar.ibrahimova64@gmail.com](mailto:gulzar.ibrahimova64@gmail.com), ORCID: <https://orcid.org/0000-0002-8760-408X>

## INTRODUCTION

The longstanding and consistent objectives of U.S. foreign policy have been to curb nuclear proliferation, maintain stability within the region, and limit Iran's strategic reach. The limitations of existing diplomatic efforts, the failures of negotiations, and variable geopolitical realities demonstrate that a broader and longer-term strategic approach is required. Within this framework, the U.S.'s Middle East policy needs to be restructured based on a more multilateral and nuanced strategy that encompasses not only Iran's nuclear program but also its regional activities. Such a policy should constrain Iran's ability to make concessions while ensuring security.

An assessment of the Trump administration's impact on Iran's nuclear program and bilateral relations concludes that its "maximum pressure" policy was counterproductive. This article explores the effect of Trump-era policies on Iran's nuclear activities and U.S.–Iran relations. The decision to withdraw from the 2015 Joint Comprehensive Plan of Action (JCPOA) is cited as diminishing U.S. regional influence, exacerbating diplomatic tensions, and stimulating the advancement of Iran's nuclear capabilities (Smith, 2019). The resulting decrease in Iran's nuclear breakout time to just a few weeks has now provoked a severe crisis.

With Trump's re-election in 2025, U.S.–Iran relations entered a new phase of tension. The Trump administration returned to a hardline policy aimed at deterring Iran's nuclear ambitions, which continues to increase the risk of confrontation in the region. The leaking of classified information from the Pentagon to the press, suggesting that U.S. strikes against Iran were not very successful, indicates growing internal contradictions within the White House.

Despite Israeli attacks, Iran's nuclear arsenal has not been destroyed, and Tehran remains intent on developing its nuclear program. It is likely that in the next phase, Iran will attempt to strengthen its weak points – such as the penetration of its internal security structures by Israeli intelligence (Mossad), the transfer of critical information to adversaries, and vulnerabilities in its air defense system. The U.S. stance on Iran has significant implications for regional stability.

A broader and more multilateral Middle East policy may have implications for managing Iran-related challenges, preventing escalation, and addressing strategic competition. Such a policy should be long-term and limit Iran's alternatives for making concessions. If Iran's nuclear issue remains unresolved, nuclear proliferation in the Middle East could become inevitable. In such a scenario, the nuclear ambitions of countries like Türkiye, Egypt, and Saudi Arabia could also materialize, potentially leading to an entirely new and uncontrolled arms race in the region.

In this context, the article aims to clarify how Trump's potential second-term agenda could reshape the strategic setting of Iran's nuclear file. The study seeks to identify which specific policy tools—such as economic pressure, military deterrence, or regional alliances—are likely to influence Tehran's calculations. It also examines the gaps left by earlier research, particularly regarding the interaction between U.S. coercive measures and Iran's adaptive strategies. By linking these questions to the broader geopolitical environment, the article aims to offer a coherent analytical framework

for explaining possible escalation trajectories. Ultimately, the study seeks to contribute to a deeper understanding of the risks, constraints, and diplomatic openings that may define the next phase of the nuclear standoff.

## METHODS

This research employs a qualitative and analytical methodology to examine the evolving dynamics of U.S.–Iran relations and their implications for global nuclear diplomacy following Donald Trump's return to the presidency in 2025. The study is based on a comprehensive analysis of primary and secondary sources, including official government statements, policy documents, international agreements, think tank reports, and peer-reviewed academic literature. A historical-institutionalist approach is applied to contextualize the roots of the current tensions, particularly focusing on the U.S. withdrawal from the JCPOA in 2018 and its long-term effects on Iran's nuclear trajectory.

The research design relies on three main stages. First, a descriptive analysis outlines the key political developments, diplomatic interactions, and policy shifts between Washington and Tehran. Second, a comparative analytical framework evaluates the similarities and differences between Trump's first and second terms in office, particularly regarding coercive diplomacy, sanctions regimes, and strategic communication. Third, a scenario-based assessment explores the potential outcomes of the renewed “maximum pressure” policy for both regional security and international nuclear governance.

This study also incorporates discourse analysis of official statements by U.S. and Iranian leaders, supported by data from international organizations such as the International Atomic Energy Agency (IAEA) and the United Nations. By combining these methods, the research seeks to provide a multi-dimensional understanding of how strategic decisions and external pressures influence Iran's nuclear ambitions. The methodological approach allows for a critical evaluation of diplomatic behavior, policy rationales, and geopolitical consequences, offering insights relevant to both academic research and policy formulation.

## RESULTS

### **Donald Trump's Second Presidency and Iran's Nuclear Policy**

In 2020, President Trump stated during his presidency that Iran would never be allowed to possess nuclear weapons. According to Trump, Iran remains the leading sponsor of terrorism, and its attempts to acquire nuclear weapons threaten the civilized world—something he would “never allow” (The White House, 2025a). With Donald Trump's return to the White House in 2025, U.S.–Iran relations once again intensified. Trump reinstated his “maximum pressure” policy aimed at preventing Iran from acquiring nuclear weapons. Through a National Security Presidential Memorandum (NSPM) signed on February 5, 2025, Trump reinforced measures against Iran's nuclear activities, malign

foreign influence, and support for terrorism. The document portrays Iran as the leading state sponsor of terrorism and accuses it of supporting groups such as Hezbollah, Hamas, the Houthis, the Taliban, and Al-Qaeda. Furthermore, the Islamic Revolutionary Guard Corps (IRGC) is recognized as a “Foreign Terrorist Organization,” and it is emphasized that Iran poses a serious threat to regional and global stability (The White House, 2025b).

The Memorandum stipulates that Iran’s nuclear weapons and intercontinental ballistic missiles must be denied, its terror network neutralized, and its aggressive development of missiles, as well as other asymmetric and conventional weapon capabilities, must be countered (The White House, 2025a). The Memorandum notes Iran’s multifaceted threats against U.S. citizens. These threats, particularly those carried out via the IRGC, include cyber espionage as well as physical attacks, kidnappings, and assassination attempts. Iran’s activities are directed not only within U.S. territory but also against Americans in other countries, indicating the global expansion of its operational network.

“Hezbollah’s Islamic Jihad Organization” is one of Iran’s main proxy groups in the Middle East. These examples indicate that Iran operates not directly, but through groups it supports, employing a “proxy warfare” strategy. Thus, Iran’s sphere of influence has expanded globally to target U.S. citizens. The memorandum’s claim of “planting sleeper cells in the homeland” is considered a serious warning about Iran’s potential to create a terrorist threat inside the United States. This raises concerns that the threat could originate domestically rather than from abroad, and by condemning Iran’s activities, it lays the groundwork for harsher measures. The memorandum includes the following statements expressing the main concerns and strategy of U.S. policy toward Iran:

*Regional Aggression and Support for Terrorism:*

- Accusation regarding the October 7, 2023, Hamas attacks: It is alleged that Iran bears direct or indirect responsibility for these attacks. While official evidence has not been widely disclosed, this accusation aims to demonstrate Tehran’s support for regional terrorist activities.
- Emphasis on Iran’s support for the Houthis in Yemen, which has consequently endangered international shipping in the Red Sea. This indicates that Iran’s sphere of influence is not limited to land but extends to maritime routes.
- Highlighting Iran’s readiness for missile attacks against Israel in 2024 shows it has become a military power that destabilizes the region.

*Human Rights and Citizen Security:*

- Iran’s detention of U.S. citizens on false charges strengthens accusations of hostage diplomacy.
- The statement “The United States stands with the Iranian women subjected to the regime’s daily violence” indicates Washington’s focus on human rights issues within Iran, especially women’s rights. However, this stance is perceived by Tehran as interference in internal affairs.

*Nuclear Program and Violation of International Obligations:*

- Iran’s enrichment capabilities are assessed as an “existential threat” to U.S. and global security.

- Iran's concealment of nuclear facilities and materials from the International Atomic Energy Agency is presented as a violation of the Treaty on the Non-Proliferation of Nuclear Weapons, setting the stage for international legal pressure.
- The "all pathways to a nuclear weapon" formula aims to close not only technical capabilities like enrichment but all technological and political avenues leading to Iran's acquisition of nuclear weapons.

Overall, the memorandum reflects four main pillars of the U.S. "maximum pressure" policy against Iran: support for terrorism, regional aggression, human rights violations, and the nuclear program. The tone of the text is harsh and accusatory, demonstrating a stance that considers Iran's behavior unacceptable. The U.S. evaluates these activities as a threat to its national interests and considers it expedient to continue maximum pressure against the Iranian regime to limit its nuclear program, halt ballistic missiles, and cut off support for terrorist groups. The Memorandum reflects the main pillars of U.S. foreign policy toward Iran:

- Prevent Iran from possessing nuclear weapons and intercontinental ballistic missiles.
- Neutralize Iran's regional aggression network and campaign.
- Prevent and weaken the IRGC and its proxies' access to resources that enable them to continue their destabilizing activities.
- Prevent the aggressive development of Iran's missiles, other asymmetric, and conventional weapon capabilities.

Preventing Iran from possessing nuclear weapons and intercontinental ballistic missiles is the most central objective of U.S. policy toward Iran. This indicates a readiness to use diplomatic pressure, sanctions, and military options to prevent Tehran from acquiring nuclear weapons. Intercontinental ballistic missiles are noted as a means to deliver nuclear warheads over long distances.

Neutralizing Iran's regional aggression network and campaign targets groups supported by Iran in the region (e.g., Iraq, Syria, Lebanon, Yemen, including Hezbollah and the Houthis). The U.S.'s goal is to limit the activities and influence of these groups. The term "neutralize" signifies a strategic objective to completely negate the effectiveness and influence of this network.

Preventing and weakening the IRGC and its proxies' access to resources directly targets the IRGC, Iran's core military and ideological institution. The IRGC and its proxies refer to entities that carry out Iran's political and military operations abroad. The goal is to cut off their financial, arms, and other supplies, disrupt their activities, and weaken their power.

The U.S. objective to prevent the "aggressive development" of Iran's weapons extends beyond its nuclear program to encompass a full spectrum of military capabilities. This includes ballistic missiles, as well as asymmetric weapons such as UAVs (unmanned aerial vehicles), mortars, and naval craft that are cost-effective yet potent, in addition to conventional arms. This broad focus reveals a U.S. perception of Iran as a multifaceted military threat, not merely a nuclear one. The specific use of the term "aggressive development" underscores the rapid, assertive, and destabilizing nature with which Iran is advancing these diverse programs, solidifying its status as a dominant regional military power.

The statement thus affirms that U.S. policy is designed to confront the full spectrum of challenges posed by Iran, integrating concerns over its nuclear program with efforts to check its conventional military power, missile development, and regional influence. This integrated approach embodies a strategy of simultaneous deterrence and coercive pressure.

Article 2 of the Memorandum concerns the application of maximum pressure against the Islamic Republic of Iran. The Memorandum outlines the responsibilities of the Secretary of the Treasury, the Secretary of State, the U.S. Permanent Representative to the UN, the Secretary of Commerce, and the Attorney General.

*Responsibilities of the Secretary of the Treasury include:*

- Taking immediate action on sanction violations related to Iran.
- Conducting a continuous sanctions campaign to block financial resources of the regime and its proxies.
- Revoking or modifying existing concessions (licenses, guidelines).
- Issuing updated warnings to relevant business sectors about the risks of sanction violations.
- Promoting the implementation of the “know your customer’s customer” principle in financial institutions.

*Responsibilities of the Secretary of State include:*

- Revoking economic concessions, including those related to Chabahar Port.
- Coordinated action to reduce Iran’s oil exports to zero.
- Internationally isolating the IRGC and other terrorist entities.
- Preventing Iran from evading sanctions through Iraq and Gulf countries.

*Responsibilities of the U.S. Permanent Representative to the UN include:*

- Reactivating the anti-Iran “snapback” sanctions mechanism.
- Holding Iran accountable for violations of its NPT obligations.
- Regularly bringing Iran’s threats to international security onto the UN agenda.

*Responsibilities of the Secretary of Commerce include:*

- Strengthening export controls to limit Iran’s access to military-purpose technologies.

*Responsibilities of the Attorney General include:*

- Detecting and prosecuting Iran-related financial and operational networks in the U.S. and abroad.
- Confiscating illegal Iranian oil shipments.
- Identifying Iranian assets and ensuring compensation for U.S. citizen victims.
- Pursuing indictments and extradition efforts against Iran-related terrorist groups.
- Taking legal measures against Iran’s espionage and cyber activities.

This article indicates that the U.S. is mobilizing legal, financial, and diplomatic tools within a unified strategy in its Iran policy (The White House, 2025b). Iran’s progress in uranium enrichment has brought the country closer to a “point of no return.” Tehran has stated that it does not consider this

progress a subject for negotiation, creating a serious disagreement with Washington. This situation has also provided additional diplomatic and strategic leverage for Israel.

**IAEA Reports and Iran's Nuclear Progress**

Recent reports from the International Atomic Energy Agency (IAEA) indicate a significant increase in Iran's enriched uranium stockpile. The latest report, released in February, noted a 92.5 kg increase since the November report. This material is now only a short technical step away from reaching weapon-grade levels of 90% enrichment (Table 1). According to IAEA data, approximately 42 kg of 60% enriched uranium is theoretically sufficient to produce one atomic bomb if further enriched to 90% (Liechtenstein, 2025).

By May, this figure had increased to 409 kg of enriched uranium, which would be enough for approximately ten nuclear bombs. Iran's total enriched uranium stockpile stands at 8,294.4 kg (18,286 lbs), representing a substantial increase of 1,690.0 kg (3,725.8 lbs) since the last report in November. However, in March 2025, the Director of National Intelligence, Tulsi Gabbard, stated that U.S. intelligence "assessed that Iran is not building a nuclear weapon and that Supreme Leader Ali Khamenei has not authorized such a program" (Illmer, 2025).

Table 1. Iran's 60% Enriched Uranium Stockpile (kg), February 8, 2025

|      | August | November | February | May   |
|------|--------|----------|----------|-------|
| 2024 | 164.7  | 182.3    |          |       |
| 2025 |        |          | 274.8    | 409.0 |

Source: Liechtenstein (2025)

**Trump's Letter and Military Warning**

Assessing the current situation, President Donald Trump sent a letter to Iran's Supreme Leader, Ayatollah Khamenei, in March 2025, demanding the conclusion of a new nuclear agreement within two months (Ravid, 2025). The letter was sternly worded, threatening Iran with military consequences if negotiations failed. Trump also informed regional allies, including Israel, Saudi Arabia, and the UAE, about this development. This scenario represents a potential turning point in U.S. policy toward Iran and highlights several significant points:

1. The harsh tone of Trump's letter to Khamenei and the two-month deadline for a new nuclear agreement indicate the sharpness of the U.S. stance on Iran. This approach emphasizes the use of pressure alongside diplomatic measures. The statement that "Iran was threatened with military consequences if negotiations failed" underscores that this pressure is at its highest level, and that the U.S. is keeping the option of military intervention on the table. This approach

differs from that adopted during the Joe Biden administration, which prioritized diplomacy and multilateral engagement.

2. Trump's informing of regional allies such as Israel, Saudi Arabia, and the UAE suggests that this action is being carried out not only with U.S. support but also with the backing of key regional partners. These countries are seriously concerned about Iran's nuclear program and regional activities and support a firm U.S. stance. This indicates that a broad regional consensus against Iran has formed or is in the process of forming. Informing allies could also serve as a preliminary step to ensure their support during a potential military operation.

The writing of this letter was not a random act; rather, it is an integral part of a coordinated set of measures and preparations. Preparation for this process involved gathering detailed information about Iran's nuclear capabilities, military potential, and regional activities; defining the parameters of a new agreement; preparing potential sanctions or strengthening existing ones; establishing the legal framework for military intervention; developing military plans, identifying targets, and assessing resources; and undertaking diplomatic efforts to gain the support of regional allies.

Consequently, this letter from the Trump administration indicates that the U.S. has adopted a more assertive policy approach toward Iran, considering a military option and taking this step in coordination with regional allies. These measures affected Iran's strategic options and have significant implications for regional stability.

### **Initial Political Reaction and Negotiation Process**

Despite Supreme Leader Ayatollah Khamenei's initially strong reaction to Trump's letter, a softening of Iran's stance emerged due to internal compromise and international pressure. Iranian President Masoud Pezeshkian sent an open message signaling willingness for indirect negotiations. The first round of indirect nuclear talks between the U.S. and Iran concluded on April 12, with the fifth round wrapping up on May 25. Proceeding in an atmosphere of deep uncertainty and mutual distrust, the talks failed to produce a new accord before the two-month deadline expired. This failure led to Israel's military intervention against Iran, supported by the United States, while Iran's resistance further escalated the situation.

### **U.S. Position: Contradictory Demands and Pressure Politics**

Initially, President Donald Trump stated that preventing Iran from acquiring nuclear weapons was his primary goal. However, he later demanded the complete dismantling of the program, although he did not rule out allowing a civilian nuclear program under strict restrictions. The Secretary of State, meanwhile, insisted on a complete halt to uranium enrichment, cessation of long-range missile production, and an end to support for terrorist groups. Simultaneously, some within the administration advocated for allowing limited enrichment to avert war.

This apparent shift from "preventing nuclear weapons" to demanding "complete dismantling of the program" suggests a lack of a unified and clear strategy in U.S. negotiations. Such contradictory signaling complicates the negotiation process and fosters distrust on the Iranian side. The United States

has escalated tensions by increasing its military presence in the Middle East, intensifying sanctions, and potentially supporting Israeli strikes on Iranian nuclear facilities (Staff & Magid, 2025). These measures reflect a strategy of coercive diplomacy.

### **Iran's Stance: Legal Grounds and "Red Lines"**

Iran emphasizes its right to maintain a complete nuclear fuel cycle under the Nuclear Non-Proliferation Treaty (NPT), asserting that its program is civilian in nature. It has declared that refusing to abandon uranium enrichment constitutes a "red line," though it remains open to discussions regarding "potential militarization." While Iran rejects talks on its missile and defense systems, it states it will not produce nuclear-armed missiles. Tehran invites the U.S. to invest in its nuclear energy program, stressing that negotiations would be mutually beneficial.

### **Regional Tensions and Responses to Pressure**

In response to U.S. pressure, Iran has conducted ballistic missile tests, threatened "retaliatory strikes," and holds the U.S. responsible for Israeli attacks. Iran also exacerbates regional instability by supporting the Houthis and orchestrating provocations in Jordan. Israel is concerned about a nascent nuclear deal and advocates striking Iran's nuclear facilities. Gulf countries, however, consider a U.S.–Iran compromise vital for regional stability. China and Russia support negotiations, defending Iran's right to a civilian nuclear program and even offering mediation.

The main point of disagreement in negotiations is uranium enrichment. The U.S. states it will not permit any level of enrichment, while Iran's declaration of "refusing to abandon uranium enrichment" as a "red line" indicates its unwillingness to compromise. Although Iran has shown openness to increased inspections, the impending expiration of sanctions snapback mechanisms in October 2025 further heightens tensions. The Trump administration has threatened military operations with Israeli assistance if diplomacy fails and has acted on these threats. Iran, in turn, declares it will increase the likelihood of acquiring nuclear weapons if threatened.

### **Global and Regional Geopolitical Context**

The expansion of U.S. sanctions against trading partners such as China suggests that the nuclear issue is also being used as a tool for economic leverage. Negotiations reflect the complex political, legal, and military dimensions of U.S.–Iran relations, extending beyond the nuclear program to encompass the regional balance of power and geostrategic interests.

In May 2025, the IAEA announced that Iran had accumulated 409 kg of 60% purity uranium, a level higher than required for civilian use ("How close is Iran to getting a nuclear bomb?"). In response, Iran announced it would build a third nuclear enrichment facility under IAEA safeguards (Liechtenstein et al., 2025; Lewis, 2025). On June 10, 2025, General Michael Kurilla, head of U.S. Central Command, testified to Congress, describing Iran as the "single greatest malign actor in the region." He warned that Iran was only a few steps away from reaching the 90% threshold for weaponization and that a "historic," "unprecedented," and unparalleled "window of strategic opportunity" had emerged for the

United States to secure its core interests in the region (Marcetic, 2025). If Iran made “rapid progress” in uranium enrichment, it could produce one nuclear weapon within a week and up to ten within three weeks.

However, producing a weapon also involves additional steps Iran has yet to achieve, such as carrying out a nuclear explosion or integrating an atomic warhead onto ballistic missiles. According to various estimates, considering these additional steps, Iran is seven months to a year away from building a weapon (“CENTCOM Warned”, 2025). The General added that Tehran’s acquisition of nuclear weapons could trigger a regional arms race, prompting other countries to seek nuclear missile capabilities either through production or acquisition for self-protection.

One day before the Israeli attacks, the IAEA determined that Iran had failed to comply with its nuclear obligations for the first time in 20 years (Murphy, 2025). The White House announced that the two-month deadline for Iran to reach an agreement had expired the day before Israel’s attacks (Balmer, 2025).

Following what IAEA Director General Rafael Grossi admitted was a biased and baseless report on Iran’s nuclear program, the IAEA Board of Governors adopted a condemnation resolution alleging Iran’s non-compliance. Hours after the resolution’s adoption on June 12, Israel launched large-scale air strikes against Iran’s nuclear and military facilities in the early morning of June 13. The attacks targeted Iran’s Natanz and Fordo nuclear sites and occurred in five waves, hitting approximately 100 targets. As a result, several Iranian military commanders, scientists, and civilians were killed (“Grossi Admits”, 2025). Israeli officials stated that the strikes also hit targets Tehran did not anticipate (Fabian, 2025).

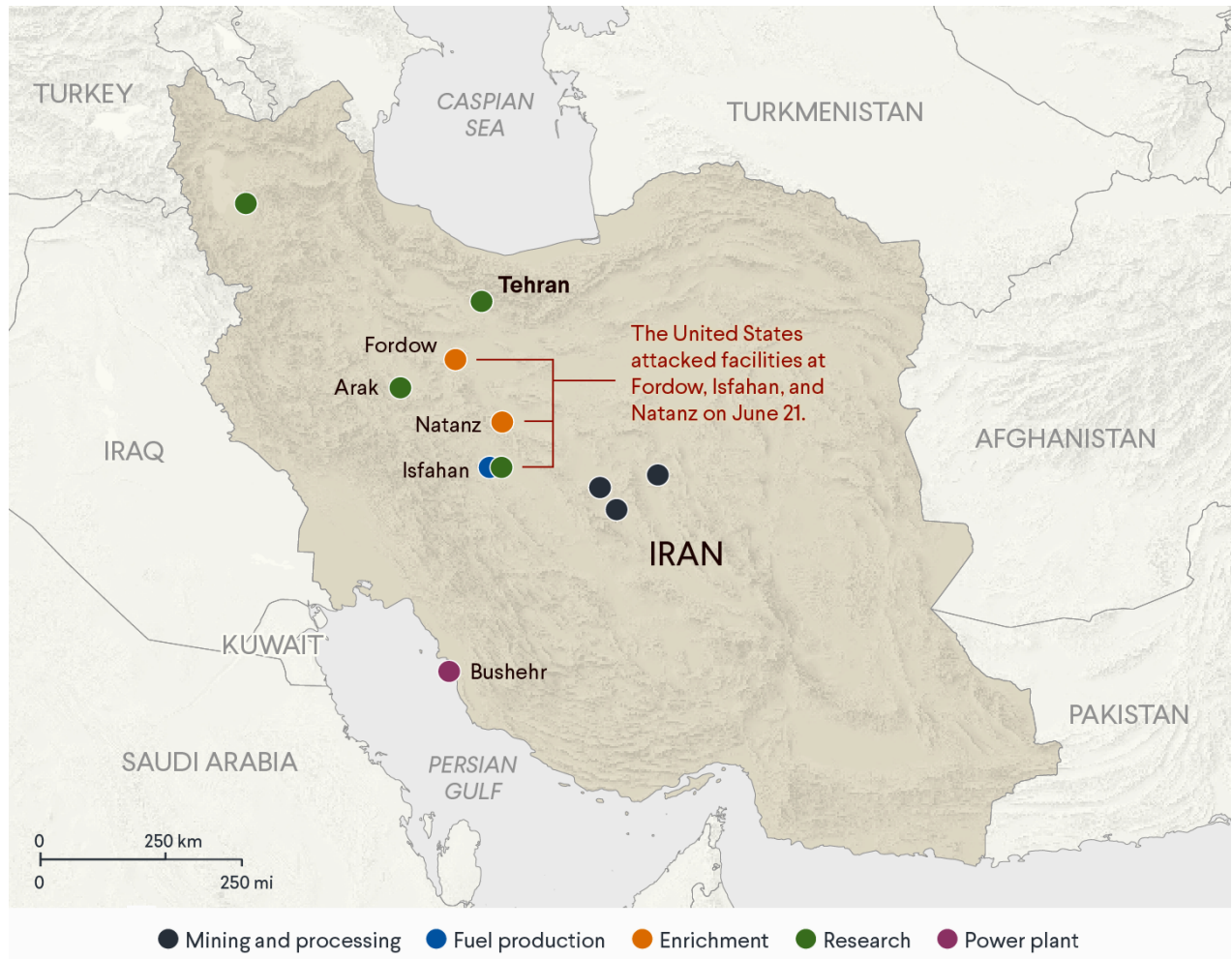
### **Contradictory Statements and Escalation in the Middle East**

Despite escalating tensions, CNN’s chief journalist Christiane Amanpour reported that IAEA Director General Rafael Grossi explicitly stated that the international body had no evidence of a systematic effort by Iran to produce nuclear weapons. Grossi reportedly said, “We have reported and reported that we had no evidence of any systematic effort to produce nuclear weapons – as some of the sources you cited coincided, we had no such evidence” (“Grossi Admits”, 2025). Furthermore, Iran’s Supreme Leader Ayatollah Ali Khamenei has repeatedly affirmed the existence of an Islamic fatwa (legal ruling) prohibiting the development of nuclear weapons, deeming it forbidden under Islamic law (Gallagher, 2025).

However, the situation escalated sharply on June 22, when the United States officially joined the conflict on Israel’s side, launching B-2 bomber strikes against key Iranian nuclear facilities, including Fordo, Natanz, and Isfahan (Figure 1). In response, Iran proposed closing the Strait of Hormuz, a vital oil shipping lane, and reportedly blocked vessel traffic (Tekesh, 2025). The following day, June 23, the Iranian military launched attacks on U.S. military bases in Qatar and Iraq (“Iran, Katar”, 2025).

On June 24, U.S. President Donald Trump announced a 12-hour consecutive ceasefire. However, Israeli Defense Minister Yisrael Katz opposed the agreement, stating that attacks on Tehran would continue. Trump later confirmed that an accord on a ceasefire had been reached.

Figure 1. Regional Conflict Map



Source: Ferragamo (2025)

## The "Trump Doctrine" in Action

This series of events is considered the first application of the "Trump Doctrine," a concept regarded as a manifestation of the Trump administration's "peace through strength" principle (Holland & Brunnstrom, 2025). However, Israel's rejection of the ceasefire further complicated the situation, creating uncertainty regarding the future of conflict and peace in the region. U.S. Vice President J. D. Vance elaborated on the core principles of this doctrine, marking a new phase in U.S. foreign policy:

- Clearly define American interests.
- Attempt to resolve issues through diplomacy first.

- If diplomacy fails, apply immediate and overwhelming military force, but withdraw without allowing the conflict to prolong.

This doctrine suggests a decisive, yet limited, use of force to protect U.S. interests, aiming for swift resolution rather than protracted engagement. Vice President Vance has characterized this approach as a power-based foreign policy model that avoids prolonging wars. The U.S. administration views these actions as a clear manifestation of President Trump's "peace through strength" principle. According to White House spokesperson Anna Kelley, President Trump and Vice President Vance form an "ideal tandem" due to their shared belief in this principle.

Donald Trump's actions against Iran represent not merely a military operation but a strategic shift in U.S. foreign policy. This approach, dubbed the "Trump Doctrine," transcends standard geopolitical frameworks and establishes new rules of engagement. In essence, Trump's strike on Iran is more than a military maneuver; it marks the inauguration of a new strategic concept in U.S. foreign policy. This unexpected move, reflecting Trump's governing style, has set new political ground rules encompassing a comprehensive spectrum of international relations. It also suggests that Trump's policy targets not only adversaries but also challenges the expectations of allies and traditional cooperation models.

## CONCLUSIONS

Donald Trump's "maximum pressure" policy and his unilateral withdrawal from the 2015 nuclear agreement reportedly accelerated Iran's nuclear program and heightened regional tensions. Upon his re-election in 2025, Donald Trump reinstated the "maximum pressure" policy aimed at preventing Iran from acquiring nuclear weapons. Through the National Security Presidential Memorandum of February 5, 2025, the U.S. portrayed Iran as a regime that supports terrorism, develops a ballistic missile program, and destabilizes regional stability. The Memorandum outlined four main objectives: the dismantlement of Iran's nuclear program, the cessation of ballistic missile development, the restriction of the IRGC's access to resources, and the limitation of Iran's regional influence. The document indicated that the U.S. considers Iran's behavior unacceptable.

However, Iran defends its right to a civilian nuclear program under the Nuclear Non-Proliferation Treaty and considers abandoning uranium enrichment a "red line." The contradictory demands and pressure tactics from the U.S. complicated negotiations, ultimately leading to Israel's air strikes on Iranian nuclear facilities on June 13, 2025, followed by the U.S. joining the conflict. These events have been seen as the application of Trump's "peace through strength" doctrine. Israel's rejection of the ceasefire further complicated the situation.

Consequently, to achieve an effective and lasting agreement, it is crucial to consider not only nuclear issues but also Iran's regional activities and security concerns. The Iranian regime primarily needs security guarantees. On the other hand, mutual distrust and 'enemy-like' rhetoric among political leaders have intensified since the 12-day war, complicating prospects for a diplomatic resolution. If the nuclear problem remains unresolved, the risk of nuclear proliferation in the region will increase.

With Israel recently bombing the Syrian General Staff, the nuclear ambitions of countries like Türkiye, Egypt, and Saudi Arabia are now becoming increasingly relevant, potentially leading to an entirely new and uncontrolled arms race in the region.

## REFERENCES

- Balmer, C. (2025, June 13). After years of waiting, Israel's Netanyahu finally makes his move on Iran. *Reuters*. <https://www.reuters.com/world/middle-east/after-years-waiting-israels-netanyahu-finally-makes-his-move-iran-2025-06-13/>
- CENTCOM warned Iran was 'mere steps' from nuclear weapons before IDF strikes began. (2025, June 17). *The Jerusalem Post*. <https://www.jpost.com/middle-east/iran-news/article-858058>
- Fabian, E. (2025, June 13). Israel has so far carried out 5 waves of strikes in Iran, military official says. *The Times of Israel*. [https://www.timesofisrael.com/liveblog\\_entry/israel-has-so-far-carried-out-5-waves-of-strikes-in-iran-military-official-says/](https://www.timesofisrael.com/liveblog_entry/israel-has-so-far-carried-out-5-waves-of-strikes-in-iran-military-official-says/)
- Ferragamo, M. (2025, June 25). U.S., Israel Attack Iranian Nuclear Targets—Assessing the Damage. *Council on Foreign Relations*. <https://www.cfr.org/article/us-israel-attack-iranian-nuclear-targets-assessing-damage>
- Gallagher, A. (2025, June 16). The 'unsustainable' reason behind who can have nuclear weapons, and who can't. *ICAN Australia*. <https://icanw.org.au/the-unsustainable-reason-behind-who-can-have-nuclear-weapons-and-who-cant/>
- Grossi admits no evidence Iran seeking nuclear arms: CNN senior journalist. (2025, June 18). *Tehran Times*. <https://www.tehrantimes.com/news/514580/Grossi-admits-no-evidence-Iran-seeking-nuclear-arms-CNN-senior>
- Holland, S., & Brunnstrom, D. (2025, June 26). The latest US foray into military action has a name: The Trump Doctrine. *Reuters*. <https://www.reuters.com/world/us/latest-us-foray-into-military-action-has-name-trump-doctrine-2025-06-26/>
- Illmer, A. (2025, June 15). How close is Iran to getting a nuclear bomb? *Politics/Iran, DW*. <https://www.dw.com/en/iran-nuclear-bomb-uranium-natanz-israel-attacks-donald-trump-iaea-v3/a-72918689>
- İran, Katar ve Irak'taki ABD üslerine saldırı düzenledi [Attacks on U.S. Bases in Iran, Qatar, and Iraq]. (2025, June 24). *Anadolu Ajansı*. <https://www.aa.com.tr/tr/dunya/iran-katar-ve-irak-taki-abd-uslerine-saldiri-duzenledi/3609968#>
- Liechtenstein, S. (2025, February 26). Iran accelerates production of near weapons-grade uranium, IAEA says, as tensions with US ratchet up. *The Associated Press*. <https://apnews.com/article/iran-nuclear-iaea-weapons-grade-uranium-trump-0b11a99a7364f9a43e1c83b220114d45>

- Liechtenstein, S., Gambrell, J., & Madhani, A. (2025, June 13). Iran announces a new nuclear enrichment site after UN watchdog censure. *The Associated Press*. <https://apnews.com/article/iran-nuclear-iaea-sanctions-728b811da537abe942682e13a82ff8bd>
- Lewis, J. (2025, June 13). Nuclear Claims Are a Smoke Screen for Hopes of Toppling Iran. *Foreign Policy*. <https://foreignpolicy.com/2025/06/13/israel-iran-strikes-regime-change-nuclear-claims/>
- Marcetic, B. (2025, June 27). The Biden Hawk Behind Trump's Iran. *Jacobin*. <https://jacobin.com/2025/06/kurilla-trump-iran-war-china>
- Murphy, F. (2025, June 12). IAEA board declares Iran in breach of non-proliferation obligations. *Reuters*. <https://www.reuters.com/world/china/iaea-board-declares-iran-breach-non-proliferation-duties-diplomats-say-2025-06-12/>
- Ravid, B. (2025, March 19). Scoop: Trump's letter to Iran included 2-month deadline for new nuclear deal. *AXIOS*. <https://www.axios.com/2025/03/19/trump-letter-iran-nuclear-deal>
- Smith, D. (2019, May 7). *The US withdrawal from the Iran deal: One year on*. Stockholm International Peace Research Institute. <https://www.sipri.org/commentary/expert-comment/2019/us-withdrawal-iran-deal-one-year>
- Tekesh, A. F. (2025, June 23). İran, Hürmüz Boğazı'nı gemi trafiğine kapattı iddiası [Iran allegedly closed the Strait of Hormuz to shipping]. *Anadolu Ajansı*. <https://www.aa.com.tr/tr/teyithatti/ekonomi/iran-hurmuz-bogazini-gemi-trafigine-kapatti-iddiasi/1819253>
- Fact Sheet: President Donald J. Trump Restores Maximum Pressure on Iran*. (2025). The White House. <https://www.whitehouse.gov/fact-sheets/2025/02/fact-sheet-president-donald-j-trump-restores-maximum-pressure-on-iran/>
- National Security Presidential Memorandum/NSPM-2*. (2025). The White House. <https://www.whitehouse.gov/presidential-actions/2025/02/national-security-presidential-memorandum-nspm-2/>

Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licence-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)  
<https://creativecommons.org/licenses/by-nc-nd/4.0/>

This open access article may be used under the international license terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)  
<https://creativecommons.org/licenses/by-nc-nd/4.0/>





Scrooby, Chanel<sup>1</sup> – Gregory, James Jenkins<sup>2</sup>

# From Conservation to Commercialisation: Events at the Pretoria National Botanical Garden, South Africa

## ABSTRACT

Over the past few decades, urban green spaces such as botanical gardens have increasingly undergone commercialisation. The majority of scholarly research on botanical gardens remains focused on the Global North, with studies predominantly centred on biodiversity conservation and the educational role of these spaces. Limited scholarly attention, however, has been paid to the commercialisation of botanical gardens. This study aims to examine the paradox of balancing conservation and commercialisation through the integration of events at the Pretoria National Botanical Garden in South Africa. The study employs content analysis of 20 years (2004–2024) of annual reports from the South African National Biodiversity Institute (SANBI), as well as semi-structured interviews with key informants from the garden's management. In addition, a community survey was conducted to gain insight from the general public regarding the integration and impact of events at the garden. The findings indicate that events have been strategically incorporated by SANBI at the Pretoria National Botanical Garden since the 2000s, with the aim of broadening the visitor profile, increasing visitor numbers, and generating additional income. Furthermore, the results suggest that events have the potential to stimulate repeat visits, thereby contributing to human–nature interaction. This paper contributes to an understanding of the broader implications of the commercialisation of botanical gardens from a Global South perspective, where commercialisation should not be understood solely as a contradiction to conservation, but rather as a mechanism that enables conservation to continue under conditions of economic constraint.

*Keywords: events; commercialisation; urban green space; botanical garden; South Africa*

<sup>1</sup> Geography and Environmental Science BSocSci Honours, Department of Geography, Geoinformatics and Meteorology, University of Pretoria, Geography Building, Hatfield, Pretoria, 0028, South Africa. Email: [chanelscrooby05@gmail.com](mailto:chanelscrooby05@gmail.com)

<sup>2</sup> Lecturer, Department of Geography, Geoinformatics and Meteorology, University of Pretoria, Geography Building, Hatfield, Pretoria, 0028, South Africa. Email: [jj.gregory@up.ac.za](mailto:jj.gregory@up.ac.za); <https://orcid.org/0000-0001-5649-380x>, corresponding author

*Acknowledgements:* Thanks are due to the reviewers for their valuable feedback. Many thanks to Lourens Snyman from the Department of Geography, Geoinformatics and Meteorology at the University of Pretoria for producing the map. A big thank you to the SANBI representatives for their willingness to participate in this research, as well as the survey respondents for taking the time to share their valuable insights. Lastly, this article is dedicated to the memory of Doreen Boshoff, whose love of nature and gardening helped inspire one of the authors.

## INTRODUCTION

Botanical gardens are important urban green spaces for biodiversity conservation and for fostering human–nature interaction through education and recreation (Ballantyne et al., 2008; Neves, 2024; Wyse-Jackson & Sutherland, 2000). The modern form of botanical gardens originated in Italy during the 16th century and was closely linked to universities, where these spaces were primarily seen as sites of learning (Chen & Sun, 2018). Hiscock et al. (2024, p. 251) estimate that “there are over 2,500 botanic gardens and arboreta across the world, visited by an estimated half a billion people each year.” Ward et al. (2010, p. 50), however, explain that “despite the high levels of both biodiversity and rates of urbanisation in sub-Saharan Africa, the [Botanic Gardens Conservation International] inventory lists only 98 botanical gardens within the African and Indian Ocean regions.”

South Africa boasts several botanical gardens located throughout the country, managed by entities ranging from municipalities and public benefit organisations to public–private partnerships (Ward et al., 2010). Notable examples include the Johannesburg Botanical Gardens, Durban Botanic Gardens, and the Makana Botanical Gardens in Makhanda. In addition, several university botanical gardens are located at Stellenbosch University, the University of KwaZulu-Natal, North-West University, and the University of Pretoria. South Africa also has 11 national botanical gardens (NBGs) managed by the South African National Biodiversity Institute (SANBI).

Existing literature on botanical gardens mainly focuses on their value for biodiversity conservation and education (O'Donnell & Sharrock, 2017). Limited research, however, has focused on the role of recreation and events at botanical gardens. Globally, the commercialisation and neoliberalisation of urban green spaces, including botanical gardens, has become increasingly common as a means of generating additional income for these spaces (Smith, 2021). Funsten et al. (2022) further identify that events hosted at botanical gardens can increase the recreational value of these spaces by broadening visitor demographic profiles and stimulating additional income streams for gardens.

In South Africa, there is evidence that SANBI has strategically integrated events, such as concerts, at various national botanical gardens since the 1990s (SANBI, 2023–2024). The Pretoria National Botanical Garden is selected as a case study due to evidence of increased commercialisation over the past 20 years. This paper investigates the paradox of commercialisation at the Pretoria National Botanical Garden as a means of ensuring the garden's viability, despite its tension with the garden's traditional purpose of conservation and education. The garden must manage these competing mandates, both of which are essential for its future sustainability. This is achieved by tracing the history of commercialisation and the integration of events at the Pretoria National Botanical Garden from 2004 to 2024, and by exploring community perspectives on the impact of these events.

## LITERATURE REVIEW

Urban green spaces include vegetated areas in cities, ranging from parks and nature reserves to gardens, and are located on either public or private property (Jennings et al., 2019). The positive role of urban green spaces in supporting human wellbeing is widely documented across a variety of disciplines (Bertram & Rehdanz, 2015; Jabbar et al., 2022; Reyes-Riveros et al., 2021). Urban green spaces also provide several important environmental benefits, including biodiversity conservation and ecosystem support within cities (Zhang & Qian, 2024). The value of urban green spaces in promoting public health is widely recognised (Javadi & Nasrollahi, 2021; Wolch et al., 2014). These spaces are of critical importance, as they contribute to psychological and physiological well-being by offering opportunities for physical activity as well as the stress-relieving benefits of contact with nature (Barbosa et al., 2007; Richardson et al., 2013; Saz-Salazar & Rausell-Koster, 2008). Urban green spaces offer an escape from the busy and crowded lifestyles associated with city living, thereby contributing to improved urban liveability (Chiesura, 2004; Sanesi et al., 2006). During the COVID-19 pandemic, characterised by restricted movement and social distancing, the importance of access to urban green spaces was reaffirmed as people increasingly sought engagement with these environments (Berdejo-Espinola et al., 2021; Noszczyk et al., 2022; Venter et al., 2021).

Urban greening often forms part of urban renewal projects aimed at beautifying cities, but it can also lead to gentrification (Wolch et al., 2014). Questions of access and environmental justice have therefore emerged. For example, in the United States of America, minority communities and communities of colour often lack access to urban green spaces (Wolch et al., 2014). Similarly, in South Africa, while there has been some investment in urban green spaces within marginalised township communities in the post-apartheid era (Gregory, 2023), access to these spaces remains highly unequal along lines of income, class, and race, producing what has been described as a distinctive form of “green apartheid” (Venter et al., 2020). The loss of urban green spaces in South Africa is evident in certain cities. In Mahikeng, for instance, this loss has largely been attributed to the mismanagement or conversion of urban green spaces for commercial use by a financially stressed municipal government (Munyati & Drummond, 2020). Despite ongoing challenges related to access, urban green spaces offer important opportunities for socialisation and community interaction, contributing to overall social wellbeing (Neves, 2024).

Botanical gardens form part of urban green spaces but are often considered semi-public spaces, as many require entrance or membership fees to fund conservation efforts and the maintenance of these sites (Conway, 1991). The traditional value and expanding role of botanical gardens in society are widely documented, particularly as important sites for biodiversity conservation, education, and recreation (O'Donnell & Sharrock, 2017). Botanical gardens have existed since antiquity (Rakow & Lee, 2015); however, the modern botanical garden can be traced to the 16th century in Padova, Italy, where it functioned as a space for the study of botany and medicinal plants. During European colonial expansion from the 17th to the 19th centuries, botanical gardens served as important sites for the collection of agricultural and ornamental plants of economic value from across the world (Baber,

2016; Brockway, 1979). In the latter half of the 20th century, botanical gardens increasingly shifted towards conservation and the sustainable use of biodiversity. In the 21st century, they continue to evolve in response to broader environmental and social responsibilities (Krishnan & Novy, 2017), as well as growing demands for recreational and entertainment experiences (Rakow & Lee, 2015).

Botanical gardens maintain a strong commitment to scientific research, particularly in plant sciences (Faraji & Karimi, 2022), biodiversity conservation, and citizen science initiatives (Chen & Sun, 2018). They are also important spaces for climate change research; for example, the study of phenology in controlled environments such as botanical gardens can enhance understanding of climate change processes (Primack & Miller-Rushing, 2009; Primack et al., 2021). Botanical gardens are further recognised as key sites for environmental education for the general public, and especially for children (Sanders et al., 2018; Yilmaz et al., 2023). Visiting botanical gardens has the potential to influence pro-environmental behaviour and strengthen human–nature interaction (Williams et al., 2015). In contemporary urbanised societies, botanical gardens can also be used to challenge ‘plant blindness’, thereby further enhancing human–nature interaction (Daniel et al., 2023).

Dodd and Jones (2010) outline the evolving social purpose of botanical gardens, emphasising the need to broaden audiences and increase their relevance to wider society. In the United Kingdom (UK), Dodd and Jones (2010, p. 2) found that “common to most botanic gardens is the desire to broaden their audiences, and to undermine the perception that they are just for a particular elite of white, middle-class, older people”. Their research revealed that, among other activities, events were hosted with diverse audiences in mind. In addition, advertising and community outreach aimed at attracting new audiences were identified as priorities for most botanical gardens in the UK.

Similarly, in South Africa, botanical gardens were introduced as part of the broader colonial project, promoting Western epistemologies and primarily serving the white minority population (Boehi, 2021). During the apartheid era, urban green spaces such as parks and botanical gardens were disproportionately located in higher-income white group areas (Venter et al., 2020). Apartheid-era segregationist policies further enforced strict racial separation in spaces of tourism and recreation, systematically restricting access for people of colour (Rogerson, 2025a, 2025b; Rogerson & Rogerson, 2025). Boehi (2021, p. 72) explains that “as apartheid came to an end, the management of the South African National Botanical Gardens acknowledged that they had in the past exclusively served white interests and that they had to become relevant to all South Africans to justify their future existence.” During the post-apartheid era, SANBI has recognised this need and has actively sought to increase and transform its social relevance in order to appeal to broader audiences representative of South Africa’s cultural diversity (Willis, 2015).

Hosting organised events in urban green spaces has become an increasingly common trend (Hermann & Bouwer, 2023). These spaces serve as important gathering places that offer environmental, social, and economic advantages (Kabisch, 2015; Wang & Bao, 2018). The commercialisation of urban green spaces, such as botanical gardens, through the hosting of events expands their function, making them more versatile by accommodating not only biodiversity conservation but also social gatherings (Smith, 2016; Neves, 2024). Some of the advantages of hosting events in urban green spaces include

increased publicity and awareness, as well as improved financial viability. The commercialisation and neoliberalisation of urban green spaces, such as parks, are well documented, particularly in the UK context (Smith, 2018, 2019, 2021). Within conditions of public spending austerity, urban green spaces are often required to adopt more entrepreneurial approaches (Davidson, 2013; de Vries, 2019) in order to pursue alternative funding sources (Smith, 2019, 2021). Smith (2018) cautions that the commercialisation of urban green spaces can place increased emphasis on the exchange value of events, potentially overshadowing the use value of these spaces. Nevertheless, event programming can play an important role in promoting inclusivity and diversity of use, as expanded programming may render spaces more accessible, flexible, relatable, and sociable (Smith et al., 2024). Events can have a significant impact on the social, economic, and spatial patterning of green spaces. However, the commercialisation of urban green spaces also carries risks, including securitisation and increased privatisation, which may limit public access (Smith, 2016). Furthermore, such commercialisation is associated with a range of challenges, including noise pollution, physical damage or overuse of space, disturbances to residents and neighbours, and concerns regarding the environmental sustainability of events (Laing & Frost, 2010).

The growing popularity of events at botanical gardens is considered pivotal in attracting new and broader audiences, thereby encouraging repeat visits (Benfield, 2013, 2021; Paiva et al., 2020). Garrod et al. (1993) highlight the economic value of botanical gardens as recreational spaces that can generate additional revenue to offset rising operational costs. Events, in particular, provide an important source of income necessary for maintenance and other projects (Funsten et al., 2022). Some events hosted at botanical gardens also serve a dual purpose by offering entertainment while simultaneously educating visitors about environmental issues and conservation (Ward et al., 2010). Funsten et al. (2022) further identify that events hosted at botanical gardens can increase the recreational value of these spaces, broaden visitor demographics, and stimulate additional income streams for gardens.

## METHODS

This study adopts a qualitative methodological approach. First, a content analysis of 20 years (2004–2024) of annual reports from SANBI informed the historical overview of event integration at the Pretoria National Botanical Garden. These annual reports are freely available to the public via SANBI's website. Keywords such as “event”, “concert”, and “festival” were used to systematically review the reports and identify relevant content, which was subsequently refined through coding and thematic analysis to understand broader changes related to events at the garden over time. Second, an online survey was conducted via Google Forms and disseminated widely on social media, targeting various community groups across the City of Tshwane on platforms such as Facebook and WhatsApp during July 2024. Residents of the city aged 18 and above formed part of the sample, enabling an exploration of motivations for visiting the garden and attending events, as well as public perceptions of the impacts of events hosted at the garden. A total of 108 usable survey responses were recorded and

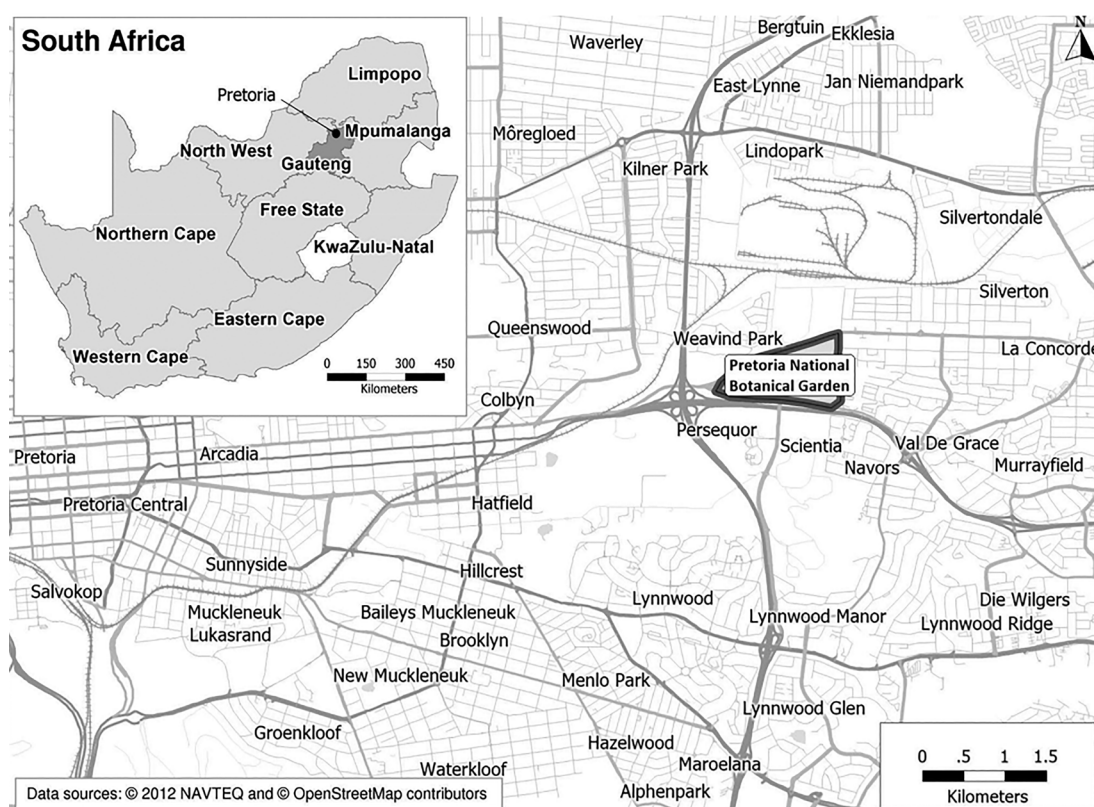
included in the analysis. Third, two semi-structured interviews were conducted with key informants from the Pretoria National Botanical Garden, including the events manager and the garden curator. These interviews provided valuable insights into the incorporation of events at the garden. Permission to conduct the research was granted by SANBI, and informed consent was obtained from all survey and interview participants. While this study focuses on the case of the Pretoria National Botanical Garden, the findings may also be applicable to other national botanical gardens in South Africa and contribute to broader debates on the commercialisation of urban green spaces in the Global South.

## RESULTS

### The Integration of Events at the Pretoria National Botanical Garden

South Africa has 11 national botanical gardens across eight of its nine provinces, managed by the South African National Biodiversity Institute (SANBI), a state-owned institution operating under the Department of Forestry, Fisheries, and the Environment (DFFE). SANBI is mandated under the National Environmental Management: Biodiversity (NEMBA) Act No. 10 of 2004 to manage national botanical and zoological gardens. As stipulated in NEMBA, SANBI's core mandate is to promote research, education, and policy related to biodiversity conservation in South Africa, while also providing spaces for leisure and entertainment (SANBI, 2024).

Figure 1. Location of the Pretoria National Botanical Garden, South Africa



Source: Authors

The Pretoria National Botanical Garden is located approximately 10 km east of central Pretoria, within the City of Tshwane Metropolitan Municipality (Figure 1). The garden was established in June 1946, when the Department of Agriculture was granted permission by the University of Pretoria to redevelop 76 hectares of the university's experimental farm into a botanical garden showcasing South Africa's savanna and forest biomes. The garden officially opened on 23 October 1958 as a research facility under the management of the Botanical Research Institute (BRI), which later became the South African National Biodiversity Institute (SANBI) in 2004. The garden subsequently opened to the public in 1984. The Pretoria National Botanical Garden also houses the administrative head offices of SANBI, which oversees all national botanical and zoological gardens in South Africa (SANBI, 2024).

Upon reviewing 20 years of annual reports from SANBI, the commercialisation of the Pretoria National Botanical Garden since 2004 can be grouped into five distinct time periods. These include the establishment of events from 2004–2010, the growth and diversification of events from 2010–2016, the innovation and maturation of event hosting from 2016–2019, the COVID-19 pandemic period from 2020–2022, and the post-pandemic resurgence of events from 2022–2024.

### **Establishment of Events from 2004–2010**

The period from 2004–2010 was characterised by the establishment of events at the Pretoria National Botanical Garden. It is important to note that the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) stipulates that botanical gardens should be open to the public and may offer commercial facilities, such as restaurants, and host events (Garden Curator, personal communication, June 13, 2024). The Pretoria National Botanical Garden, together with the Walter Sisulu National Botanical Garden in Johannesburg, largely replicated the success of the Kirstenbosch National Botanical Garden in Cape Town, which has been hosting events since the 1990s (Events Manager, personal communication, June 13, 2024).

Historically, the Pretoria National Botanical Garden was primarily used for research purposes; therefore, marketing efforts were required to raise public awareness of the garden's existence and its accessibility to visitors (Garden Curator, personal communication, June 13, 2024). In the mid- to late 2000s, the garden began hosting sponsored events and concerts, such as the Pick 'n Pay winter concert series. During this period, SANBI mandated that national botanical gardens include the hosting of social and cultural events relevant to South Africa's diverse cultures (SANBI, 2009).

Marketing and visibility played an important role in broadening the garden's visitor profile, which had historically been predominantly white. According to SANBI (2010, p. 8), "[we are] bringing music to nature through our concerts. Our concerts attract a wide variety of people, some of whom might ordinarily not visit a botanical garden." The garden's role as an event space expanded through the introduction of a formal marketing strategy, the growth of email distribution lists, and the promotion of events on the SANBI website. During this period, the garden was actively promoted as a local tourist destination. Annual reports from 2005 to 2009 indicate that the garden's visitor numbers averaged over 80,000 people per year.

### **Growth and Diversification of Events from 2010–2016**

The period from 2010–2016 was marked by the growth and diversification of events. During this time, the Pretoria National Botanical Garden became well known for hosting a wide range of activities, including community markets, plant fairs, sporting events such as fun runs and parkruns, as well as concerts. Concerts, in particular, gained increasing popularity during this period. Strategic corporate partnerships proved to be important; for example, Old Mutual sponsored a ‘Music in the Gardens’ concert series at the Pretoria National Botanical Garden for the first time in 2011 (SANBI, 2012).

Visitor numbers and income increased, placing the garden among the top-performing national botanical gardens, alongside the Walter Sisulu National Botanical Garden in Johannesburg and the Kirstenbosch National Botanical Garden in Cape Town. SANBI (2015, p. 27) reports that “historically best ever visitor numbers were received [at the] Pretoria botanical gardens. These numbers were attributed largely to promotion of events...”. During this period, events were increasingly used as a catalyst for the growth, visibility, and revenue-generating potential of the garden.

While exact revenue figures generated specifically from events at the Pretoria National Botanical Garden are not available for this period, SANBI reports aggregated income across all national botanical gardens. SANBI (2014, p. 21) reported that “an income of R42,301,556 was generated by all NBGs combined for the 2013/14 financial year, representing a 16 percent year-on-year increase on the 2012/13 equivalent income figure (R36,594,810)”. By 2016, this figure had increased substantially. SANBI (2016, p. 29) reported that “an income of R74,094,740 was generated by all NBGs combined for the 2015/16 financial year, representing a 7% year-on-year increase (2014/15 equivalent R69,171,784). This represents the highest own income amount ever earned in the history of South Africa’s NBGs”. Although these figures reflect total income from multiple sources, the increase coincides with the period of growth and diversification of events. The SANBI (2014) annual report further notes that visitor numbers at the Pretoria National Botanical Garden increased to 133,642, aligning with the expansion of events such as concerts at the garden.

### **Innovation and Maturation of Events from 2016–2019**

The period from 2016–2019 was characterised by continued innovation and the maturation of event hosting at the Pretoria National Botanical Garden. Following several years of sustained growth in events, the SANBI (2017) annual report indicated an increase to 371,666 visitors to the garden. During the 2017 financial year, SANBI developed a social media strategy, underscoring the important role of social media in promoting events (SANBI, 2017). Platforms such as Facebook, Instagram, X (formerly Twitter), and YouTube were used to inform followers about upcoming events and highlight the garden’s unique selling features (SANBI, 2018).

Additional investment was made in backup energy generators to ensure business and event continuity during periods of loadshedding or unscheduled power outages. By 2019, the Pretoria National Botanical Garden hosted the most diverse range of events within the SANBI National Botanical Garden system, with an increasing focus on lifestyle and leisure activities. Events included the annual sponsored

concert series, as well as additional concerts. Significant growth was observed in the attendance of people of colour at concerts, driven by the inclusion of a broader range of performing artists (SANBI, 2019) and increased engagement with the youth market (SANBI, 2020).

This trend was confirmed by the Garden Curator (personal communication, June 13, 2024), who noted: “A lot has changed over the years... for example, I started seeing events that were never hosted in the botanical gardens before, such as Amapiano<sup>3</sup> events, and we are bringing a lot of [young] black Africans to the garden [and] they are actually still surprised that [an] area like this does exist within their region.” This highlights the importance of expanding the accessibility of events to a broader demographic for SANBI.

Several sporting events, including fun runs, lunar night runs, and the popular weekly parkrun, were held on a regular basis. SANBI (2017, p. 31) noted that “the parkrun event hosted in the Pretoria National Botanical Garden is considered one of the fastest growing parkruns in the world.” By 2019, it had become the largest parkrun globally, with 52,000 registered participants. A range of festivals, such as the Capital Craft Beer Festival, the Biltong and Boerewors Festival, and an outdoor film festival, also took place during this period. The University of Pretoria annually hosted a Spring Day festival at the garden, attended by thousands of students. In addition, a variety of markets were offered, including a monthly banting market with over 4,000 attendees and an annual Christmas market attracting more than 2,000 attendees.

Within the context of widespread fiscal cuts in the national government, SANBI increasingly relied on generating its own revenue (SANBI, 2020). SANBI’s income is derived from three main sources: a government grant (68%), projects and donations (10%), and exchange revenue from commercial operations (22%), including entrance fees, venue hire, and events (SANBI, 2019). Events are therefore crucial for growing both revenue streams and visitor numbers at the garden. In addition, SANBI (2020) noted that events also contribute to strengthening the organisation’s brand.

### **COVID-19 Pandemic from 2020–2022**

During the COVID-19 pandemic period from 2020–2022, events at the Pretoria National Botanical Garden were postponed or cancelled due to the strict lockdown measures and the ban on large gatherings imposed by the South African government. South Africa was in a national state of disaster for 750 days, from 15 March 2020 until 4 April 2022, with varying levels of lockdown (SANBI, 2023). During this period, visitor numbers dropped significantly, accompanied by a substantial loss of revenue. SANBI (2021, p. 29) reported on the severe economic implications of the pandemic:

The immediate economic implications have left the gardens with only the government as a major source of income. For the foreseeable future, it can be expected that the government will have less funding available than in the past to meet its myriad of human basic needs. Prior to the pandemic, the country was experiencing an economic weakening. The damage done to the economy at large by the lockdown has only exacerbated its pitiful state. The economy cannot generate nearly

---

<sup>3</sup> Amapiano is a popular South African music genre, and seen as a hybrid of kwaito, gqom, deep house, jazz, soul and lounge music genres.

enough tax to satisfy basic citizen requirements during this period. Going beyond ‘the basics’ to include the important but not critical needs is an unlikely possibility. As a result of the above-mentioned state of affairs, SANBI can expect that there may be a cut in the grant received from the Department of Environment, Forestry and Fisheries. Furthermore, the general public might have less disposable income. All these factors will have an impact on SANBI delivering on its mandate (SANBI, 2021, p. 29).

There was an attempt to shift to virtual content and engagement; for instance, videos were produced of various educational events. One such online initiative during Arbor Month 2020 involved a challenge posted on SANBI’s social media platforms, encouraging staff members to plant trees with their families in community spaces (SANBI, 2021). Recovery during 2021–2022 was slow, with only limited events taking place. Despite the uncertainty caused by the pandemic and the strict lockdown measures, SANBI (2021, p. 93) remained optimistic, stating:

The lockdown, combined with the financial constraints of a depressed economy, may well be an important stimulus for botanical garden visits. Having been confined for long periods, the joy of the gardens near urban areas will be a heightened attraction. Further, it is a leisure-time activity that, without additional cost, can be extended to fill a whole day. The outdoors offers ‘social distancing’ unavailable to many other forms of recreation. In short, it is highly likely that interest in the botanical gardens will rise, not fall, after the restrictions associated with the pandemic are lifted (SANBI, 2021, p. 93).

### **Post-pandemic Resurgence of Events from 2022–2024**

The post-pandemic period from 2022–2024 was characterised by the large-scale return of events. Urban green spaces, including botanical gardens, proved particularly popular following months of restrictions during lockdown (SANBI, 2021). This period saw the resumption of regular events as well as the introduction of additional activities. Both the international and local tourism industries began to recover, and SANBI implemented various marketing initiatives to encourage local visitors to use national botanical gardens as outdoor recreational spaces (SANBI, 2023).

During the 2023–2024 financial year, the marketing team expanded both the variety and number of events hosted at the gardens. A series of high-revenue events generated over R2 million at the Pretoria National Botanical Garden during this period. This resurgence was also marked by increased collaboration with event organisers, and the Pretoria National Botanical Garden adopted a venue hire model for major events. Overall, the enhanced marketing initiatives, the commercialisation of the gardens, and an expanded events programme contributed to increased income and a more diverse audience (SANBI, 2024). Across all income sources, SANBI reported a “101% year-on-year increase in income generated. Income of R209,861,055 was generated compared to R104,566,367 for the same period of the previous financial year (2021/22)” (SANBI, 2024, p. 129).

## Event Types, Screening, and Management

It is evident that, since the 2000s, the integration of a diverse range of events at the Pretoria National Botanical Garden has served both to introduce the gardens to a broader audience and to generate additional income. As the Events Manager explained: “By hosting these kinds of events, you introduce the gardens to a different kind of audience, and then the following week, you will see them coming back with their families to picnic... people come to the garden for an event [and] may be first-timers, but after seeing how the garden looks and what is possible within it, we manage to retain them” (Events Manager, personal communication, June 13, 2024). The importance of strategic marketing and the role of social media in promoting events cannot be overstated. Table 1 provides an overview of the different types of events hosted at the Pretoria National Botanical Garden.

Table 1. Overview of Events Hosted at the Pretoria National Botanical Garden

| Event Theme             | Examples                                                                                                       | Trend                                                      |
|-------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Concerts and Festivals  | Old Mutual Concerts, Gospel Concert, Craft Beer Festival, University of Pretoria Spring Day Festival           | Grew in scale since the 2000s targeting diverse audiences  |
| Sports and Fitness      | Parkrun, night runs, fun runs, boot camp, yoga                                                                 | Integrated regularly from 2014 onwards                     |
| Markets and Exhibitions | Banting market, Christmas market, plant fairs                                                                  | Monthly or annual markets attracting thousands of visitors |
| Education               | Nocturnal stargazing, World Wetlands Day, Arbor week celebrations, several community education outreach events | Signals SANBI’s continued commitment to education          |
| Cultural and Community  | Kaya FM events, Braai Day, Women’s Day                                                                         | Increased inclusivity and social relevance of the gardens  |

Source: SANBI Annual Reports

In addition to larger events, the gardens provide space for smaller gatherings, such as weddings, birthday celebrations, baby showers, picnics, family reunions, and conferences. Since Pretoria is the administrative capital of South Africa, the garden is in close proximity to embassies from around the world, and it often hosts gala dinners and events for embassy functions (Events Manager, personal communication, June 13, 2024). A wide range of events can be hosted at the garden; however, all events must comply with the garden’s rules and regulations. Event proposals are screened before space is allocated. This screening process plays a vital role in determining the type of events allowed, with careful consideration given to visitor experience to avoid disruption. As an urban public space, all events must also comply with the City of Tshwane’s regulations and bylaws. In addition, SANBI requires event organisers to adhere to the rules and regulations set by the institute (Events Manager, personal communication, June 13, 2024).

An events management system, the Joint Operations Committee (JOC), is in place to ensure that all events comply with city regulations and safety precautions. All events, from weddings to music festivals, must be presented to this committee. Key aspects considered include waste management plans, security, safety measures, and noise compliance, as events are restricted to a specified decibel

level (Events Manager, personal communication, June 13, 2024). While the City of Tshwane allows up to 90 decibels, SANBI limits events to 75 decibels in consideration of the surrounding area (Events Manager, personal communication, June 13, 2024). The maximum capacity for an event is 5,000 attendees, and the number of attendees must always be approved by both the City of Tshwane and the JOC. Exceeding the approved maximum will result in the event being shut down (Garden Curator, personal communication, June 13, 2024) visitor and attendee safety, appointing additional security for larger events. The gardens maintain good relationships with the South African Police Service (SAPS) and the Tshwane Metro Police Department (TMPD), particularly during events. One ongoing security challenge is the presence of self-appointed car guards who redirect visitors away from the gardens' dedicated parking areas. SANBI also maintains strong communication with neighbouring residents, schools, and companies by sharing event schedules in advance, ensuring all stakeholders are informed about upcoming activities (Garden Curator, personal communication, June 13, 2024).

Once proposed events comply with the rules and regulations of the JOC and SANBI, space is allocated accordingly. Large concerts and festivals take place in the Marquee area, while smaller concerts and events use the concert stage area. Private or intimate functions, such as weddings, are hosted in the educational centre or Cycad Garden. Lawn areas are used for smaller gatherings, including birthday celebrations and baby showers (Events Manager, personal communication, June 13, 2024). Additionally, the Pretoria Bee School Programme provides an educational facility focused on hosting educational programmes, events, and exhibitions to teach younger generations about biodiversity conservation (Events Manager, personal communication, June 13, 2024).

Biodiversity protection and education remain a priority for SANBI: "...over and above, we are still a botanical garden where we still have to maintain our biodiversity collection" (Garden Curator, personal communication, June 13, 2024). Similarly, the Events Manager noted, "...if an event is proposed in the garden and it goes against our conservation mandate, then we will not allow it" (Events Manager, personal communication, June 13, 2024). The connection between most events hosted at the gardens and SANBI's overarching goal of biodiversity conservation is not always direct. Events may expose attendees to what the garden has to offer and can contribute to increased human-nature interaction, although evidence for this is limited. Both interviewees reflected that at larger events, attendees are unlikely to fully appreciate the importance of the garden; however, when they return independently—for example, for a family picnic—there is greater potential for meaningful human-nature interaction.

The popularity of the Pretoria National Botanical Garden as an urban green space and events venue is evident. The garden has won the "Best of Pretoria Readers' Choice Awards" multiple times, receiving recognition for best outdoor venue, best place to visit, best events area, and best nature area. Larger events also benefit the surrounding local tourism economy, including guest houses and restaurants. The connection to urban tourism is significant, as regular events at the gardens can have a positive ripple effect on other businesses, supporting the city's tourism sector and contributing to local economic development (Garden Curator, personal communication, June 13, 2024). The Events

Manager emphasised, “it’s not us, it’s the community” (personal communication, June 13, 2024), highlighting the important role of the community in contributing to and supporting the garden. Attention now shifts to analysing community perspectives.

## **Community Perspectives on Events at the Pretoria National Botanical Garden**

This section draws on findings from an online survey, which recorded 108 responses for analysis. The survey targeted residents over the age of 18 living in the City of Tshwane Metropolitan Municipality who had previously visited or attended events at the Pretoria National Botanical Garden. A large majority of respondents, 79% (n=108), indicated that they learned about events at the botanical gardens online, either via the website or social media platforms. This suggests that SANBI’s online marketing strategy is effective in reaching the broader community.

Most respondents, 89% (n=108), reported visiting the gardens primarily for leisure and recreational purposes, including events. A majority, 64% (n=86), attended between one and three events annually, highlighting the popularity of the garden’s event schedule. The survey revealed that motivations for attending events were diverse. The garden is perceived as a multi-purpose urban green space, attracting visitors for a variety of reasons. Some respondents were drawn to specific or niche events regardless of their location within the garden. Most respondents noted that attending events offered exposure to the outdoors and nature, relaxation, entertainment, enjoyment, and opportunities to socialise with different types of people.

The majority of respondents, 84% (n=108), reported positive experiences, as illustrated in comments such as: “My overall experience is very positive. The event was organised in an orderly manner, and the staff were knowledgeable and helpful.” Another respondent noted, “Very well organised and big open spaces to be able to host a lot of people.” Importantly, 70% (n=108) indicated that attending an event increased their likelihood of returning to the garden. This finding aligns with observations by the garden curator and events manager regarding the potential of events to stimulate repeat visits.

SANBI’s core mandate is to ensure biodiversity conservation and to educate the public on its importance. The survey indicated that 58% (n=108) of respondents felt that events had the potential to raise awareness about biodiversity conservation. One respondent stated, “Activities in botanical gardens can help raise people’s awareness and make them more concerned about the importance of biodiversity conservation.” Another noted, “Yes, I believe that botanical garden activities can help raise awareness about biodiversity conservation. It is precisely because of botanical garden activities that we fully understand that plants also need to be protected.” These responses suggest that some respondents perceive a correlation between events and awareness of biodiversity conservation.

However, 24% (n=108) disagreed that events contribute to awareness, indicating that people often attend solely for the event itself rather than the garden: “No, people appear to go there solely for the event and have little interest in the garden itself.” Similarly, “The events often have nothing to do with biodiversity conservation.” For some respondents, the impact depends on the type of event: “I

don't think their musical events raise any awareness." Educational events were generally viewed as more likely to contribute to awareness. One respondent observed, "Even if events are not directly aimed at biodiversity or conservation, parks and gardens and such spaces require public interest and sustained usage to remain viable." This, in turn, is crucial for generating income to support biodiversity conservation and educational outreach. Another respondent noted, "It is a great way and maybe the only way of getting sufficient funds to uphold the gardens and make it grow." Attention now shifts to discussing some of the additional challenges and benefits associated with events at the Pretoria National Botanical Garden (Table 2).

Table 2. Community Perspectives on the Challenges and Benefits Associated With Events at the Pretoria National Botanical Garden

| Challenges                     | Benefits                              |
|--------------------------------|---------------------------------------|
| Environmental degradation      | Creates awareness and promotes garden |
| Litter and noise pollution     | Additional income stream              |
| Disruptive to general visitors | Promotes community social cohesion    |
| Overshadows educational role   | Contributes to local tourism economy  |

Source: Survey

The survey revealed community perspectives and concerns regarding challenges related to events. One key concern is environmental degradation: "It may cause certain pressure on the ecological environment of the botanical garden. The influx of a large number of people may cause vegetation to be trampled and soil to be compacted, affecting plant growth and ecological balance." Littering and noise pollution were also highlighted as concerns, contributing to environmental stress. As one respondent explained: "Damage to the gardens and plant life, negative impact on the garden's ecosystem, littering and possibly noise pollution." Another respondent emphasised: "From previous experience, the music is usually way too loud. I don't think that it has a positive effect on the animals residing there, and I can only imagine how much stress it puts on them." Similarly, it was noted, "The noise and crowds might disturb the plants' natural environment and disrupt the peaceful atmosphere." Some respondents also indicated that events can potentially disrupt visitors during their experience in the garden and may overshadow its educational role.

Despite some negative perspectives, several key benefits associated with events were noted by respondents. In line with SANBI annual reports and observations from the garden curator and events manager, the survey revealed that events can contribute to greater awareness of the garden. One respondent noted: "It makes you aware of the biodiversity of the botanical gardens and makes you realise that you should be visiting it more often. Functions like sports events allow you to also help grow the gardens with additional funds." The financial benefits of hosting events were underscored: "Obviously more money pumping into the botanical gardens and added awareness." The importance of the garden as a community space and as a site for social cohesion was also highlighted: "In my opinion, sports events, concerts, and festivals in botanical gardens can actively promote community

cohesion.” Similarly, another respondent noted: “Sports events attract people of different ages to participate, promoting the unity of the community and people’s healthy lifestyles. Music concerts and festivals provide people with opportunities to relax and enjoy cultural arts, enriching people’s spiritual lives.” Some respondents also recognized the importance of events for the local tourism industry: “[Events] can also attract more tourists, enhance the popularity and influence of the botanical garden, and bring a positive boost to the local tourism industry.”

## CONCLUSIONS

It is widely recognised that urban green spaces such as botanical gardens offer a variety of benefits, including stress relief and an escape from city living (Barbosa et al., 2007; Chiesura, 2004; Richardson et al., 2013; Saz-Salazar & Rausell-Koster, 2008). Events hosted at the Pretoria National Botanical Garden provide opportunities for recreation, community connection, and an escape from daily routines, contributing to improved urban livability (Chiesura, 2004; Sanesi et al., 2006). Importantly, while the majority of these events are not directly linked to education or biodiversity conservation, they may encourage increased human-nature interaction (Daniel et al., 2023; Williams et al., 2015). The COVID-19 pandemic reaffirmed the importance of engagement with urban green spaces (Berdejo-Espinola et al., 2021; Noszczyk et al., 2022; Venter et al., 2021). The appeal of outdoor events during and after the pandemic is evident in the return of large-scale events at the Pretoria National Botanical Garden following the relaxation of strict lockdown measures.

Access to urban green spaces, such as botanical gardens, is not always equal, and communities of colour often lack access to these spaces (Wolch et al., 2014). In South Africa, Venter et al. (2020) argue that access remains highly unequal due to the legacy of apartheid spatial planning, resulting in a distinctive “green apartheid.” The Pretoria National Botanical Garden is located in a historically white, largely middle-income area in the Eastern suburbs of Pretoria, which has influenced efforts to broaden its appeal to more diverse audiences. Dodd and Jones (2010) note that in the UK, botanical gardens are often perceived as elite spaces for older, white, middle-class visitors. Shifting such perceptions is increasingly important to broaden the social appeal of botanical gardens (Benfield, 2013, 2021; Paiva et al., 2020). Similarly, in South Africa, botanical gardens are historically tied to colonial origins, serving the white minority population (Boehi, 2021). In the post-apartheid era, SANBI has recognised the need for transformation and to broaden audiences visiting botanical gardens (Willis, 2015). At the Pretoria National Botanical Garden, a variety of events have been strategically introduced to increase access for audiences reflective of South Africa’s cultural diversity. As noted by Smith et al. (2024), expanded event programming can make gardens more accessible, flexible, relatable, and sociable, encouraging return visits. This study confirmed that events have the potential to stimulate return visits.

Within the context of public spending austerity, the commercialisation of urban green spaces has become a strategy to generate additional funding for maintenance and conservation (Funsten et al.,

2022; Smith, 2018, 2019, 2021). SANBI has actively pursued alternative funding sources since the 1990s to reduce reliance on government funding. Strategic corporate partnerships and event hosting have proved beneficial in generating additional income. Willis (2015, p. 9) cautions against the “crass commercialisation” of national botanical gardens in South Africa, emphasising that commercialisation must align with SANBI’s mandate of biodiversity conservation while expanding the social relevance of gardens. This study indicates that SANBI carefully integrates events to preserve its core mandate of conservation and education. Potential risks of commercialisation include physical damage, noise pollution, and challenges to environmental sustainability (Laing & Frost, 2010), which were also reflected in community concerns. SANBI mitigates these risks through a strict vetting and event approval process overseen by a committee adhering to City of Tshwane by-laws and institutional measures.

Overall, SANBI responds to global trends in the evolving function of botanical gardens. Their expanded role—encompassing biodiversity conservation, education, and recreation—ensures environmental and social responsiveness while generating additional income (Funsten et al., 2022; Ward et al., 2010; Willis, 2015).

This study provides insight into the integration of events at the Pretoria National Botanical Garden, highlighting the paradox of balancing conservation and education with commercialisation. Further research is needed to assess the impact of events in urban green spaces, potentially using quantitative approaches and comparative analyses across multiple South African botanical gardens. Future studies could measure income generated from events and its contribution to maintenance, education, and conservation, as well as quantify the proportion of event attendees relative to total visitors. While this study suggests that events encourage return visits and increased human-nature interaction, research measuring these correlations is needed to confirm such effects. More broadly, additional studies are warranted on the impact of neoliberalisation and commercialisation of urban green spaces in other cities of the Global South.

## REFERENCES

- Baber, Z. (2016). The plants of empire: Botanic gardens, colonial power and botanical knowledge. *Journal of Contemporary Asia*, 46(4), 659–679. <https://doi.org/10.1080/00472336.2016.1185796>
- Ballantyne, R., Packer, J., & Hughes, K. (2008). Environmental awareness, interests and motives of botanic gardens visitors: Implications for interpretive practice. *Tourism Management*, 29(3), 439–444. <https://doi.org/10.1016/j.tourman.2007.05.006>
- Barbosa, O., Tratalos, J. A., Armsworth, P. R., Davies, R. G., Fuller, R. A., Johnson, P., & Gaston, K. J. (2007). Who benefits from access to green space? A case study from Sheffield, UK. *Landscape and Urban Planning*, 83(2–3), 187–195. <https://doi.org/10.1016/j.landurbplan.2007.04.004>
- Benfield, R. (2013). *Garden tourism*. CABI.

- Benfield, R. (2021). *New directions in garden tourism*. CABI.
- Berdejo-Espinola, V., Suárez-Castro, A. F., Amano, T., Fielding, K. S., Oh, R. R. Y., & Fuller, R. A. (2021). Urban green space use during a time of stress: A case study during the COVID-19 pandemic in Brisbane, Australia. *People and Nature*, 3(3), 597–609. <https://doi.org/10.1002/pan3.10218>
- Bertram, C., & Rehdanz, K. (2015). The role of urban green space for human well-being. *Ecological economics*, 120, 139–152. <https://doi.org/10.1016/j.ecolecon.2015.10.013>
- Boehi, M. (2021). Radical stories in the Kirstenbosch National Botanical Garden: Emergent ecologies' challenges to colonial narratives and Western epistemologies. *Environmental Humanities*, 13(1), 66–92. <https://doi.org/10.1215/22011919-8867208>
- Brockway, L. H. (1979). Science and colonial expansion: the role of the British Royal Botanic Gardens. *American ethnologist*, 6(3), 449–465.
- Chen, G., & Sun, W. (2018). The role of botanical gardens in scientific research, conservation, and citizen science. *Plant diversity*, 40(4), 181–188. <https://doi.org/10.1016/j.pld.2018.07.006>
- Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning*, 68(1), 129–138. <https://doi.org/10.1016/j.landurbplan.2003.08.003>
- Conway, H. (1991). *People's Parks. The Design and Development of Public Parks in Britain*. Cambridge University Press.
- Daniel, J., Russo, A., & Burford, B. (2023). How might we utilise the concept of botanic gardens' in urban contexts to challenge plant blindness? *Biodiversity and Conservation*, 32(7), 2345–2364. <https://doi.org/10.1007/s10531-023-02607-w>
- Davidson, M. (2013). The sustainable and entrepreneurial park? Contradictions and persistent antagonisms at Sydney's Olympic Park. *Urban Geography*, 34(5), 657–676. <https://doi.org/10.1080/02723638.2013.778564>
- de Vries, L. A. (2019). 'Paradox of the Commons'? The Planning and Everyday Management of Green Point Park. *Urban Forum*, 30, 325–339. <https://doi.org/10.1007/s12132-019-09362-8>
- Dodd, J., & Jones, C. (2010). *Redefining the role of botanic gardens: Towards a new social purpose*. Leicester, UK: Research Centre for Museums and Galleries (RCMG).
- Faraji, L., & Karimi, M. (2022). Botanical gardens as valuable resources in plant sciences. *Biodiversity and Conservation*, 31(12), 2905–2926. <https://doi.org/10.1007/s10531-019-01926-1>
- Funsten, C., Di Franco, C., Borsellino, V., Surano, N., Asciuto, A., & Schimmenti, E. (2022). The recreational value of botanic garden events: A case study of the Zagara plant fair in Palermo, Italy. *Journal of Outdoor Recreation and Tourism*, 39, 100565. <https://doi.org/10.1016/j.jort.2022.100565>
- Garrod, G., Pickering, A., & Willis, K. (1993). The economic value of botanic gardens: a recreational perspective. *Geoforum*, 24(2), 215–224. [https://doi.org/10.1016/0016-7185\(93\)90035-G](https://doi.org/10.1016/0016-7185(93)90035-G)

- Gregory, J. J. (2023). Taming the wilds: tactical urbanism and creative placemaking in the revitalisation of a nature reserve in Johannesburg, South Africa. *Bulletin of Geography. Socio-economic Series*, (60), 33–45. <https://doi.org/10.12775/bgss-2023-0014>
- Hermann, U. P., & Bouwer, S. C. (2023). Motives to visit urban ecotourism sites: A study of a botanical garden in South Africa. *Journal of Environmental Management and Tourism*, 14(2), 563. [https://doi.org/10.14505/jemt.v14.2\(66\).25](https://doi.org/10.14505/jemt.v14.2(66).25)
- Hiscock, S., Lennon, S., & Young, B. (2024). Celebrating botanic gardens. *Plants, People, Planet*, 6(2), 251–253. <https://doi.org/10.1002/ppp3.10472>
- Jabbar, M., Yusoff, M. M., & Shafie, A. (2022). Assessing the role of urban green spaces for human well-being: a systematic review. *GeoJournal* 87, 4405–4423. <https://doi.org/10.1007/s10708-021-10474-7>
- Javadi, R., & Nasrollahi, N. (2021). Urban green space and health: The role of thermal comfort on the health benefits from the urban green space; a review study. *Building and Environment*, 202, 108039. <https://doi.org/10.1016/j.buildenv.2021.108039>
- Jennings, V., Browning, M.H.E.M., & Rigolan, A. (2019). *Urban green spaces: Public health and sustainability in the United States*. Springer
- Kabisch, N. (2015). Ecosystem service implementation and governance challenges in urban green space planning—The case of Berlin, Germany. *Land Use Policy*, 42, 557–567. <https://doi.org/10.1016/j.landusepol.2014.09.005>
- Krishnan, S., & Novy, A. (2017). The role of botanic gardens in the twenty-first century. *Cabi Reviews*, 1–10. <https://doi.org/10.1079/PAVSNNR201611023>
- Laing, J., & Frost, W. (2010). How green was my festival: Exploring challenges and opportunities associated with staging green events. *International Journal of Hospitality Management*, 29(2), 261–267. <https://doi.org/10.1016/j.ijhm.2009.10.009>
- Munyati, C., & Drummond, J. H. (2020). Loss of urban green spaces in Mafikeng, South Africa. *World Development Perspectives*, 19, 100226. <https://doi.org/10.1016/j.wdp.2020.100226>
- Neves, K. G. (2024). Botanic gardens in biodiversity conservation and sustainability: History, contemporary engagements, decolonization challenges, and renewed potential. *Journal of Zoological and Botanical Gardens*, 5(2), 260–275. <https://doi.org/10.3390/jzbg5020018>
- Noszczyk, T., Gorzelany, J., Kukulska-Kozieł, A., & Hernik, J. (2022). The impact of the COVID-19 pandemic on the importance of urban green spaces to the public. *Land use policy*, 113, 105925. <https://doi.org/10.1016/j.landusepol.2021.105925>
- O'Donnell, K., & Sharrock, S. (2017). The contribution of botanic gardens to ex situ conservation through seed banking. *Plant Diversity*, 39(6), 373–378. <https://doi.org/10.1016/j.pld.2017.11.005>

- Paiva, P. D. D. O., Sousa, R. D. B., & Carcaud, N. (2020). Flowers and gardens on the context and tourism potential. *Ornamental horticulture*, 26, 121–133. <https://doi.org/10.1590/2447-536X.v26i1.2144>
- Primack, R. B., & Miller-Rushing, A. J. (2009). The role of botanical gardens in climate change research. *New Phytologist*, 182(2), 303–313. <https://doi.org/10.1111/j.1469-8137.2009.02800.x>
- Primack, R. B., Ellwood, E. R., Gallinat, A. S., & Miller-Rushing, A. J. (2021). The growing and vital role of botanical gardens in climate change research. *New Phytologist*, 231(3), 917–932. <https://doi.org/10.1111/nph.17410>
- Rakow, D. A., & Lee, S. A. (2015). Western botanical gardens: history and evolution. *Horticultural Reviews*, 43, 269–310. <https://doi.org/10.1002/9781119107781.ch05>
- Reyes-Riveros, R., Altamirano, A., De La Barrera, F., Rozas-Vásquez, D., Vieli, L., & Meli, P. (2021). Linking public urban green spaces and human well-being: A systematic review. *Urban forestry & urban greening*, 61, 127105. <https://doi.org/10.1016/j.ufug.2021.127105>
- Richardson, E. A., Pearce, J., Mitchell, R., & Kingham, S. (2013). Role of physical activity in the relationship between urban green space and health. *Public Health*, 127(4), 318–324. <https://doi.org/10.1016/j.puhe.2013.01.004>
- Rogerson, C. M. (2025a). Racialized hospitality spaces: Food and drink in apartheid Johannesburg. *Modern Geografía*, 20(4), 17–38. <https://doi.org/10.15170/MG.2025.20.04.02>
- Rogerson, C. M. (2025b). The inhospitable city: Historical racial segregation in Johannesburg c. 1890–1970. *Modern Geografía*, 20(1), 83–106. <https://doi.org/10.15170/MG.2025.20.01.05>
- Rogerson, C. M., & Rogerson, J. M. (2025). Racial Discrimination in Tourism: The Record of Apartheid Cape Town. *Modern Geografía*, 20(3), 47–67. <https://doi.org/10.15170/MG.2025.20.03.03>
- Sanders, D. L., Ryken, A. E., & Stewart, K. (2018). Navigating nature, culture and education in contemporary botanic gardens. *Environmental Education Research*, 24(8), 1077–1084. <https://doi.org/10.1080/13504622.2018.1477122>
- Sanesi, G., Laforteza, R., Bonnes, M., & Carrus, G. (2006). Comparison of two different approaches for assessing the psychological and social dimensions of green spaces. *Urban Forestry & Urban Greening*, 5(3), 121–129. <https://doi.org/10.1016/j.ufug.2006.06.001>
- Saz-Salazar, S. D., & Rausell-Köster, P. (2008). A Double-Hurdle model of urban green areas valuation: Dealing with zero responses. *Landscape and Urban Planning*, 84(3–4), 241–251. <https://doi.org/10.1016/j.landurbplan.2007.08.008>
- Smith, A. (2016). *Events in the city: Using public spaces as event venues*. Routledge.
- Smith, A. (2018). Paying for parks. Ticketed events and the commercialisation of public space. *Leisure Studies*, 37(5), 533–546. <https://doi.org/10.1080/02614367.2018.1497077>
- Smith, A. (2019). Justifying and resisting public park commercialisation: The battle for Battersea Park. *European Urban and Regional Studies*, 26(2), 171–185. <https://doi.org/10.1177/0969776418767731>

- Smith, A. (2021). Sustaining municipal parks in an era of neoliberal austerity: The contested commercialisation of Gunnersbury Park. *Environment and Planning A: Economy and Space*, 53(4), 704–722. <https://doi.org/10.1177/0308518X20951814>
- Smith, A., Osborn, G., & Vodicka, G. (2024). Programming parks. How do organized events and activities affect the inclusivity of urban green spaces? *Journal of Leisure Research*, 55(3), 344–362. <https://doi.org/10.1080/00222216.2023.2210563>
- South African National Biodiversity Institute. (2005). *Annual Report, 2004–2005*. <https://www.sanbi.org/wp-content/uploads/2018/04/annualreport2004-2005-1.pdf>
- South African National Biodiversity Institute. (2006). *Annual Report, 2005–2006*. <https://www.sanbi.org/wp-content/uploads/2018/04/annualreport2005-2006-1.pdf>
- South African National Biodiversity Institute. (2007). *Annual Report, 2006–2007*. <https://www.sanbi.org/wp-content/uploads/2018/04/annualreport2006-2007-1.pdf>
- South African National Biodiversity Institute. (2008). *Annual Report, 2007–2008*. <https://www.sanbi.org/wp-content/uploads/2018/04/annualreport2007-2008-1.pdf>
- South African National Biodiversity Institute. (2009). *Annual Report, 2008–2009*. <https://www.sanbi.org/wp-content/uploads/2018/04/annualreport2008-2009-1.pdf>
- South African National Biodiversity Institute. (2010). *Annual Report, 2009–2010*. <https://www.sanbi.org/wp-content/uploads/2018/04/sanbianreport2010-1.pdf>
- South African National Biodiversity Institute. (2011). *Annual Report, 2010–2011*. <https://www.sanbi.org/wp-content/uploads/2018/04/sanbiannualreport2011-1.pdf>
- South African National Biodiversity Institute. (2012). *Annual Report, 2011–2012*. <https://www.sanbi.org/wp-content/uploads/2018/04/sanbi-annual-report-2011-2012-1.pdf>
- South African National Biodiversity Institute. (2013). *Annual Report, 2012–2013*. <https://www.sanbi.org/wp-content/uploads/2018/04/sanbi-ar-2013-web-1.pdf>
- South African National Biodiversity Institute. (2014). *Annual Report, 2013–2014*. <https://www.sanbi.org/wp-content/uploads/2018/04/sanbi-ar-2014-web-1.pdf>
- South African National Biodiversity Institute. (2015). *Annual Report, 2014–2015*. <https://www.sanbi.org/wp-content/uploads/2018/03/sanbi-ar-full-21-aug-2015.pdf>
- South African National Biodiversity Institute. (2016). *Annual Report, 2015–2016*. <https://www.sanbi.org/wp-content/uploads/2018/03/k-13308-sanbi-annual-report-2016devv34-lr.pdf>
- South African National Biodiversity Institute. (2017). *Annual Report, 2016–2017*. <https://www.sanbi.org/wp-content/uploads/2018/03/sanbi-annual-report-2016-17.pdf>
- South African National Biodiversity Institute. (2018). *Annual Report, 2017–2018*. <https://www.sanbi.org/wp-content/uploads/2018/10/Annual-Report-2017-18.pdf>
- South African National Biodiversity Institute. (2019). *Annual Report, 2018–2019*. <https://www.sanbi.org/wp-content/uploads/2019/10/Annual-Report-2018-2019.pdf>

- South African National Biodiversity Institute. (2020). *Annual Report, 2019–2020*. <https://www.sanbi.org/wp-content/uploads/2021/01/SANBI-Annual-Report-2019-2020.pdf>
- South African National Biodiversity Institute. (2021). *Annual Report, 2020–2021*. [https://www.sanbi.org/wp-content/uploads/2021/10/SANBI-Annual-Report-2020-21-FINAL\\_9-Sept-2021-final-version-for-tabling....pdf](https://www.sanbi.org/wp-content/uploads/2021/10/SANBI-Annual-Report-2020-21-FINAL_9-Sept-2021-final-version-for-tabling....pdf)
- South African National Biodiversity Institute. (2022). *Annual Report, 2021–2022*. <https://www.sanbi.org/wp-content/uploads/2022/08/SANBI-Annual-Report-2022-V10-Final-Cov.pdf>
- South African National Biodiversity Institute. (2023). *Annual Report, 2022–2023*. <https://www.sanbi.org/wp-content/uploads/2023/09/SANBI-Annual-Report-2022-23.pdf>
- South African National Biodiversity Institute. (2024). *Annual Report, 2023–2024*. <https://www.sanbi.org/wp-content/uploads/2024/10/SANBI-Annual-Report-2023-24.pdf>
- Venter, Z. S., Barton, D. N., Gundersen, V., Figari, H., & Nowell, M. S. (2021). Back to nature: Norwegians sustain increased recreational use of urban green space months after the COVID-19 outbreak. *Landscape and urban planning*, 214, 104175. <https://doi.org/10.1016/j.landurbplan.2021.104175>
- Venter, Z. S., Shackleton, C. M., Van Staden, F., Selomane, O., & Masterson, V. A. (2020). Green apartheid: Urban green infrastructure remains unequally distributed across income and race geographies in South Africa. *Landscape and Urban Planning*, 203, 103889. <https://doi.org/10.1016/j.landurbplan.2020.103889>
- Wang, M., & Bao, H. X. H. (2018). Mega-event effects on the housing market: Evidence from the Beijing 2008 Olympic Games. *Cities*, 72, 207–216. <https://doi.org/10.1016/j.cities.2017.07.014>
- Ward, C. D., Parker, C. M., & Shackleton, C. M. (2010). The use and appreciation of botanical gardens as urban green spaces in South Africa. *Urban Forestry & Urban Greening*, 9(1), 49–55. <https://doi.org/10.1016/j.ufug.2009.11.001>
- Williams, S. J., Jones, J. P., Gibbons, J. M., & Clubbe, C. (2015). Botanic gardens can positively influence visitors' environmental attitudes. *Biodiversity and conservation*, 24(7), 1609–1620. <https://doi.org/10.1007/s10531-015-0879-7>
- Willis, C. (2015). *Gardens for the nation: 1994–2014. Serving and supporting South Africa's social and economic development for 20 years*. SANBI Biodiversity Series 27. South African National Biodiversity Institute, Pretoria.
- Wolch, J. R., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'. *Landscape and urban planning*, 125, 234–244. <https://doi.org/10.1016/j.landurbplan.2014.01.017>
- Wyse Jackson, P. S., & Sutherland, L. A. (2000). International agenda for botanical gardens in conservation. Botanical Gardens Conservation International. [http://www.bgci.org/files/All/Key\\_Publications/interagendaeng2580.pdfS](http://www.bgci.org/files/All/Key_Publications/interagendaeng2580.pdfS)

- Yilmaz, S., Vural, H., & Yilmaz, H. (2023). Effects of botanical gardens on student environmental perception. *Ecological Informatics*, 73, 101942. <https://doi.org/10.1016/j.ecoinf.2022.101942>
- Zhang, F., & Qian, H. (2024). A comprehensive review of the environmental benefits of urban green spaces. *Environmental research*, 118837. <https://doi.org/10.1016/j.envres.2024.118837>

*Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licence-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

*This open access article may be used under the international license terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>





Li, Ziming<sup>1</sup> – Yang, Jie<sup>2</sup> – Jamaludin, Muhammad Ikhwan<sup>3</sup>

# Adaptive Governance for Tourism Resilience Under Climate Change: A Systematic Review of the Literature (2015–2025)

## ABSTRACT

Climate change poses escalating risks to tourism destinations by undermining climate-sensitive resources, disrupting socio-economic systems, and challenging existing governance arrangements. Although social-ecological resilience and adaptive governance have become prominent concepts in tourism research, their application remains fragmented across contexts and scales. This study presents a PRISMA-guided systematic review of 30 peer-reviewed articles published between 2015 and 2025 that examine climate change adaptation in tourism destinations through these two lenses. Using qualitative thematic synthesis, the review consolidates how resilience and governance are conceptualised and operationalised across diverse destination types and regions. Three recurring patterns emerge: the widespread treatment of destinations as coupled social-ecological systems; the central role of multi-level and participatory governance in shaping adaptive responses; and the growing recognition that adaptation outcomes are closely linked to equity, power relations, and justice. At the same time, the evidence base remains uneven, with a strong focus on coastal and island destinations and limited attention to inland and urban tourism systems, adaptation failures, and long-term institutional change. Rather than proposing new models, this review synthesises existing evidence to clarify current knowledge boundaries and identify priorities for future research and policy aimed at advancing inclusive and context-sensitive climate adaptation in tourism destinations.

*Keywords: climate change adaptation; tourism destinations; social-ecological resilience; adaptive governance; systematic review*

<sup>1</sup> Centre for Sustainable Urban Planning and Real Estate (SUPRE), Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Malaya, Kuala Lumpur, Email: [liziming.um@foxmail.com](mailto:liziming.um@foxmail.com).

<sup>2</sup> Asia-Europe Institute, Universiti Malaya, Kuala Lumpur, 50603, Malaysia.

<sup>3</sup> PhD, Senior Lecturer, Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Malaya, 50603 Kuala Lumpur, Malaysia Email: [ikhwanj@um.edu.my](mailto:ikhwanj@um.edu.my). Corresponding author.

## INTRODUCTION

Climate change poses escalating and systemic challenges to tourism destinations worldwide. As a sector that depends heavily on climate-sensitive resources—including snow reliability, coastal and marine ecosystems, biodiversity, and stable seasonal patterns—tourism is increasingly exposed to rising temperatures, extreme weather events, sea-level rise, and ecosystem degradation. These climatic stressors generate cascading effects at the destination level, disrupting infrastructure and accessibility, reshaping visitor demand, and undermining local livelihoods and community well-being (Gössling et al., 2018; Scott et al., 2012; IPCC, 2022). From alpine resorts experiencing declining snow cover to small island destinations threatened by coastal erosion, the urgency of strengthening climate resilience in tourism destinations has become widely recognised.

In response, two interrelated concepts—social–ecological resilience and adaptive governance—have gained prominence in tourism and sustainability scholarship. Originating in ecology and later extended to sustainability science, social–ecological resilience conceptualises destinations as coupled systems capable of absorbing disturbances, adapting to change, and reorganising while maintaining essential functions (Folke, 2006; Biggs et al., 2015). Adaptive governance complements this perspective by focusing on the institutional arrangements, actor networks, and decision-making processes that enable learning, flexibility, and coordination across scales under conditions of uncertainty (Hall, 2011; Chaffin et al., 2014). Together, these perspectives provide a useful analytical lens for examining how tourism destinations respond to climate change through governance processes rather than isolated technical measures.

Despite their growing prominence, the application of social–ecological resilience and adaptive governance in tourism research remains uneven and fragmented. Existing studies are disproportionately concentrated on coastal and island destinations, Small Island Developing States, and selected mountain regions, while inland destinations, urban tourism systems, and domestic tourism economies—particularly in parts of Asia, Africa, and Latin America—remain underrepresented (Becken & Hay, 2012; Nalau et al., 2018). Here, the Global North is used as an analytical shorthand to refer primarily to high-income and OECD contexts, where governance capacity and research attention have been disproportionately concentrated (IPCC, 2022; Eriksen et al., 2021). This distinction is employed not to imply regional homogeneity or normative superiority, but to highlight systematic biases in the geographical distribution of tourism adaptation research. At the same time, the review recognises the substantial heterogeneity within Asia, encompassing advanced economies, emerging tourism destinations, and least-developed contexts characterised by markedly different governance capacities and vulnerability profiles.

Moreover, the literature tends to privilege accounts of successful adaptation initiatives, with comparatively limited attention to adaptation failures, trade-offs, and power asymmetries that shape governance outcomes (Wyborn et al., 2016; Eriksen et al., 2021). Conceptual inconsistencies further

persist, as key terms such as “resilience” and “adaptive capacity” are often employed without clear operationalisation or explicit linkage to ecological, social, or equity-related outcomes.

While a growing number of empirical and conceptual studies address climate adaptation in tourism destinations, a systematic synthesis that explicitly integrates social–ecological resilience and adaptive governance across diverse destination contexts remains lacking. In particular, previous reviews have tended to focus on climate impacts or adaptation strategies in isolation, rather than examining how governance processes shape adaptive capacity across scales and social groups. This gap limits cumulative knowledge building and constrains the translation of research insights into context-sensitive policy and practice.

To address this gap, this study conducts a PRISMA-guided 2020 systematic review of 30 peer-reviewed studies published between 2015 and 2025 that examine climate change adaptation in tourism destinations through the lenses of social–ecological resilience and adaptive governance. The review employs qualitative thematic synthesis to consolidate existing evidence, identify recurring patterns and biases in the literature, and clarify key areas of convergence and divergence. Rather than proposing new conceptual models, the aim is to synthesise existing empirical and theoretical insights to delineate current knowledge boundaries and inform future research and governance efforts aimed at enhancing climate resilience in tourism destinations.

## METHODS

This study follows the PRISMA 2020 guidelines for systematic reviews, as illustrated in Figure 1 (the PRISMA flow diagram). This standardised flowchart delineates each stage—Identification, Screening, Eligibility, and Inclusion—and reports the number of records retained and excluded at each step.

### Identification

During the identification phase, a comprehensive and systematic search was conducted across three major bibliographic databases—Web of Science, Scopus, and ScienceDirect—for literature published between 2015 and 2025. This 10-year span was selected to capture the most recent research on climate change impacts and governance in tourism destinations. The initial search identified 946 records related to the core themes of tourism research, social–ecological resilience, and adaptive governance under climate change. All retrieved records were consolidated, and 212 duplicate entries (i.e. results overlapping across databases) were removed, resulting in 734 unique records proceeding to the screening stage. The comprehensiveness of this search—spanning multiple databases and disciplines—aligns with the standards of high-quality systematic reviews in tourism and sustainable development, ensuring that the initial literature pool was broad and inclusive.

## Screening

In the screening phase, the 734 unique records underwent a systematic review of their titles and abstracts to assess relevance to the study's thematic focus. Each record was evaluated against pre-defined inclusion criteria—specifically, a focus on tourism destinations and climate change–related resilience or adaptive governance—and exclusion criteria (e.g. studies not focusing on tourism, lacking resilience or adaptation dimensions, or situated outside a social–ecological context). Through this process, 654 records were excluded for failing to meet the inclusion criteria. Common reasons for exclusion included studies addressing tourism or climate change in isolation (rather than jointly), papers examining resilience in non-tourism sectors, and conceptual articles lacking empirical or case study evidence. Following this screening process, 80 records were deemed potentially relevant and advanced to the full-text eligibility assessment. The substantial reduction at this stage reflects the specific scope of the review, with only approximately 10% of initially identified studies aligning directly with the core themes.

## Eligibility

During the eligibility phase, the remaining 80 articles underwent detailed full-text assessment to determine their adherence to the inclusion criteria. The evaluation considered whether: (1) the study explicitly addressed climate change resilience in tourism destinations; (2) it discussed or evaluated adaptive governance measures or frameworks; and (3) it provided qualitative or quantitative evidence related to tourism's social–ecological resilience. Following the full-text review, 50 articles were excluded. The most frequent reasons for exclusion included studies that, despite using relevant keywords, did not focus on climate change impacts (e.g. examining resilience to economic crises or other non-climatic disturbances), the absence of a governance or policy dimension (with a sole focus on ecological resilience), or articles classified as commentaries or opinion pieces rather than research papers meeting the review's quality and content standards. In line with PRISMA recommendations, all exclusion reasons were documented to ensure transparency. After the full-text eligibility screening, 30 studies met all criteria and were considered suitable for inclusion.

## Inclusion (Qualitative Synthesis)

Following the screening process described above, 30 articles that met all inclusion requirements were ultimately selected. Given the high conceptual complexity of the selected research topics and the heterogeneity of methodologies employed, a qualitative synthesis was conducted for these 30 articles. The included studies cover a wide range of geographical contexts and subtopics within the broader theme, providing a rich qualitative foundation for comprehensive analysis. In accordance with best practices, the findings of these studies were synthesised using a narrative approach rather than a

quantitative meta-analysis, given the qualitative nature of the evidence base. This approach enables the synthesis to distil common themes, strategies, and gaps prevalent in the literature.

**Rationale for synthesis approach (SWiM).** Although the review followed PRISMA 2020 guidelines for identification and screening, a quantitative meta-analysis was not methodologically appropriate for the included body of evidence. Across the 30 eligible studies, destination contexts, study designs, analytical frameworks, and outcome reporting were highly heterogeneous, and many primary studies reported qualitative or narrative findings that cannot be transformed into comparable effect sizes without introducing substantial bias. Accordingly, this study adopted a systematic review with narrative synthesis and structured the reporting of synthesis results in line with the SWiM (Synthesis Without Meta-analysis) guideline to enhance transparency, consistency, and reproducibility.

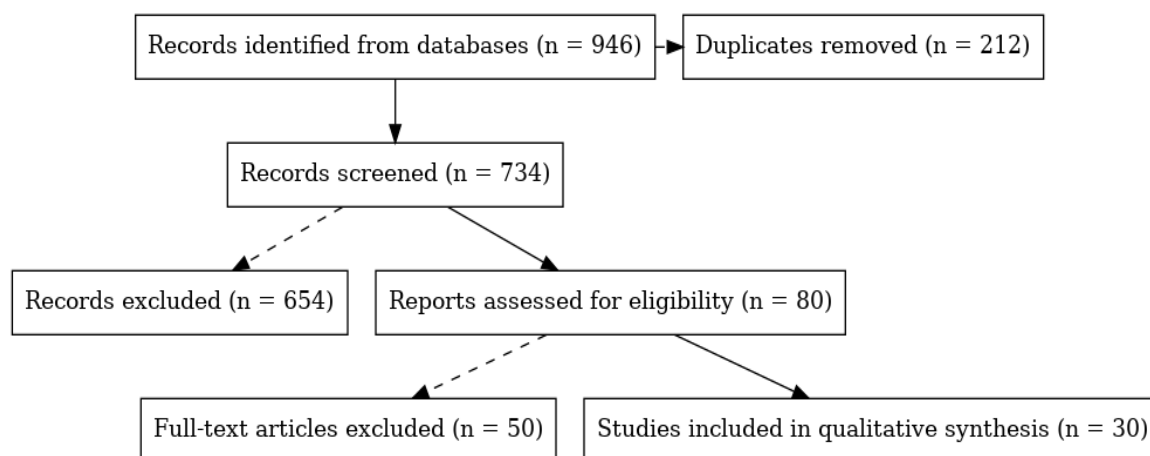
The core concepts examined in this review—social–ecological resilience, adaptive governance, community-level adaptation, and multi-level governance—are predominantly qualitative, context-dependent, and resistant to numerical standardisation. The included studies employ diverse methodological designs (e.g. case studies, interviews, policy analysis, mixed methods), rendering their findings unsuitable for conversion into comparable effect sizes. Furthermore, this review seeks to advance theory rather than produce statistical estimates; consequently, narrative and thematic synthesis represents the most rigorous approach for integrating insights across destinations concerning cross-scalar mechanisms, governance structures, and social–ecological interactions. The final sample size ( $n \approx 30$ ) further supports the use of qualitative thematic analysis, enabling conceptual depth and theoretical saturation. Braun and Clarke (2006, 2021) note that thematic analysis is most effective for datasets comprising 10 to 50 sources, balancing analytical depth with manageability. Thus, a sample size of approximately 30 achieves an optimal balance between depth, heterogeneity, and theoretical saturation within a qualitative synthesis.

These 30 articles constitute the core body of literature examining the development of resilience and adaptive governance in tourism destinations confronting climate change. They include representative empirical case studies, comparative analyses, and conceptual frameworks that collectively explore how destinations respond to climate-related disturbances, strengthen social–ecological resilience, and implement governance strategies to cope with or mitigate climate impacts.

The flow diagram (Figure 1) outlines the literature selection process for this review. Each box reports the number of records at specific stages (Identification, Screening, Eligibility, and Included), while arrows indicate the number of records excluded or removed at each respective phase. This diagram adheres to the standard PRISMA format, ensuring transparent reporting of the process leading to the final set of studies included in the analysis.

Before synthesising the substantive themes, the characteristics of the included studies were examined to provide an overview of the empirical basis of the review. As shown in Table 2, the 30 studies display a pronounced concentration on coastal and island destinations, alongside a strong geographical bias towards Europe, Small Island Developing States, and global-scale analyses.

Figure 1. PRISMA 2020 Flow Diagram Illustrating the Literature Search, Screening, Eligibility Assessment, and Inclusion Process



The qualitative synthesis draws on 30 empirical and comparative studies examining climate change adaptation and governance across a diverse range of tourism contexts. These include coastal and island destinations (e.g. Arabadzhyan et al., 2020; Wolf et al., 2021; Lam-González et al., 2022; Shakeela & Becken, 2015), mountain and alpine tourism systems (Steiger et al., 2017; Scott & McBoyle, 2007), protected areas and nature-based destinations (Jones et al., 2020; Maoela et al., 2025), community-based tourism contexts (Young et al., 2021), as well as cross-regional and global comparative analyses (Pan et al., 2024; Navarro-Drazich et al., 2023; Hoogendoorn & Fitchett, 2018). Together, these studies constitute the empirical foundation for the thematic synthesis presented below.

Table 1. Distribution of Included Studies by Destination Type and Geographical Region (n = 30)

| Category              | Sub-category                           | Number of Studies (n) | Percentage (%) |
|-----------------------|----------------------------------------|-----------------------|----------------|
| Destination Type      | Coastal / Island destinations          | 13                    | 43.3           |
|                       | Mountain / Alpine destinations         | 4                     | 13.3           |
|                       | Protected areas / Nature-based tourism | 5                     | 16.7           |
|                       | Urban / Regional tourism systems       | 3                     | 10.0           |
|                       | Conceptual / Multi-destination studies | 5                     | 16.7           |
|                       | Subtotal                               | 30                    | 100            |
| Geographical Coverage | Global / Multi-region                  | 8                     | 26.7           |
|                       | Europe                                 | 7                     | 23.3           |
|                       | Small Island Developing States (SIDS)  | 6                     | 20.0           |
|                       | Africa                                 | 4                     | 13.3           |
|                       | Asia & Latin America                   | 5                     | 16.7           |
|                       | Subtotal                               | 30                    | 100            |

Note: Percentages are calculated based on the total number of included studies (n = 30). Some studies classified as “Global / Multi-region” draw on multiple destination types or regions.

## RESULTS

Following SWiM reporting principles, the synthesis is organised around analytically derived themes. For each theme, we (i) define the thematic focus, (ii) summarise the supporting evidence base (including study designs and contexts), (iii) describe patterns and heterogeneity across settings, and (iv) note limitations and confidence considerations. Table 1 summarises the included studies by destination type and geographical region, while Table S1 provides detailed study-level information (author–year, location, methods, and thematic contribution).

### Impacts of Climate Change on Tourism and the Imperative for Building Resilience

Theme definition: Climate stressors (e.g. heat, sea-level rise, extreme events) generate cascading impacts on destination systems and motivate resilience-building. Evidence base: Evidence includes studies across coastal and island destinations, alpine contexts, and cross-regional syntheses, as summarised in Table 1 and Table S1. Patterns/heterogeneity: Impacts and response capacity vary according to hazard type, exposure, and destination dependence on climate-sensitive resources. Confidence/limitations: Findings are more robust where multiple studies converge; however, causal claims remain constrained by cross-sectional designs and strong context specificity.

Climate is a pivotal factor influencing tourist flows and destination appeal (Scott et al., 2019). Shifts in seasonal patterns are increasingly undermining the core attractiveness and operational foundations of tourism destinations. Winter sports resorts face mounting operational pressures due to persistently declining snowpack, while traditional “sun-and-sand” destinations encounter unseasonal rainfall or extreme heat during peak tourist seasons (Scott & McBoyle, 2007). Coastal and island tourism areas bear the most immediate and severe impacts of climate change. Rising sea levels intensify coastal erosion, directly threatening the core assets of coastal tourism, including beaches and shoreline infrastructure. Increasingly intense tropical cyclones can rapidly devastate tourism facilities such as hotels and marinas. More gradually, but no less significantly, saltwater intrusion and coral bleaching are degrading the ecological foundations that underpin marine-based tourism activities (Scott et al., 2012). At the same time, inland destinations face substantial challenges. Recurrent droughts and heatwaves not only exacerbate water scarcity but also markedly increase wildfire risks, posing direct threats to ecotourism and adventure tourism activities that depend on natural landscapes (Jones et al., 2020).

Paradoxically, the tourism sector itself contributes to climate change through high-emission activities such as air travel and cruise tourism, thereby intensifying pressure on the climate system. This self-reinforcing feedback creates a vicious cycle for tourism development and renders climate action within the sector particularly urgent (Peeters et al., 2016). Within this context, building resilience has emerged as a central objective of tourism destination management. In tourism research, “resilience” refers to the capacity of a destination—understood as a coupled human–environment (social–ecological) system—to absorb external shocks or stressors (e.g. extreme weather events or

long-term climate change), to reorganise and adapt when necessary, and to retain its core functions, structure, identity, and feedback mechanisms. Moreover, destinations may also “bounce forward” by strengthening adaptive capacity and governance in ways that better equip them to confront future challenges (Walker et al., 2004; González-Quintero et al., 2019; Calgaro et al., 2014; Della Corte & Lima, 2021). This implies a destination’s ability to withstand climate-related disturbances without catastrophic collapse of its tourism economy or irreversible losses in environmental and social value.

Existing research conceptualises tourism resilience as a multidimensional construct encompassing absorptive capacity (the ability to withstand shocks with minimal loss), adaptive capacity (the ability to learn, reorganise, and adjust under changing conditions), and transformative capacity (the ability to initiate fundamental system change when existing structures become untenable) (Walker et al., 2004; Folke et al., 2010; Calgaro et al., 2014; Lew et al., 2016). For example, a coastal destination resilient to climate threats may demonstrate absorptive capacity by withstanding cyclone damage, adaptive capacity through flexible marketing strategies that shift tourist demand seasonally, and transformative capacity by transitioning from mass tourism towards a more sustainable and climate-resilient development model. Crucially, resilience is not merely an outcome but an ongoing process, built and sustained through continuous adaptation, learning, and innovation among the stakeholders that constitute a destination’s tourism system.

### **Social–Ecological Resilience Perspectives in Tourism Research**

Theme definition: Destinations are conceptualised as coupled social–ecological systems in which resilience depends on feedbacks among ecosystems, infrastructure, livelihoods, and institutions. Evidence base: Evidence draws on both conceptual and empirical scholarship on tourism resilience across multiple destination types. Patterns/heterogeneity: Applications vary in operational definitions and indicators, resulting in differences in measurement and comparability across studies. Confidence/limitations: Conceptual coherence is relatively strong, but empirical operationalisation remains uneven and frequently under-specified.

The review identified a growing body of tourism research adopting a social–ecological resilience perspective. A dominant trend involves conceptualising tourism destinations as social–ecological systems, highlighting the interdependence between human and ecological subsystems within tourism regions (Farrell & Twining-Ward, 2004; Calgaro et al., 2014; Espiner et al., 2017; Prideaux et al., 2020). Viewed through this lens, destination resilience emerges not solely from ecological or environmental attributes but also from social structures and the dynamic interactions between social and ecological components. Factors shaping resilience include the diversity and condition of natural assets, the strength of social networks and institutions, the flexibility of local livelihoods, and the knowledge base and learning capacity of destination communities.

Applying a social–ecological resilience framework to tourism opens new analytical and planning opportunities. For example, researchers have employed the concept of the adaptive cycle—describing



phases of system growth, collapse, and reorganisation—to examine how destinations experience periods of expansion, crisis, and recovery (Calgaro, Dominey-Howes, & Lloyd, 2014). Building resilience in social–ecological systems fundamentally depends on strengthening the adaptive capacity of individuals, communities, and institutions (Folke et al., 2005; Berkes & Ross, 2013; Engle, 2011). In tourism contexts, adaptive capacity encompasses the ability of stakeholders to perceive and anticipate climate risks, to plan and implement adaptation measures collaboratively, and to reorganise business models or practices in response to changing conditions.

An empirical study by Young et al. (2021) of a nature-based tourism community in the Peruvian Andes illustrates these dynamics. While strong social bonds and cultural identity helped buffer short-term impacts from the COVID-19 pandemic, weak external organisational networks constrained the development of long-term resilience to climate risks. In this case, the establishment of broader partnerships beyond the local community was identified as essential for implementing risk management strategies and strengthening long-term climate resilience, underscoring the importance of social capital and external linkages for community-level adaptive capacity. Researchers have also proposed tourism-specific resilience assessment approaches. For instance, Alvarez, Bahja, and Fyall (2022) developed a framework for assessing destination vulnerability and resilience, emphasising that resilience can be evaluated through absorptive, adaptive, and transformative capacities. Such approaches assist in diagnosing destination strengths and weaknesses, for example, strong physical infrastructure but limited community engagement, or vice versa, and in guiding targeted interventions. Overall, the adoption of a social–ecological resilience perspective highlights the importance of systems thinking in tourism planning, recognising that building resilience to climate change requires the integrated consideration of ecological integrity, community well-being, and institutional robustness.

## **Adaptive Governance**

**Theme definition:** Adaptive governance is examined as multi-level, participatory, and learning-oriented institutional arrangements that enable adaptation under conditions of uncertainty. **Evidence base:** Evidence includes comparative case studies and governance analyses across regions and destination settings. **Patterns/heterogeneity:** Reported mechanisms vary according to institutional capacity, stakeholder power relations, and policy scale; levels of equity and the quality of participation also differ. **Confidence/limitations:** The evidence consistently supports the importance of governance for adaptation, but longitudinal evidence of institutional change remains scarce; potential publication bias and context specificity persist.

The literature reviewed further highlights adaptive governance as a critical approach to climate change adaptation in tourism destinations. Traditional governance models are predominantly top-down, often driven by higher-level governments and large corporations, with limited opportunities for meaningful community participation in decision-making processes (Tosun, 2006). These entrenched, often rigid “command-and-control” approaches tend to respond slowly to emerging threats, and

decisions taken by governments or corporate actors frequently overlook the interests of local communities, particularly more marginalised or passive stakeholders. In contrast, Akamani (2023) characterises adaptive governance as participatory, polycentric, and reflective.

Participatory governance refers to more inclusive decision-making processes that grant agency to local actors—including Indigenous and marginalised groups—regarding how tourism systems adapt. Polycentric governance denotes the distribution of authority across multiple centres (e.g. local, regional, and national governments, as well as private and community institutions), rather than a single hierarchical structure. This configuration allows for experimentation, cross-scale coordination, and institutional redundancy. Reflective governance implies that policies are treated as provisional and subject to testing; authorities actively monitor outcomes and adjust strategies based on learning and feedback. In practice, adopting adaptive governance in tourism may involve establishing multi-stakeholder platforms or committees for climate adaptation planning, fostering public–private partnerships for risk management, and institutionalising continuous feedback mechanisms (Djalante, 2012; Strickland-Munro et al., 2010). One illustrative approach is adaptive co-management, which combines the collaborative power-sharing characteristic of co-management (e.g. joint management of protected areas by communities and governments) with the iterative learning orientation of adaptive management. While the importance of adaptive governance is widely recognised, it is equally important to acknowledge its limitations. Adaptive governance is not a panacea and may fail if key enabling conditions are absent. Reed (2008) notes that participatory processes that remain superficial and lack genuine influence are unlikely to produce substantive outcomes. A clear illustration is provided by Nalau et al. (2018), who document how coastal adaptation planning in the Caribbean was dominated by hotel operators focused on protecting tourism infrastructure, while fisherfolk—whose livelihoods depend on healthy coral reef ecosystems—were systematically excluded from decision-making processes.

Recent research further underscores the relevance of adaptive governance for tourism climate resilience. In a comparative study of Arctic tourism, Hovelsrud (2021) found that despite markedly different governance regimes in Svalbard and Greenland, tourism actors in both contexts sought greater involvement in decision-making. This led the author to argue that place-based, collaborative adaptive governance is essential for addressing shared challenges in the Arctic, including sustainability pressures, climate change, and overtourism. Hovelsrud's findings suggest that as global climate change accelerates, tourism destinations will increasingly require governance systems capable of learning and adapting more rapidly than ever before.

## Research Gaps

Despite substantial progress in understanding how tourism destinations respond to climate change, the synthesis reveals a number of persistent structural gaps that constrain theoretical consolidation and limit the practical applicability of existing findings. These gaps span conceptual, methodological,

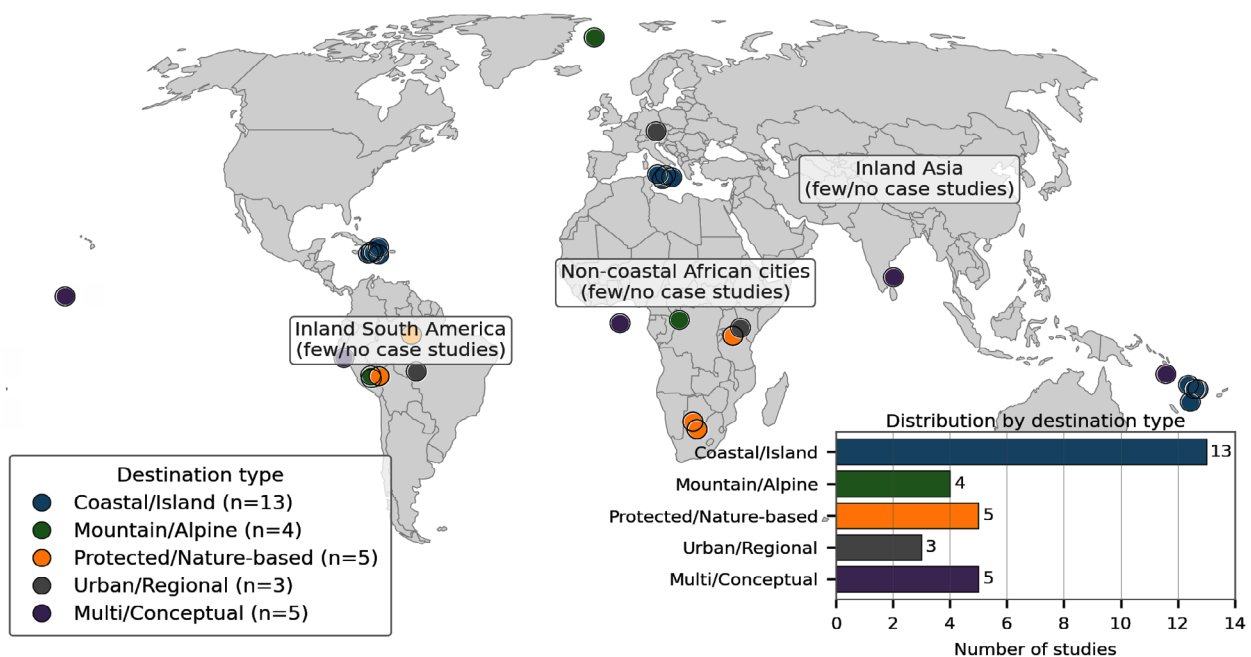


spatial, and governance dimensions, collectively highlighting the need for a more rigorous, context-sensitive, and equity-oriented research agenda.

## Geographical and Contextual Bias

The current evidence base remains heavily concentrated on Small Island Developing States, iconic coastal destinations, selected mountain regions, and high-income countries in the Global North. In contrast, inland destinations, medium-sized urban tourism systems, non-coastal protected areas, and major domestic tourism economies across Asia, Africa, and Latin America remain significantly underrepresented (Arabadzhyan et al., 2020; Guo et al., 2025; Hoogendoorn & Fitchett, 2018; Lam-González et al., 2022; Maoela et al., 2025; Navarro-Drazich et al., 2023; Pan et al., 2024; Wolf et al., 2021). Consequently, prevailing theories of destination resilience and adaptive governance are disproportionately derived from “exceptional” or high-profile contexts, which undermines the transferability and adaptation of these frameworks to more common, climate-vulnerable yet less globally prominent “everyday” tourism destinations. Future research should therefore prioritise underrepresented geographical regions—particularly inland and peri-urban destinations, large domestic tourism markets, and climate-sensitive rural landscapes—to broaden the empirical foundations of resilience theory. As illustrated in Figure 2, the spatial distribution of the reviewed studies reveals a strong concentration on coastal and island destinations, with inland and urban contexts remaining markedly underrepresented.

Figure 2. Geographic Distribution of Studied Destinations



### **Conceptual Ambiguity and Under-Operationalisation of Key Constructs**

Despite the frequent invocation of concepts such as “resilience,” “adaptive governance,” and “adaptive capacity,” these terms are often employed descriptively rather than analytically. Many existing studies fail to clearly distinguish among the three core dimensions of absorptive, adaptive, and transformative capacity, nor do they sufficiently elucidate the causal mechanisms through which specific governance arrangements—such as co-management, decentralisation, or multi-level coordination—influence adaptation outcomes (Agrawal, 2008; Armitage et al., 2009; Béné et al., 2012; Brown, 2014; Duit & Galaz, 2008; Folke et al., 2010; Moser & Ekstrom, 2010; Wied et al., 2020). This has resulted in a body of literature characterised by conceptual stretching and limited operational clarity. Future research should therefore develop measurable, theoretically grounded indicators that enable systematic cross-case comparison of these constructs and link them explicitly to social–ecological outcomes.

### **Limited Integration of Climate Justice and Intra-Community Inequities**

There is an urgent need for future research to move beyond homogenised conceptions of “community” and instead adopt theoretical frameworks that integrate intersectional analysis with multidimensional conceptions of climate justice (distributive, procedural, and recognitional) (Kaijser & Kronsell, 2014; Schlosberg, 2012). This requires critical examination of how adaptation interventions (re) distribute risks and opportunities among different social groups, alongside rigorous scrutiny of power relations within decision-making processes. Without explicit attention to whose voices are heard, whose knowledge is valued, and who ultimately bears the costs of resilience-building, participatory governance risks reinforcing—rather than redressing—existing inequalities (Eriksen et al., 2021; Ziervogel et al., 2020).

### **Geographical and Contextual Bias**

The current evidence base remains heavily concentrated on Small Island Developing States, iconic coastal destinations, specific mountain regions, and high-income nations in the Global North. Conversely, inland destinations, medium-sized urban tourism systems, non-coastal protected areas, and major domestic tourism economies across Asia, Africa, and Latin America remain significantly underrepresented (Arabadzhyan et al., 2020; Guo et al., 2025; Hoogendoorn & Fitchett, 2018; Lam-González et al., 2022; Maoela et al., 2025; Navarro-Drazich et al., 2023; Pan et al., 2024; Wolf et al., 2021). Consequently, prevailing theories of destination resilience and adaptive governance are disproportionately reliant on ‘exceptional’ or high-profile contexts, undermining the transferability and adaptation of their frameworks to more common, climate-vulnerable yet less globally prominent ‘everyday’ tourism destinations. Future research should therefore prioritise underrepresented geographical regions, particularly inland and peri-urban destinations, large domestic markets, and climate-sensitive rural landscapes, to broaden the empirical foundations of resilience theory.



### **Conceptual Ambiguity and Under-Operationalisation of Key Constructs**

Despite the frequent invocation of terms such as “resilience,” “adaptive governance,” and “adaptive capacity,” these concepts are often employed descriptively rather than analytically. Many existing studies fail to clearly delineate the three core dimensions of absorptive, adaptive, and transformative capacities, nor do they adequately elucidate the causal mechanisms through which specific governance arrangements—such as co-management, decentralisation, or multi-level coordination—influence adaptation outcomes (Agrawal, 2008; Armitage et al., 2009; Béné et al., 2012; Brown, 2014; Duit & Galaz, 2008; Folke et al., 2010; Moser & Ekstrom, 2010; Wied et al., 2020). This has resulted in a literature characterised by conceptual stretching and limited operational clarity. Future work should develop measurable, theoretically grounded indicators to enable systematic cross-case comparison of these constructs and explicitly link them to social-ecological outcomes.

### **Limited Integration of Climate Justice and Intra-Community Inequities**

There is an urgent need for future research to move beyond homogenised conceptions of ‘community’ and instead adopt theoretical frameworks that integrate intersectional analysis with multidimensional climate justice (distributive, procedural, and recognitional) (Kaijser & Kronsell, 2014; Schlosberg, 2012). This necessitates a critical examination of how adaptation interventions (re)distribute risks and opportunities among different social groups, alongside rigorous scrutiny of power dynamics within decision-making processes. Without explicit attention to whose voices are heard, whose knowledge is valued, and who ultimately bears the costs of resilience-building, participatory governance risks reinforcing—rather than redressing—existing inequalities (Eriksen et al., 2021; Ziervogel et al., 2020).

### **Inadequate Examination of Multi-Level Governance Interactions**

Although multi-level governance has become a central research topic, most existing studies are confined to analysing either local initiatives or national policy texts, failing to trace the specific cross-level interactive mechanisms, resource flows, and institutional bargaining processes that ultimately enable or constrain the implementation of adaptive governance (Adger et al., 2005; Amundsen et al., 2010; Cash et al., 2006; Duit & Galaz, 2008; Gupta et al., 2010; Urwin & Jordan, 2008; Biesbroek et al., 2010; Moser & Ekstrom, 2010). The lack of systematic analysis of how local, regional, national, and global governance tiers interact results in incomplete explanations of why adaptation succeeds in some contexts yet fails in others. Future work should employ political economy and institutional ethnography approaches to map vertical and horizontal governance linkages, funding pathways, and accountability structures.

### **Analytical and Epistemic Limitations of the Current Knowledge Base**

Current research predominantly relies on cross-sectional data, single-round interviews, or descriptive case study analyses. Longitudinal studies capable of systematically documenting the evolution of

governance mechanisms before and after climate shocks remain scarce (Bennett, 2019). Concurrently, participatory research approaches are frequently implemented in fragmented and short-term ways, often lacking sustained engagement with local power relations and institutional arrangements that shape decision-making processes (Cundill et al., 2019; Nalau et al., 2018). Future research should adopt long-term mixed-methods approaches—integrating longitudinal ethnography, social network analysis, multi-stakeholder action research, and ecosystem monitoring—to generate more dynamic and reflexively grounded scholarly insights (Cundill et al., 2019).

## CONCLUSIONS

Climate change presents profound and multidimensional challenges to tourism destinations, affecting environmental integrity, economic viability, governance capacity, and community well-being. Drawing on a PRISMA-guided qualitative synthesis of 30 peer-reviewed studies, this review examined how social-ecological resilience and adaptive governance have been applied in tourism research to address climate change adaptation. Overall, the literature demonstrates growing conceptual maturity but remains characterised by uneven geographical coverage, fragmented empirical evidence, and methodological limitations.

Across the reviewed studies, several points of convergence are evident. First, conceptualising tourism destinations as coupled social-ecological systems enables a more comprehensive understanding of cascading climate impacts and interdependencies among ecosystems, infrastructure, livelihoods, and visitor dynamics. Second, adaptive responses are consistently associated with governance arrangements that facilitate coordination, learning, and collaboration across multiple levels, linking local action with broader institutional and policy frameworks. Third, an increasing number of studies acknowledge that resilience cannot be separated from questions of equity and justice, as participation, power relations, and the distribution of costs and benefits fundamentally shape adaptation outcomes.

Despite these advances, significant gaps persist. Empirical research remains disproportionately focused on coastal and island destinations, while inland, urban, and domestic tourism systems receive comparatively little attention. Failures, trade-offs, and structural constraints in adaptation processes are underexplored, limiting understanding of why certain interventions succeed or stall. Moreover, relatively few studies integrate governance analysis with ecological indicators or adopt longitudinal and mixed-methods designs capable of capturing institutional change over time.

The forward path for research and practice therefore lies not in the proliferation of new conceptual models, but in deeper empirical engagement with diverse destination contexts and governance realities. Future studies should prioritise broader geographical coverage, systematic examination of adaptation failures and power asymmetries, and stronger methodological integration that connects governance processes with ecological and socio-economic outcomes. For policy and destination management, the synthesis underscores the importance of cross-level coordination, meaningful community participation, and iterative learning under uncertainty. As climate risks intensify, strengthening tourism resilience



is both a practical necessity and an ethical responsibility, requiring inclusive, evidence-informed, and context-responsive approaches to adaptation.

## REFERENCES

- Adger, W. N., Arnell, N. W., & Tompkins, E. L. (2005). Successful adaptation to climate change across scales. *Global Environmental Change*, 15(2), 77–86. <https://doi.org/10.1016/j.gloenvcha.2004.12.005>
- Agrawal, A. (2008). *The role of local institutions in adaptation to climate change* (IDS Working Paper No. 76). Institute of Development Studies.
- Akamani, K. (2023). The roles of adaptive water governance in enhancing the transition towards ecosystem-based adaptation. *Water*, 15(13), 2341. <https://doi.org/10.3390/w15132341>
- Amundsen, H., Berglund, F., & Westskog, H. (2010). Overcoming barriers to climate change adaptation—A question of multi-level governance? *Environment and Planning C: Government and Policy*, 28(2), 276–289. <https://doi.org/10.1068/c08126>
- Arabadzhyan, A., Figini, P., García, C., González, M. M., Lam-González, Y. E., & León, C. J. (2020). Climate change, coastal tourism, and impact chains – A literature review. *Current Issues in Tourism*. Advance online publication. <https://doi.org/10.1080/13683500.2020.1825351>
- Béné, C., Wood, R. G., Newsham, A., & Davies, M. (2012). Resilience: New utopia or new tyranny? Reflection about the potentials and limits of the concept of resilience in relation to vulnerability reduction programmes (IDS Working Paper No. 405). Institute of Development Studies.
- Bennett, N. J. (2019). In political seas: Engaging with political ecology in the ocean and coastal environment. *Coastal Management*, 47(1), 67–87. <https://doi.org/10.1080/08920753.2019.1540905>
- Berkes, F., & Jolly, D. (2001). Adapting to climate change: Social–ecological resilience in a Canadian Arctic community. *Conservation Ecology*, 5(2), 18. <https://www.jstor.org/stable/26272044>
- Becken, S., & Hay, J. (2012). *Climate change and tourism: From policy to practice*. Routledge.
- Berkes, F., & Ross, H. (2013). Community resilience: Toward an integrated approach. *Society & Natural Resources*, 26(1), 5–20. <https://doi.org/10.1080/08941920.2012.736605>
- Biggs, R., Schlüter, M., Biggs, D., Bohensky, E. L., BurnSilver, S., Cundill, G., Dakos, V., Daw, T. M., Evans, L. S., Kotschy, K., Leitch, A. M., Meek, C., Quinlan, A., Raudsepp-Hearne, C., Robards, M. D., Schoon, M. L., Schultz, L., & West, P. C. (2015). Toward principles for enhancing the resilience of ecosystem services. *Annual Review of Environment and Resources*, 40, 1–29. <https://doi.org/10.1146/annurev-environ-012014-021002>
- Biesbroek, R., Klostermann, J., Termeer, C., & Kabat, P. (2013). On the nature of barriers to climate change adaptation. *Regional Environmental Change*, 13(5), 1119–1129. <https://doi.org/10.1007/s10113-012-0397-9>

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications.
- Brown, K. (2014). Global environmental change I: A social turn for resilience? *Progress in Human Geography*, 38(1), 107–117. <https://doi.org/10.1177/0309132513498837>
- Calgaro, E., Dominey-Howes, D., & Lloyd, K. (2014). From vulnerability to transformation: A framework for assessing the vulnerability and resilience of tourism destinations. *Journal of Sustainable Tourism*, 22(3), 341–360. <https://doi.org/10.1080/09669582.2013.820310>
- Cash, D. W., Adger, W. N., Berkes, F., Garden, P., Lebel, L., Olsson, P., Pritchard, L., & Young, O. (2006). Scale and cross-scale dynamics: Governance and information in a multilevel world. *Ecology and Society*, 11(2), 8. <https://www.ecologyandsociety.org/vol11/iss2/art8/>
- Chaffin, B. C., Gosnell, H., & Cosens, B. A. (2014). A decade of adaptive governance scholarship. *Ecology and Society*, 19(3), 56. <https://doi.org/10.5751/ES-06824-190356>
- Della Corte, V., & Lima, A. (2021). Destination resilience and innovation for advanced tourism-destination management. *Sustainability*, 13(22), 12632. <https://doi.org/10.3390/su132212632>
- Djalante, R. (2012). Adaptive governance and resilience: The role of multi-stakeholder platforms in disaster risk reduction. *Natural Hazards and Earth System Sciences*, 12(9), 2923–2942. <https://doi.org/10.5194/nhess-12-2923-2012>
- Duit, A., & Galaz, V. (2008). Governance and complexity—Emerging issues for governance theory. *Governance*, 21(3), 311–335. <https://doi.org/10.1111/j.1468-0491.2008.00402.x>
- Engle, N. L. (2011). Adaptive capacity and its assessment. *Global Environmental Change*, 21(2), 647–656. <https://doi.org/10.1016/j.gloenvcha.2011.01.019>
- Eriksen, S. H., Nightingale, A. J., & Eakin, H. (2021). Reframing adaptation: The political nature of climate change adaptation. *Global Environmental Change*, 35, 523–533. <https://doi.org/10.1016/j.gloenvcha.2015.09.014>
- Espiner, S., Orchiston, C., & Higham, J. (2017). Resilience and tourism: From theory to practice. *Tourism Management*, 63, 435–448. <https://doi.org/10.1016/j.tourman.2017.07.001>
- Farrell, B. H., & Twining-Ward, L. (2004). Reconceptualizing tourism. *Annals of Tourism Research*, 31(2), 274–295. <https://doi.org/10.1016/j.annals.2003.11.004>
- Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analysis. *Global Environmental Change*, 16(3), 253–267. <https://doi.org/10.1016/j.gloenvcha.2006.04.002>
- Folke, C., Carpenter, S. R., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: Integrating resilience, adaptability and transformability. *Ecology and Society*, 15(4), 20. <https://www.ecologyandsociety.org/vol15/iss4/art20/>



- Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources*, 30, 441–473. <https://doi.org/10.1146/annurev.energy.30.050504.144511>
- Gössling, S., Scott, D., & Hall, C. M. (2018). Global trends in climate change and tourism. *Journal of Sustainable Tourism*, 26(7), 1144–1163. <https://doi.org/10.1080/09669582.2018.1444449>
- González-Quintero, C., Gajendran, T., & Brewer, G. (2019). Operationalization and measurement of social-ecological resilience: A review. *Sustainability*, 11(21), 6073. <https://doi.org/10.3390/su11216073>
- Guo, C., Lyu, Y., Li, P., & Kou, I. E. (2025). Knowledge, attitudes, and practices (KAP) towards climate change among tourists: A systematic review. *Tourism and Hospitality*, 6(1), 32. <https://doi.org/10.3390/tourhosp6010032>
- Gupta, J., Termeer, C., Klostermann, J., Meijerink, S., van den Brink, M., Jong, P., & Bergsma, E. (2010). The adaptive capacity wheel: A method to assess the inherent characteristics of institutions to enable adaptive capacity of society. *Environmental Science & Policy*, 13(6), 459–471. <https://doi.org/10.1016/j.envsci.2010.05.006>
- Hall, C. M. (2011). Policy learning and policy failure in sustainable tourism governance: From first- and second-order to third-order change. *Journal of Sustainable Tourism*, 19(4–5), 649–671. <https://doi.org/10.1080/09669582.2011.555555>
- Hall, C. M., Prayag, G., & Amore, A. (2018). Tourism and resilience: Individual, organisational and destination perspectives. Channel View Publications.
- Hoogendoorn, G., & Fitchett, J. M. (2018). Tourism and climate change: A review of threats and adaptation strategies for Africa. *Current Issues in Tourism*, 21(7), 742–759. <https://doi.org/10.1080/13683500.2016.1188893>
- Hovelsrud, G. K., Kaltenborn, B. P., Olsen, J., & Østreng, W. (2021). Tourism governance and climate change adaptation in Svalbard and Greenland: A comparative analysis. *Journal of Sustainable Tourism*. Advance online publication. <https://doi.org/10.1080/09669582.2021.1936003>
- IPCC. (2022). *Climate change 2022: Impacts, adaptation and vulnerability*. Cambridge University Press.
- Jones, B., Scott, D., & Abi Khaled, H. (2020). Implications of climate change for adventure tourism. *Journal of Outdoor Recreation and Tourism*, 30, 100281. <https://doi.org/10.1016/j.jort.2020.100281>
- Kaijser, A., & Kronsell, A. (2014). Climate change through the lens of intersectionality. *Environmental Politics*, 23(3), 417–433. <https://doi.org/10.1080/09644016.2013.835203>
- Lam-González, Y. E., León, C. J., de León, J., & Suárez-Rojas, C. (2022). The impact of degradation of islands' land ecosystems due to climate change on tourists' travel decisions. *Land*, 11(10), 1644. <https://doi.org/10.3390/land11101644>

- Lew, A. A., Ng, P. T., Ni, C. C., & Wu, T. C. (2016). Community sustainability and resilience: Similarities, differences and indicators. *Tourism Geographies*, 18(1), 18–27. <https://doi.org/10.1080/14616688.2015.1122664>
- Maoela, M. A., Nhamo, G., Chapungu, L., & Madikizela, A. (2025). Tourists' perceptions of climate change awareness, impact, and response mechanisms in South African national parks. *Development Southern Africa*. Advance online publication. <https://doi.org/10.1080/0376835X.2024.2443417>
- Moser, S. C., & Ekstrom, J. A. (2010). A framework to diagnose barriers to climate change adaptation. *Proceedings of the National Academy of Sciences of the United States of America*, 107(51), 22026–22031. <https://doi.org/10.1073/pnas.1007887107>
- Navarro-Drazich, D., Christel, L. G., Gerique, A., Grimm, I., Rendón, M.-L., Alcântara, L. S., Abraham, Y., Conde, M. del R., & De Simón, C. (2023). Climate change and tourism in South and Central America. *Journal of Sustainable Tourism*. Advance online publication. <https://doi.org/10.1080/09669582.2023.2210783>
- Nalau, J., Preston, B. L., & Maloney, M. C. (2018). Is adaptation a local responsibility? *Environmental Science & Policy*, 89, 128–135. <https://doi.org/10.1016/j.envsci.2018.07.015>
- Pan, S.-L., Wu, L., & Morrison, A. M. (2024). A review of studies on tourism and climate change from 2007 to 2021. *International Journal of Contemporary Hospitality Management*, 36(5), 1512–1533. <https://doi.org/10.1108/IJCHM-01-2023-0085>
- Peeters, P., Higham, J., Kutzner, D., Cohen, S., & Gössling, S. (2016). Are we travelling too much? *Journal of Sustainable Tourism*, 24(5), 683–703. <https://doi.org/10.1080/09669582.2015.1069834>
- Prideaux, B., Pabel, A., & Thompson, M. (2020). Tourism, climate change and sustainability: A social–ecological systems perspective. *Journal of Sustainable Tourism*, 28(12), 2047–2066. <https://doi.org/10.1080/09669582.2020.1783268>
- Reed, M. S. (2008). Stakeholder participation for environmental management: A literature review. *Biological Conservation*, 141(10), 2417–2431. <https://doi.org/10.1016/j.biocon.2008.07.014>
- Sandelowski, M. (1995). Sample size in qualitative research. *Research in Nursing & Health*, 18(2), 179–183. <https://doi.org/10.1002/nur.4770180211>
- Schlosberg, D. (2012). Climate justice and capabilities: A framework for adaptation policy. *Ethics & International Affairs*, 26(4), 445–461. <https://doi.org/10.1017/S0892679412000615>
- Scott, D., & McBoyle, G. (2007). Climate change adaptation in the ski industry. *Mitigation and Adaptation Strategies for Global Change*, 12(8), 1411–1431. <https://doi.org/10.1007/s11027-007-9109-3>
- Scott, D., Gössling, S., & Hall, C. M. (2012). *Tourism and climate change: Impacts, adaptation and mitigation*. Routledge.
- Scott, D., Gössling, S., & Hall, C. M. (2019). Global tourism vulnerability to climate change. *Annals of Tourism Research*, 84, 102946. <https://doi.org/10.1016/j.annals.2019.06.006>



- Scott, D., Simpson, M. C., & Sim, R. (2012). The vulnerability of Caribbean coastal tourism to sea level rise. *Journal of Sustainable Tourism*, 20(6), 883–898. <https://doi.org/10.1080/09669582.2012.665063>
- Strickland-Munro, J. K., Allison, H. E., & Moore, S. A. (2010). Using resilience concepts to investigate the impacts of protected area tourism on communities. *Annals of Tourism Research*, 37(2), 499–519. <https://doi.org/10.1016/j.annals.2009.11.001>
- Tosun, C. (2006). Expected nature of community participation in tourism development. *Tourism Management*, 27(3), 493–504. <https://doi.org/10.1016/j.tourman.2004.12.004>
- Urwin, K., & Jordan, A. (2008). Does public policy support or undermine climate change adaptation? Exploring policy interplay across different scales of governance. *Global Environmental Change*, 18(1), 180–191. <https://doi.org/10.1016/j.gloenvcha.2007.09.002>
- Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. (2004). Resilience, adaptability and transformability in social–ecological systems. *Ecology and Society*, 9(2), 5. <https://www.ecologyandsociety.org/vol9/iss2/art5/>
- Wied, M., Oehmen, J., & Welo, T. (2020). A taxonomy of resilience for complex engineered systems. *Systems Engineering*, 23(1), 3–24. <https://doi.org/10.1002/sys.21517>
- Wolf, F., Leal Filho, W., Singh, P., Scherle, N., Reiser, D., Telesford, J., Miljković, I. B., Havea, P. H., Li, C., Surroop, D., & Kovaleva, M. (2021). Influences of climate change on tourism development in small Pacific island states. *Sustainability*, 13(8), 4223. <https://doi.org/10.3390/su13084223>
- Wyborn, C., Evans, M. C., & Shaw, D. (2016). Building adaptive capacity in a social–ecological system: Linking adaptive governance and co-production of knowledge. *Ecology and Society*, 21(2), 24. <https://doi.org/10.5751/ES-08475-210224>
- Young, S., López, G., & Steger, C. (2021). Community resilience to COVID-19 and climate change in an Andean nature-based tourism destination: The role of social cohesion, cultural identity and external linkages. *Journal of Sustainable Tourism*, 29(12), 1989–2009. <https://doi.org/10.1080/09669582.2021.1922413>
- Ziervogel, G., Cowen, A., & Ziniades, J. (2020). Unpacking transformation: Power, agency and social–ecological change in urban climate adaptation. *Environment and Urbanization*, 32(1), 75–94. <https://doi.org/10.1177/0956247819892532>

## APPENDIX

Table S1. Evidence table of included studies (n = 30)

| Author(s) & Year                | Study location / context                     | Method                           | Thematic contribution                                              |
|---------------------------------|----------------------------------------------|----------------------------------|--------------------------------------------------------------------|
| Akamani (2023)                  | Water governance, ecosystem-based adaptation | Conceptual & policy analysis     | Adaptive governance mechanisms enabling ecosystem-based adaptation |
| Arabadzhyan et al. (2020)       | Coastal tourism (global)                     | Systematic literature review     | Climate impact chains linking tourism vulnerability and adaptation |
| Bennett (2019)                  | Coastal and marine tourism contexts          | Political ecology analysis       | Power, governance, and politics in climate adaptation              |
| Biggs et al. (2015)             | Social–ecological systems (global)           | Conceptual synthesis             | Principles for resilience and adaptive capacity                    |
| Della Corte & Lima (2021)       | Tourism destinations                         | Conceptual & empirical review    | Destination resilience and innovation pathways                     |
| Eriksen et al. (2021)           | Climate adaptation governance                | Critical review                  | Political dimensions of adaptation and governance                  |
| Espiner et al. (2017)           | Tourism destinations                         | Empirical case synthesis         | Operationalising resilience in tourism practice                    |
| González-Quintero et al. (2019) | Social–ecological systems                    | Systematic review                | Measurement and operationalisation of resilience                   |
| Nalau et al. (2018)             | Local adaptation governance                  | Comparative policy analysis      | Responsibility and scale in adaptation governance                  |
| Wyborn et al. (2016)            | Social–ecological systems                    | Conceptual & empirical synthesis | Adaptive governance and knowledge co-production                    |
| Ziervogel et al. (2020)         | Urban climate adaptation                     | Qualitative case analysis        | Power, agency, and transformation in adaptation                    |
| Gössling et al. (2018)          | Global tourism                               | Trend analysis & review          | Climate change impacts and adaptation trends in tourism            |
| Hoogendoorn & Fitchett (2018)   | Africa tourism destinations                  | Systematic review                | Climate risks and adaptation strategies in African tourism         |
| Hovelsrud et al. (2021)         | Arctic tourism (Svalbard, Greenland)         | Comparative case study           | Governance responses to climate change in polar tourism            |
| Jones et al. (2020)             | Adventure tourism                            | Empirical analysis               | Climate change implications for tourism activities                 |
| Lam-González et al. (2022)      | Island tourism                               | Quantitative modelling           | Ecosystem degradation and tourist decision-making                  |
| Lew et al. (2016)               | Community tourism                            | Conceptual & indicator review    | Community resilience and sustainability indicators                 |
| Maoela et al. (2025)            | National parks (South Africa)                | Survey-based empirical study     | Tourist perceptions of climate change and adaptation               |
| Navarro-Drazich et al. (2023)   | South & Central America                      | Regional systematic review       | Climate change impacts and governance challenges                   |
| Pan et al. (2024)               | Global tourism research                      | Bibliometric & systematic review | Evolution of tourism–climate change scholarship                    |
| Guo et al. (2025)               | Tourists (global)                            | Systematic review                | Knowledge, attitudes, and practices toward climate change          |
| Prideaux et al. (2020)          | Tourism systems                              | Conceptual framework             | Social–ecological systems approach to tourism sustainability       |
| Scott et al. (2019)             | Global tourism                               | Global vulnerability assessment  | Tourism vulnerability to climate change                            |
| Wolf et al. (2021)              | Small island states                          | Comparative empirical analysis   | Climate impacts on island tourism development                      |
| Young et al. (2021)             | Andean nature-based tourism                  | Qualitative case study           | Community resilience, social cohesion, and adaptation              |

|                             |                       |                                |                                                    |
|-----------------------------|-----------------------|--------------------------------|----------------------------------------------------|
| Peeters et al. (2016)       | Tourism mobility      | Quantitative & policy analysis | Travel behaviour, mitigation, and adaptation       |
| Wied et al. (2020)          | Complex systems       | Conceptual taxonomy            | Resilience concepts applicable to tourism systems  |
| Hall, Prayag & Amore (2018) | Tourism destinations  | Edited volume synthesis        | Multi-level perspectives on tourism resilience     |
| Braun & Clarke (2021)       | Qualitative synthesis | Methodological guide           | Thematic analysis underpinning narrative synthesis |

Table S2. SWiM (Synthesis Without Meta-analysis) 9-item Checklist Mapping

| SWiM item                              | How addressed in this review                                                                                                                   | Where to find it            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1. Grouping of studies                 | Studies grouped by themes and contextualised by destination type and region (Table 1; Table S1).                                               | Results; Table 1; Table S1  |
| 2. Rationale for synthesis method      | Meta-analysis not feasible due to heterogeneity and predominantly qualitative/narrative outcomes; SWiM-structured narrative synthesis adopted. | Methods 2.4                 |
| 3. Description of synthesis methods    | Thematic synthesis reported as: theme definition; evidence base; patterns/heterogeneity; confidence/limitations.                               | Methods 2.4; Results        |
| 4. Criteria used to prioritise results | Themes prioritised by recurrence across studies and relevance to resilience and adaptive governance constructs.                                | Results (intro)             |
| 5. Investigation of heterogeneity      | Differences discussed across destination contexts, governance scales, and stakeholder dynamics within each theme.                              | Results                     |
| 6. Data presentation                   | Study characteristics summarised in Table 1 and Table S1; synthesis organised using SWiM principles.                                           | Table 1; Table S1; Results  |
| 7. Assessment of certainty/confidence  | Confidence considered narratively based on convergence across studies and limitations of the evidence base.                                    | Results; Discussion         |
| 8. Reporting of protocol deviations    | Any deviations from the planned approach are stated explicitly (if applicable).                                                                | Methods                     |
| 9. Availability of data/materials      | Search strategy, screening outcomes, and included-study table provided to support transparency.                                                | Methods; Figure 1; Table S1 |

*Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licence-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

*This open access article may be used under the international license terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)*

<https://creativecommons.org/licenses/by-nc-nd/4.0/>





Rogerson, Christian M.<sup>1</sup>

# Tracking South Africa's 'Left-Behind' Tourism Spaces

## ABSTRACT

An important research challenge for tourism geographers is the mapping and interpretation of the structure of the tourism space economy. In recent scholarship on uneven regional development much attention surrounds the application of the concepts of 'left-behindedness' and of 'left-behind spaces'. In this research one critical dimension of the unevenness of the tourism space economy is explored, namely the identification and features of the least visited spaces. Using a comprehensive database of tourism trips and tourism spend for 213 South African local authorities the analysis points to the existence of multiple 'left-behind' tourism spaces in the country. The geographical distribution of these spaces mainly is concentrated in the province of Northern Cape. The differentiated structure of these spaces shows the largest group is dominated by travel for purposes of visits to friends and relatives. Beyond that group are, however, a small number of leisure dominated spaces. Although the volume of total trips and tourism spend occurring in such leisure dominated spaces is small, tourism assumes a critical role in local economies. To advance further the understanding of the least visited or 'left-behind' tourism spaces it is suggested local case studies are required.

*Keywords: 'left-behind spaces'; uneven tourism development; least visited areas; South Africa*

---

<sup>1</sup> Research Professor, School of Tourism & Hospitality, College of Business and Economics, Bunting Road Campus, University of Johannesburg, Johannesburg, South Africa. Email, [chrismr@uj.ac.za](mailto:chrismr@uj.ac.za) ORCID: 0000-0003-1306-8867

Acknowledgements: Arabella Rogerson was instrumental in the data analysis. Thanks are due to useful comments received from two journal reviewers and also to Lulu White, Robbie Norfolk and Betty White for their valued inputs at various times of this project. Arno Booyzen produced Figure 1.

## INTRODUCTION

An understanding of the complexion and dynamics of tourism space economies represents a significant research issue for tourism scholars (Hall, 2012; Kang et al., 2014). The structure of tourism space economies reflects the geographical distribution of tourism assets within a country and combined with the decision-making behaviour and flows of tourists for different purposes of travel such as leisure, business, health, religion or visits to friends and relatives (Rogerson & Rogerson, 2021). The relevance of comprehending changes occurring in tourism space economies is acknowledged by government policy-makers because of tourism's potential contribution towards addressing problems of uneven or unbalanced regional development (Kang et al., 2014; Karagöz et al., 2022). Further, tourism can be a critical vehicle for place-based local development planning (Rogerson, 2014). In the specific context of sub-Saharan Africa, Ahebwa and Novelli (2014) stress that an improved understanding of the spatial distribution of tourism contributes an evidence base for the making of better-informed national development policies. Accordingly, over the past two decades, several dimensions of the geographical structuring of tourism economies and their implications for policy-makers – national, regional and local – have been under investigation (Tosun et al., 2003; Wen & Sinha, 2009; Goh et al., 2014; Li et al., 2016; Romão & Saito, 2017; Siakwah, 2018; Karagöz et al., 2022; Kiss et al., 2025).

The most critical finding from international research on tourism space economies concerns the unevenness of tourism development and its ramifications for national, regional and local economies. For example, in an examination of unbalanced development in Greece, Drakakis (2022) pinpoints the country's tourism space economy is dominated consistently by metropolitan municipalities which are the most prosperous and economically advanced areas. The uneven geographical development of tourism is therefore a policy challenge which is faced in many countries. In South Africa a number of investigations, mainly conducted by geographers, have mapped out the contours of the tourism economy (Visser, 2007; Rogerson & Rogerson, 2019, 2020; Rogerson & Visser, 2020; Rogerson & Rogerson, 2021). The central conclusion of these studies is of the highly polarized character of the tourism space economy with the benefits of tourism development in South Africa concentrated upon only a small number of localities and prosperous regions. Against this backdrop the aim here is to turn the focus away from the prosperous and most researched tourism localities of South Africa. Instead, the analysis falls upon the peripheral spaces of the country, to identify the least visited tourism spaces of South Africa and their essential local tourism characteristics. In certain respects, the study revisits and extends in greater detail a preliminary analysis of South Africa's least visited tourism areas which was produced nearly a decade ago (Rogerson, 2017).

The research is approached through the theoretical lens of 'left-behindedness' and of 'left-behind spaces'. According to Benner et al. (2024, p. 237) "scholarly work in economic geography and regional science has recently seen a renewed interest in spatial inequalities, driven significantly by the debate on 'left-behind' places". Arguably, the phenomenon of left-behindedness is multi-dimensional (Perancho et al., 2025). Among the key identifiers of 'left-behind' spaces are relative

economic under-performance and decline, elevated levels of poverty and disadvantage as compared to national averages, out-migration, poor health, limited investment in economic infrastructure and reduced service provision (MacKinnon et al., 2022). As documented by Todes and Turok (2018) in terms of the uneven national landscape of regional economic development in South Africa spatial inequalities are starkly in evidence. Many of the identifiers of left-behind spaces are defining features for economically distressed spaces in South Africa, marginalised areas of the country where local economies often are based on community services, remittances and government social grants (Rogerson & Nel, 2016; Rogerson & Rogerson, 2025). Among critical problems surrounding tourism development in such areas are infrastructural shortcomings, corruption and the weak state (if not collapse) of local government as well as lack of capacity for pursuing local economic development or tourism planning (Dlomo & Rogerson, 2021; Giddy et al., 2022; Rogerson & Sixaba, 2022).

The remainder of this article is structured as follows. The next section examines how a flurry of international academic debates concerning regional development have been (re-)ignited by the concept of 'left-behind places' around which Benner et al. (2024, p. 238) observes a "high tide of interest". Following the literature review, a brief discussion on methods and data is given before the results section. The findings identify and present a profile of South Africa's least visited tourism spaces which are 'left-behind' in terms of the country's uneven and polarized tourism economy.

## LITERATURE REVIEW

For several decades, research on the challenges of lagging regions experiencing economic decline as an outcome of uneven geographical development has been a vibrant theme in international regional development scholarship (Pike et al., 2016; Martin et al., 2021; Hudson, 2022; Fransham et al., 2022; Martin et al., 2022; ). As pointed out by MacKinnon et al. (2022), during the past 30 years the understanding of spatial inequalities and the language which is applied to describe the 'symptoms' and 'remedies' has changed. Following renewed concern about spatial inequalities in the wake of the 2008 financial crisis, the term 'left behind' has become particularly prominent in recent academic discourse. Broadly, the concept of 'left behind' places references localities which are characterised by economic stagnation or decline. In the environment of the Global North these refer both to former industrial areas beset by problems of de-industrialisation as well as marginalised rural areas (Tomaney et al., 2021).

MacKinnon et al. (2024) aver that concerns about spatial inequality burgeoned most especially after the 'Great Recession' or 2008 global financial crisis. This concern is indexed by the growing stream of research conducted in the USA, Europe and especially in the UK (Rodriguez-Pose, 2018; Liddle et al., 2022; Rodriguez-Pose et al., 2023; Fiorentino et al., 2024; Pruitt, 2024; Rodriguez-Pose et al., 2024; Royer & Leibert, 2025). Houlden et al. (2024, p. 1) maintain that in "the UK, especially since the 2008 global financial crisis and 2016 Brexit referendum, the predicament of areas variously termed 'peripheralised', 'left behind' or 'places that don't matter' has emerged as a key topic". Indeed, across

several countries in the Global North, Leyshon (2021) identify the resurgence of uneven development as a political issue that triggered public policy debates as a response to voting patterns that mark out ‘geographies of discontent’ (Rodríguez-Pose, 2018; De Ruyter et al., 2021; Lenzi & Perucca, 2021; Rodríguez-Pose et al., 2021; Sanderson, 2024; Bernard et al., 2025; Adamiak et al., 2026). Economic geography is seen as an underpinning of a surge of political populism in ‘places that don’t matter’, or ‘left behind towns’ (Koeppen et al., 2021; Lenzi & Perucca, 2021; Leyshon, 2021; Rodríguez-Pose et al., 2023; Hertrich & Brenner, 2025; Adamiak et al., 2026). For Sanderson (2024) such places are united through their discontent from being ‘left behind’ in terms of regional economic development. Accordingly, the spatial imaginery of ‘left-behind’ places gained traction for highlighting uneven spatial development as an explanatory cause of ‘geographies of discontent’ with left-behind places pushing a vengeance against more dynamic places because of feelings of abandonment from centres of power (Rodríguez-Pose, 2018; Rodríguez-Pose et al., 2021; Perancho et al., 2025).

As indicated, the core characteristics of ‘left-behind’ spaces are relative economic under-performance and decline, elevated levels of poverty and disadvantage as compared to national averages, out-migration, poor health, limited investment in economic infrastructure and reduced service provision. According to MacKinnon et al. (2022) these spaces manifest a combination of features namely economic disadvantage, low living standards, often population decline, lack of infrastructure and political neglect. For Tups et al. (2024, p.1219) such spaces “epitomise the geographical and structural consequences of protracted processes of economic decline and peripheralisation that accompany uneven accumulation processes”. Left-behind places are spaces of systematic disadvantage and arrested development. This said, the fundamental problems of ‘left-behind places’ are not new, rather they have accumulated (and been ignored) for several decades (van Meeteren & Smit, 2025). The term ‘left-behind’ is therefore a new spatial terminology for interpreting a long-established phenomenon which relates to declining or struggling places that often, if not usually, are overlooked by policy-makers mainly concerned with issues of agglomeration and innovation (Fiorentino et al., 2024; Pike et al., 2024).

Essentially the challenges of ‘left behind’ spaces represent “a contemporary manifestation of long-standing processes of capitalist uneven development” (MacKinnon et al., 2022, p. 41). Halford et al. (2025) maintain that the long-term left-behind places often confront significant development challenges because of entrenched path-dependencies. MacKinnon et al. (2024) situate the roots of ‘left-behindedness’ in structural and inter-related processes of metropolitanisation and peripheralisation. The latter is traditionally associated with remote (usually rural) regions whereas metropolitanisation classically refers to the selective concentration of economic activities in large cities (Gaussier et al., 2003). The framework of peripheralisation conceives the relationship between core areas and peripheries as dynamic and changing over time (Royer & Leibert, 2025). Unquestionably, social, economic and political exclusion can reinforce peripheralisation (Fuerst-Bjeliš et al., 2025). Spatial inequalities thus are shown to be inextricably bound to asymmetries in geographies of power which allow some spaces to move ahead at the expense of others (Ek & Rauhut, 2024). In a useful

contribution which is based on research undertaken in Germany, Royer and Leibert (2025) assert that recent literature underscores the diversity of 'left-behind' places and their pathways of development and decline.

Arguably, the term 'left-behind places', as it has evolved in Anglo-American discourse, is close in meaning and usage to the earlier concepts of 'marginal regions' and 'marginality' (Fuerst-Bjeliš et al., 2025). For some observers the concept remains, however, somewhat 'fuzzy' and lacks clear definition. For example, Houlden et al. (2024) maintains that despite its increasing application, the term 'left behind' remains a contested concept which is applied at different geographical scales of analysis including regions, cities and even at the level of neighbourhoods. Despite its lack of definitional clarity, 'left behind' evokes forms of spatial peripherality whether economic (lack of jobs, tourism), social (political disaffection) or material (lack of infrastructure). Fuerst-Bjeliš et al. (2025) maintain that the concept of 'left-behind' places strengthens the classic core-periphery theoretical model and in so doing assists our understanding of why in economic, social, cultural and political dimensions certain localities or places are relatively privileged whilst others are structurally disadvantaged and appear locked into a dependent status.

Tups et al. (2024) contend a geographical bias exists in the application of the concept of left-behindedness. The need is for the extension and application of the concept beyond its Global North heartland. One direction for moving forward and deepening research around left-behind spaces is for an increased attention to, and integration of, Global South perspectives (Phelps, 2025). It is evident the terminology of left-behindedness already has journeyed into the Global South environment where it has witnessed relevant application in pioneer investigations (Matamanda et al., 2025; Phelps et al., 2025). Trejo-Nieto (2025) reflects on the manifestations left-behindedness in Mexico in light of European experiences. Scholvin and Lupin (2026) point to the specificities of left-behind spaces in Latin America and potentially the need for refining the concept of 'left-behind' spaces for the specificities of the Global South. In one Zambian study geographical remoteness and climate challenges are acknowledged as playing an important role in explaining the 'left behind' character of certain places. Nevertheless, it was argued that across much of sub-Saharan Africa one should not overlook the chronic underinvestment and persistent disconnections of many 'left-behind' rural hinterland areas from basic infrastructure and markets (Phelps et al., 2025). In South Africa there has been a recent take-up and application of the terminology of 'left-behindedness' and 'left-behind spaces'. Rogerson and Rogerson (2025) interrogate the historical evolution of the former apartheid-created Bantustans and especially their development trajectory in the post-apartheid period within the framework of 'left-behind' spaces. Mpungose and Myeni (2025) interpret geographical outbreaks of violence and discontent in South Africa through a narrative of neoliberalism and the making of left-behind places. Within extant South African tourism scholarship, some attention is given to 'left-behindedness' also in examining post COVID-19 recovery in rural tourism (Rogerson & Sixaba, 2022).

## METHODS

The analysis is based upon the tourism component of the private sector S&P Global South Africa Regional eXplorer database. This tourism data set is a subset of a consolidated platform of integrated databases that, in the absence of official establishment and enterprise surveys, provides the most useful data available for planning purposes at a sub-national level in South Africa, with information provided down to the local municipal scale. The information base is built upon the regular collection and triangulation of primary information which is extracted by S&P Global from a wide span of both official and non-government sources. The data is reworked in order to ensure consistency across variables as well as via the application of national and subnational verification tests in order to ensure that the economic model is consistent for the measurement of business activity in South Africa. The S&P data is accessible only through payment for a specified ‘data dump’ from the organization.

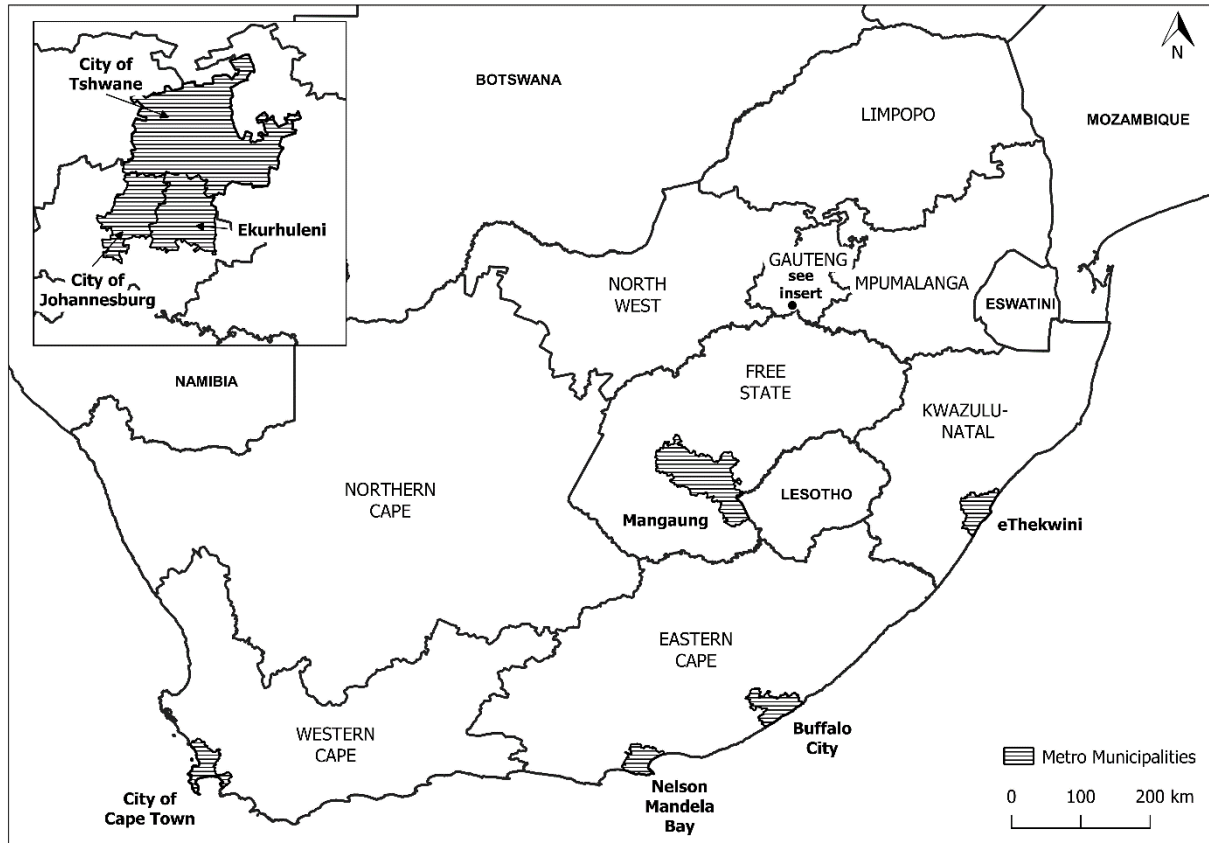
As demonstrated in previous research, the local tourism base of the Regional eXplorer data set is especially useful for spatial analysis and understanding the changing structure of the tourism space economy (Rogerson, 2017; Rogerson & Rogerson, 2019, 2020, 2021). The data set includes information on the tourism performance of all South African municipalities in terms of the following variables, *inter alia*, the volume of tourism trips differentiated by primary purpose of trip (leisure, business, visiting friends and relatives and other); tourism trips by origin of trip (domestic or international), bednights by origin of tourist; calculation of tourism spend; and, the contribution of tourism to GDP. The database exists from 2001 and formerly was known as the IHS Global Insight data. The data set is constantly updated with adjustments made to reflect official changes made in municipal administrative boundaries as well as the availability of new data. As a result of the refinement and updating of the database over a period of two decades (including the correction of minor errors) as well as several shifts taking place in municipal administrative boundaries in South Africa it must be understood that direct comparison is not enabled with certain tourism data used in earlier studies (Rogerson & Rogerson, 2021).

This research draws upon the 2025 iteration which provides the historical data as amended going back to 2001. The data covers all South Africa’s nine provinces (Figure 1). The comprehensive data base includes 213 spatial units. These comprise South Africa’s eight defined metropolitan areas (Buffalo City, Cape Town, Ekurhuleni, eThekweni, Johannesburg, Mangaung, Nelson Mandela Bay, and Tshwane) and 205 local municipalities. The large metropolitan areas collectively are the leading poles of attraction in the South African tourism space economy (Figure 1). The focus of analysis here is necessarily upon the remaining cohort of local municipalities outside the metropolitan areas and geographically spread across the country’s nine provinces.

The identification of South Africa’s ‘left-behind’ tourism spaces is conducted through the extraction and analysis of total trip and tourism spend data from the S&P Global base. A more detailed profile follows in terms of a differentiation of trips by purpose of travel for the country’s least visited tourism places. Further insight is given by examination of data concerning tourism’s contribution to local

GDP. The extracted set of data set from the S&P Global database was compiled using Excel and presented below through the use of descriptive statistics.

Figure 1. South Africa's Nine Provinces and Eight Metropolitan Areas



Source: Author

## RESULTS

The results are organized in the following manner into two sub-sections. Baseline data on total trips and total tourism spend are examined in order to identify the left-behind tourism spaces and their geography. This is followed by an analysis of the structure of the tourism economies of these spaces and their importance to local economies as a whole.

### Identifying the Left Behind Tourism Spaces

Table 1 provides the macro-picture of the 30 least visited or left-behind tourism spaces at the local municipality level in South Africa for 2002, 2010, 2018 and 2024. The municipalities are ranked based on their share of the national total of total trips which is detailed respectively for the four study years. In 2002, the base year, the World Summit on Sustainable Development took place in Johannesburg, the country's largest city. 2010 is the year that the tourism economy of South Africa was boosted by

the hosting of the FIFA Soccer World Cup. 2018 represents one of the final ‘normal’ travel years before the COVID-19 pandemic devastated the South African tourism economy (Rogerson & Rogerson, 2021). Finally, 2024 is the most recent year for which data is available. It marks a step towards a new ‘normal’ in the national tourism economy with signs of the post-COVID recovery of tourism flows in South Africa both in terms of domestic and international tourism.

Table 1. Total Trips: Ranked 30 Local Municipalities with Lowest Total Trips 2002, 2010, 2018, and 2024.

| Rank | 2002 (% National Total)      | 2010 (% National Total)      | 2018 (% National Total)      | 2024 (% National Total)      |
|------|------------------------------|------------------------------|------------------------------|------------------------------|
| 1    | !Kheis (NC) (0.016%)         | !Kheis (NC) (0.016%)         | !Kheis (NC) (0.015%)         | !Kheis (NC) (0.016%)         |
| 2    | Renosterberg (NC) (0.017%)   | Laingsburg (WC) (0.018%)     | Magareng (NC) (0.021%)       | Magareng (NC) (0.018%)       |
| 3    | Magareng (NC) (0.019%)       | Magareng (NC) (0.024%)       | Thembelihle (NC) (0.024%)    | Laingsburg (WC) (0.024%)     |
| 4    | Laingsburg (WC) (0.023%)     | Thembelihle (NC) (0.024%)    | Renosterberg (NC) (0.025%)   | Kgatelopele (NC) (0.029%)    |
| 5    | Thembelihle (NC) (0.024%)    | Prince Albert (WC) (0.024%)  | Laingsburg (WC) (0.026%)     | Thembelihle (NC) (0.030%)    |
| 6    | Khai-Ma (NC) (0.024%)        | Khai-Ma (NC) (0.025%)        | Kgatelopele (NC) (0.028%)    | Renosterberg (NC) (0.032%)   |
| 7    | Kgatelopele (NC) (0.025%)    | Renosterberg (NC) (0.025%)   | Prince Albert (WC) (0.037%)  | Prince Albert (WC) (0.034%)  |
| 8    | Prince Albert (WC) (0.030%)  | Kgatelopele (NC) (0.026%)    | Khai-Ma (NC) (0.040%)        | Khai-Ma (NC) (0.038%)        |
| 9    | Richtersveld (NC) (0.035%)   | Tsantsabane (NC) (0.030%)    | Kamiesberg (NC) (0.046%)     | Dikgatlong (NC) (0.043%)     |
| 10   | Kamiesberg (NC) (0.040%)     | Kamiesberg (NC) (0.034%)     | Tsantsabane (NC) (0.047%)    | Kamiesberg (NC) (0.045%)     |
| 11   | Tsantsabane (NC) (0.040%)    | Richtersveld (NC) (0.035%)   | Richtersveld (NC) (0.049%)   | Tsantsabane (NC) (0.046%)    |
| 12   | Kareeberg (NC) (0.041%)      | Kareeberg (NC) (0.040%)      | Dikgatlong (NC) (0.050%)     | Richtersveld (NC) (0.048%)   |
| 13   | Siyathemba (NC) (0.044%)     | Siyathemba (NC) (0.042%)     | Kareeberg (NC) (0.062%)      | Kannaland (WC) (0.049%)      |
| 14   | Dikgatlong (NC) (0.046%)     | Tswelopele (FS) (0.045%)     | Karoo Hoogland (NC) (0.065%) | Kareeberg (NC) (0.057%)      |
| 15   | Tswelopele (FS) (0.053%)     | Karoo Hoogland (NC) (0.049%) | Tswelopele (FS) (0.065%)     | Karoo Hoogland (NC) (0.063%) |
| 16   | Karoo Hoogland (NC) (0.054%) | Dikgatlong (NC) (0.060%)     | Phokwane (NC) (0.071%)       | Phokwane (NC) (0.066%)       |
| 17   | Phokwane (NC) (0.066%)       | Hantam (NC) (0.061%)         | Siyathemba (NC) (0.079%)     | Tswelopele (FS) (0.076%)     |
| 18   | Siyancuma (NC) (0.068%)      | Siyancuma (NC) (0.065%)      | Ubuntu (NC) (0.081%)         | Matzikama (WC) (0.076%)      |
| 19   | Hantam (NC) (0.069%)         | Mohokare (FS) (0.069%)       | Mohokare (FS) (0.085%)       | Ntabankulu (EC) (0.077%)     |
| 20   | Matzikama (WC) (0.076%)      | Ngqushwa (EC) (0.074%)       | Hantam (NC) (0.087%)         | Hantam (NC) (0.087%)         |
| 21   | Mohokare (FS) (0.079%)       | Matzikama (WC) (0.078%)      | Ngqushwa (EC) (0.087%)       | Siyancuma (NC) (0.091%)      |
| 22   | Joe Morolong (NC) (0.082%)   | Ntabankulu (EC) (0.082%)     | Ntabankulu (EC) (0.087%)     | Swellendam (WC) (0.094%)     |
| 23   | Gamagara (NC) (0.091%)       | Joe Morolong (NC) (0.082%)   | Sakhisizwe (EC) (0.088%)     | Siyathemba (NC) (0.096%)     |
| 24   | Ubuntu (NC) (0.108%)         | Phokwane (NC) (0.084%)       | Matzikama (WC) (0.089%)      | Ga-Segonyana (NC) (0.099%)   |

|    |                          |                          |                                  |                                  |
|----|--------------------------|--------------------------|----------------------------------|----------------------------------|
| 25 | Ngqushwa (EC) (0.112%)   | Gamagara (NC) (0.084%)   | Gamagara (NC) (0.099%)           | Ubuntu (NC)<br>(0.102%)          |
| 26 | Sakhisizwe (EC) (0.112%) | Sakhisizwe (EC) (0.090%) | Ephraim Mogale (LIM)<br>(0.099%) | Joe Morolong (NC) (0.104%)       |
| 27 | Ntabankulu (EC) (0.114%) | Ubuntu (NC) (0.093%)     | Ga-Segonyana (NC)<br>(0.102%)    | Ephraim Mogale (LIM)<br>(0.104%) |
| 28 | Nama Khoi (NC) (0.115%)  | Umzimvubu (EC) (0.094%)  | Makhuduthamaga (LIM)<br>(0.102%) | Makhuduthamaga (LIM)<br>(0.104%) |
| 29 | Swellendam (WC) (0.117%) | Swellendam (WC) (0.097%) | Joe Morolong (NC)<br>(0.102%)    | Mohokare (FS) (0.106%)           |
| 30 | Bergrivier (WC) (0.123%) | Nama Khoi (NC) (0.102%)  | Umzimvubu (EC)<br>(0.105%)       | Gamagara (NC) (0.109%)           |

Source: Author compilation based on unpublished S&P Global database. Note: EC Eastern Cape; FS Free State; LIM Limpopo; NC Northern Cape; and WC Western Cape.

Table 1 reveals the results for trip data which incorporate both international as well as domestic trips. This said, as shown elsewhere, the volume of domestic trips overwhelmingly exceeds that of international travel especially in the non-borderland peripheral areas of the South African tourism space economy (Rogerson & Rogerson, 2021). For each local municipality the share of national total of trips is given. In terms of overall findings the extremely low volume of trips to these least visited 30 municipalities is evidenced by the fact that taken together the 30 municipalities shown on Table 1 account for less than 2 percent of the national total of tourism trips across all the four years under scrutiny.

The geographical unevenness of the tourism space economy is demonstrated by the strong concentration of least visited tourism spaces in the province of Northern Cape. Of South Africa's nine provinces the Northern Cape is distinguished as being the largest in size but smallest in population. As is apparent from an examination of Table 2 the largest numbers of 'left behind' tourism spaces are situated in Northern Cape with a consistent pattern of eight of the bottom ten local municipalities there as ranked by total trip data. Turning the focus to the wider cohort of the bottom 30 local municipalities with the lowest numbers of recorded tourism trips, the dominance of the Northern Cape is once again reinforced. Of the 30 least visited local municipalities, this province accounts for 20 in 2002, 20 in 2010, 19 in 2018, and 20 in 2024. Infrastructural shortages and physical inaccessibility are critical challenges to tourism development in such spaces. These remote, arid and low populated areas of Northern Cape province therefore constitute a major segment of what would be termed 'peripheral spaces' by tourism scholars (see Schmallegger et al., 2010).

Beyond the Northern Cape there is representation in the lists of bottom 10 local municipalities in the adjoining areas of the Western Cape. As shown on Table 2 broadening the focus to the 30 least visited municipalities results in the regular inclusion of remote areas of the Eastern Cape, Free State and Limpopo into the ranked lists for the four study years. In 2010 only there is a listing of two local municipalities in KwaZulu province. It is observed the grouping of bottom 30 local municipalities on total trip data incorporates additional areas of the Western Cape province. Of South Africa's nine

provinces there is no representation in the listings on Table 1 for Gauteng (South Africa's economic heartland focused on Johannesburg), Mpumalanga (which adjoins the iconic nature-tourism attraction of Kruger National Park) and North West which is close to the tourism markets of Gauteng and boasts the internationally acclaimed resort and entertainment gambling hub of Sun City.

Table 2. Local Municipalities by Province: Lowest Volume of Total Trips

|                | EC | FS | GAU | KZN | LIM | MP | NC | NW | WC |
|----------------|----|----|-----|-----|-----|----|----|----|----|
| 2002 Bottom 10 | 0  | 0  | 0   | 0   | 0   | 0  | 8  | 0  | 2  |
| 2002 Bottom 30 | 3  | 2  | 0   | 0   | 0   | 0  | 20 | 0  | 5  |
| 2010 Bottom 10 | 0  | 0  | 0   | 0   | 0   | 0  | 8  | 0  | 2  |
| 2010 Bottom 30 | 1  | 4  | 0   | 2   | 0   | 0  | 20 | 0  | 3  |
| 2018 Bottom 10 | 0  | 0  | 0   | 0   | 0   | 0  | 8  | 0  | 2  |
| 2018 Bottom 30 | 4  | 2  | 0   | 0   | 2   | 0  | 19 | 0  | 3  |
| 2024 Bottom 10 | 0  | 0  | 0   | 0   | 0   | 0  | 8  | 0  | 2  |
| 2024 Bottom 30 | 1  | 2  | 0   | 0   | 2   | 0  | 20 | 0  | 5  |

Source: Author Compilation. Note: EC Eastern Cape; FS Free State; GAU Gauteng; KZN KwaZulu-Natal; LIM Limpopo; MP Mpumalanga; NC Northern Cape; NW North West; and, WC Western Cape.

Arguably, the best single index of the impact and significance of tourism activity is total tourism spend. Table 3 provides the overall picture of South African local municipalities in terms of tourism spend data for 2002, 2010, 2018 and 2024. Once again, the 30 municipalities are ranked based on their calculated share of the national total of total tourism spend for the four study years. In all four years the share of national tourism spend in South Africa which is collectively accounted for by the 30 lowest tourism spend local municipalities is less than 2 percent throughout the time period covered in this investigation. Not surprisingly, with only minor exceptions, there is a close correspondence in the ranked listings of municipalities by total spend as for total trips. In particular, the ranking on total spend highlights the 'left-behind' tourism spaces in the Northern Cape province. Table 4 confirms the peripherality of Northern Cape in the tourism space economy of South Africa. In addition, however, it identifies the limited tourism spend in certain pockets of several other provinces, including remoter parts of Limpopo, North West, Eastern Cape, Free State and KwaZulu-Natal. Only Gauteng and Mpumalanga have no representation of local municipalities in those provinces according to the listing of 30 municipalities based on tourism spend.

Table 3. Total Spend: Ranked 30 Local Municipalities with Lowest Total Spend 2002, 2010, 2018, and 2024.

| Rank | 2002 (% National Total)           | 2010 (% National Total)           | 2018 (% National Total)           | 2024 (% National Total)           |
|------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| 1    | Khai-Ma (NC) (0.0177%)            | Laingsburg (WC) (0.0279%)         | !Kheis (NC) (0.0258%)             | !Kheis (NC)<br>(0.0185%)          |
| 2    | Kgatelopele (NC) (0.0190%)        | !Kheis (NC) (0.0280%)             | Thembelihle (NC)<br>(0.0280%)     | Thembelihle (NC) (0.0189%)        |
| 3    | Tokologo (FS) (0.0218%)           | Kagisano/Molopo (NW)<br>(0.0285%) | Magareng (NC)<br>(0.0299%)        | Renosterberg (NC)(0.0208%)        |
| 4    | Renosterberg (NC)<br>(0.0244%)    | Thembelihle (NC)<br>(0.0299%)     | Renosterberg (NC)<br>(0.0304%)    | Laingsburg (WC) (0.0297%)         |
| 5    | Thembelihle (NC)<br>(0.0244%)     | Magareng (NC) (0.0300%)           | Kgatelopele (NC)<br>(0.0327%)     | Magareng (NC)(0.0316%)            |
| 6    | !Kheis (NC) (0.0250%)             | Khai-Ma (NC) (0.0342%)            | Kagisano/Molopo (NW)<br>(0.0343%) | Kgatelopele (NC) (0.0318%)        |
| 7    | Magareng (NC) (0.0250%)           | Tokologo (FS) (0.0348%)           | Tokologo (FS) (0.0365%)           | Kagisano/Molopo (NW)<br>(0.0331%) |
| 8    | Kagisano/Molopo (NW)<br>(0.0259%) | Prince Albert (WC)<br>(0.0361%)   | Kareeberg (NC)<br>(0.0409%)       | Khai-Ma (NC) (0.0372%)            |
| 9    | Laingsburg (WC) (0.0368%)         | Renosterberg (NC)<br>(0.0363%)    | Khai-Ma (NC) (0.0425%)            | Prince Albert (WC)<br>(0.0404%)   |
| 10   | Kamiesberg (NC) (0.0384%)         | Kgatelopele (NC) (0.0371%)        | Prince Albert (WC)<br>(0.0436%)   | Kareeberg (NC)(0.0430%)           |
| 11   | Kareeberg (NC) (0.0422%)          | Letsemeng (FS) (0.0400%)          | Siyathemba (NC)<br>(0.0508%)      | Mamusa (NW) (0.0449%)             |
| 12   | Siyathemba (NC) (0.0440%)         | Mamusa (NW) (0.0418%)             | Kamiesberg (NC)<br>(0.0534%)      | Siyathemba (NC) (0.0485%)         |
| 13   | Mamusa (NW) (0.0486%)             | Kareeberg (NC) (0.0443%)          | Mamusa (NW)<br>(0.0568%)          | Tokologo (FS)(0.0527%)            |
| 14   | Prince Albert (WC)<br>(0.0520%)   | Siyathemba (NC) (0.0488%)         | Tsantsabane (NC)<br>(0.0596%)     | Kamiesberg (NC) (0.0550%)         |
| 15   | Greater Taung (NW)<br>(0.0538%)   | Ubuhlebezwe (KZN)<br>(0.0499%)    | Karoo Hoogland (NC)<br>(0.0623%)  | Tsantsabane (NC) (0.0551%)        |
| 16   | Lekwa-Teemane (NW)<br>(0.0580%)   | Ntabankulu (EC) (0.0517%)         | Greater Taung (NW)<br>(0.0627%)   | Karoo Hoogland (NC)<br>(0.0555%)  |
| 17   | Siyancuma (NC) (0.0648%)          | Kamiesberg (NC)(0.0520%)          | Letsemeng (FS)<br>(0.0681%)       | Ubuhlebezwe (KZN)<br>(0.0627%)    |
| 18   | Karoo Hoogland (NC)<br>(0.0658%)  | Tswelopele (FS) (0.0525%)         | Ubuhlebezwe (KZN)<br>(0.0716%)    | Dikgatlong (NC) (0.0633%)         |
| 19   | Richtersveld (NC)<br>(0.0689%)    | Karoo Hoogland (NC)<br>(0.0549%)  | Richtersveld (NC)<br>(0.0762%)    | Greater Taung (NW)<br>(0.0647%)   |
| 20   | Letsemeng (FS) (0.0773%)          | Joe Morolong (NC)<br>(0.0573%)    | Tswelopele (FS)<br>(0.0761%)      | Ntabankulu (EC) (0.0662%)         |
| 21   | Hantam (NC) (0.0862%)             | Greater Taung (NW)<br>(0.0579%)   | Makhuduthamaga (LIM)<br>(0.0809%) | Letsemeng (FS)(0.0674%)           |
| 22   | Dannhauser (KZN)<br>(0.0963%)     | Richtersveld (NC)<br>(0.0589%)    | Joe Morolong (NC)<br>(0.0845%)    | Gamagara (NC) (0.0721%)           |
| 23   | Matzikama (WC) (0.0978%)          | Ephraim Mogale (LIM)<br>(0.0599%) | Ga-Segonyana (NC)<br>(0.0861%)    | Ga-Segonyana (NC)<br>(0.0732%)    |
| 24   | Ntabankulu (EC) (0.1014%)         | Mohokare (FS) (0.0601%)           | Ephraim Mogale (LIM)<br>(0.0931%) | Richtersveld (NC) (0.0733%)       |
| 25   | Joe Morolong (NC)<br>(0.1115%)    | Hantam (NC) (0.0602%)             | Phokwane (NC)<br>(0.0945%)        | Phokwane (NC) (0.0775%)           |

|    |                                |                                |                                            |                                |
|----|--------------------------------|--------------------------------|--------------------------------------------|--------------------------------|
| 26 | Gamagara (NC) (0.1226%)        | Gamagara (NC) (0.0631%)        | Gamagara (NC) (0.0948%)                    | Ephraim Mogale (LIM) (0.0795%) |
| 27 | Ga-Segonyana (NC) (0.1323%)    | Makhuduthamaga (LIM) (0.0658%) | Mohokare (FS) (0.0947%)                    | uMzimkhulu (KZN) (0.0828%)     |
| 28 | Ephraim Mogale (LIM) (0.1353%) | Ga-Segonyana (NC) (0.0665%)    | Greater Tubatse/ Fetakgomo (LIM) (0.1269%) | Matzikama (WC) (0.0868%)       |
| 29 | uMzimkhulu (KZN) (0.1382%)     | uMzimkhulu (KZN) (0.0708%)     | Matzikama (WC) (0.1289%)                   | Tswelopele (FS) (0.0888%)      |
| 30 | Sakhisizwe (EC) (0.1404%)      | Matzikama (WC) (0.0719%)       | Hantam (NC) (0.1313%)                      | Makhuduthamaga (LIM) (0.0892%) |

Source: Author compilation based on unpublished S&P. Global data base. Note: EC Eastern Cape; FS Free State; KZN KwaZulu-Natal; LIM Limpopo; NC Northern Cape; NW North West and, WC Western Cape.

Table 4. Local Municipalities by Province: Lowest Volume of Total Spend

|                | EC | FS | GAU | KZN | LIM | MP | NC | NW | WC |
|----------------|----|----|-----|-----|-----|----|----|----|----|
| 2002 Bottom 10 | 0  | 1  | 0   | 0   | 0   | 0  | 7  | 1  | 1  |
| 2002 Bottom 30 | 2  | 2  | 0   | 2   | 1   | 0  | 16 | 4  | 3  |
| 2010 Bottom 10 | 0  | 1  | 0   | 0   | 0   | 0  | 6  | 1  | 2  |
| 2010 Bottom 30 | 1  | 4  | 0   | 2   | 2   | 0  | 15 | 3  | 3  |
| 2018 Bottom 10 | 0  | 1  | 0   | 0   | 0   | 0  | 7  | 1  | 1  |
| 2018 Bottom 30 | 0  | 4  | 0   | 1   | 3   | 0  | 17 | 3  | 2  |
| 2024 Bottom 10 | 0  | 0  | 0   | 0   | 0   | 0  | 7  | 1  | 2  |
| 2024 Bottom 30 | 1  | 3  | 0   | 2   | 2   | 0  | 16 | 3  | 3  |

Source: Author Compilation. Note: EC Eastern Cape; FS Free State; GAU Gauteng; KZN KwaZulu-Natal; LIM Limpopo; MP Mpumalanga; NC Northern Cape; NW North West; and WC Western Cape.

### Tourism Structure and Local Contribution

In understanding the structure of the tourism economies of South Africa's left-behind spaces it is useful to explore data relating to purpose of travel. The trip data can be differentiated into the four categories of leisure (or holiday), business, visits to friends and relatives, and 'other' travel mainly consisting of trips for reasons either of health or religion. Applying these categories, Table 5 provides insight into the major purpose of travel for each of the 30 local municipalities with the lowest recorded trips or total spend from tourism. The data is generated for three years, 2002, 2010 and 2024 with a profile shown for each of the municipalities. Several important points must be noted. First, is the overwhelming dominance of VFR travel in the reasons for travel to these municipalities. VFR dominance is evidenced for all the three years under investigation. Of the 30 local municipalities in 2002 22 were VFR dominant, in 2010 as many as 28 were VFR dominant, and for 2024 the most recent data reveals 25 of these 30 municipalities have VFR as the primary motivation for travel.

Table 5. Purpose of Trips: 30 Local Municipalities With Lowest Total Trips/Spend 2024

| Municipality/Purpose | 2002<br>L   | 2002<br>B | 2002<br>VFR | 2002<br>O | 2010<br>L   | 2010<br>B | 2010<br>VFR | 2010<br>O | 2024<br>L   | 2024<br>B | 2024<br>VFR | 2024<br>O |
|----------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| !Kheis (NC)          | 15.3        | 15.9      | <b>53.9</b> | 14.9      | 22.2        | 11.1      | <b>43.9</b> | 22.9      | 19.3        | 13.8      | <b>50.5</b> | 16.4      |
| Magareng (NC)        | 9.1         | 14.9      | <b>66.0</b> | 10.0      | 10.6        | 4.8       | <b>74.4</b> | 10.3      | 9.1         | 25.3      | <b>60.7</b> | 4.9       |
| Laingsburg (WC)      | <b>47.2</b> | 12.0      | 33.9        | 6.9       | 30.0        | 11.5      | <b>53.7</b> | 4.7       | <b>41.8</b> | 12.2      | 30.7        | 15.3      |
| Kgatelopele (NC)     | 10.2        | 13.4      | <b>62.9</b> | 13.5      | 13.0        | 8.3       | <b>67.6</b> | 11.1      | 5.7         | 34.1      | <b>51.4</b> | 8.9       |
| Thembelihle (NC)     | 20.5        | 12.1      | <b>51.9</b> | 15.5      | 16.3        | 7.1       | <b>70.3</b> | 6.2       | 9.6         | 27.5      | <b>61.3</b> | 1.6       |
| Renosterberg (NC)    | 20.9        | 8.8       | <b>56.5</b> | 13.8      | 12.3        | 4.2       | <b>75.2</b> | 8.2       | 8.3         | 19.8      | <b>61.1</b> | 10.8      |
| Prince Albert (WC)   | <b>50.0</b> | 15.3      | 27.5        | 7.2       | 33.3        | 14.6      | <b>47.1</b> | 4.9       | <b>29.9</b> | 13.3      | 29.2        | 27.6      |
| Khai-Ma (NC)         | 35.3        | 9.1       | <b>54.1</b> | 1.4       | 28.8        | 4.0       | <b>58.6</b> | 8.6       | 16.9        | 14.5      | <b>67.4</b> | 1.2       |
| Dikgatlong (NC)      | 13.0        | 8.2       | <b>64.1</b> | 14.8      | 10.1        | 3.7       | <b>77.2</b> | 9.0       | 8.7         | 20.5      | <b>58.5</b> | 12.3      |
| Kamiesberg (NC)      | <b>50.1</b> | 14.7      | 32.4        | 2.8       | <b>46.8</b> | 7.6       | 44.7        | 0.9       | 24.4        | 28.4      | <b>45.2</b> | 2.0       |
| Tsantsabane (NC)     | 15.2        | 10.1      | <b>58.8</b> | 15.9      | 19.8        | 9.5       | <b>58.3</b> | 12.4      | 6.9         | 21.6      | <b>62.3</b> | 9.1       |
| Richtersveld (NC)    | <b>44.5</b> | 12.9      | 41.1        | 1.5       | 38.2        | 5.3       | <b>55.2</b> | 1.4       | 21.1        | 19.4      | <b>56.8</b> | 2.7       |
| Kannaland (WC)       | <b>58.0</b> | 13.8      | 19.4        | 8.7       | 28.0        | 8.3       | <b>58.2</b> | 5.4       | <b>76.8</b> | 15.1      | 14.6        | 15.3      |
| Kareeberg (NC)       | 23.3        | 7.6       | <b>55.0</b> | 14.1      | 16.4        | 4.2       | <b>67.1</b> | 12.3      | 11.0        | 15.9      | <b>68.5</b> | 4.5       |
| Karoo Hoogland (NC)  | <b>45.1</b> | 12.1      | 41.5        | 1.3       | 39.5        | 6.1       | <b>53.1</b> | 1.2       | 20.4        | 24.3      | <b>54.3</b> | 1.0       |
| Phokwane (NC)        | 13.1        | 5.4       | <b>67.0</b> | 14.4      | 11.6        | 5.7       | <b>72.7</b> | 10.0      | 9.7         | 30.1      | <b>84.8</b> | 9.1       |
| Tswelopele (FS)      | 5.9         | 5.4       | <b>71.7</b> | 17.1      | 9.1         | 6.8       | <b>73.9</b> | 10.2      | 19.1        | 12.4      | <b>60.5</b> | 8.7       |
| Matzikama (WC)       | <b>41.5</b> | 9.1       | 41.1        | 8.3       | 35.2        | 8.3       | <b>49.4</b> | 7.1       | <b>63.0</b> | 11.3      | 24.0        | 1.7       |
| Ntabankulu (EC)      | 8.3         | 0.8       | <b>81.3</b> | 9.6       | 8.2         | 2.8       | <b>77.5</b> | 1.9       | 13.4        | 1.9       | <b>64.3</b> | 20.5      |
| Hantam (NC)          | 37.8        | 12.3      | <b>48.3</b> | 1.5       | 41.4        | 7.6       | <b>49.5</b> | 1.6       | 32.4        | 28.7      | <b>34.5</b> | 4.3       |
| Siyancuma (NC)       | 17.3        | 6.6       | <b>63.8</b> | 12.2      | 16.6        | 5.1       | <b>68.4</b> | 9.8       | 10.0        | 20.8      | <b>63.9</b> | 5.3       |
| Swellendam (WC)      | <b>59.2</b> | 9.0       | 23.0        | 8.8       | <b>53.4</b> | 10.0      | 30.3        | 6.3       | <b>69.0</b> | 12.0      | 10.4        | 8.5       |
| Siyathemba (NC)      | 20.0        | 8.5       | <b>55.1</b> | 16.4      | 14.8        | 5.0       | <b>76.7</b> | 3.5       | 5.9         | 11.0      | <b>78.5</b> | 4.5       |
| Ga-Segonyana (NC)    | 13.6        | 6.1       | <b>71.1</b> | 9.1       | 16.9        | 5.4       | <b>69.4</b> | 8.3       | 15.0        | 9.2       | <b>71.7</b> | 4.1       |
| Ubuntu (NC)          | 23.3        | 6.4       | <b>62.2</b> | 8.0       | 20.7        | 4.6       | <b>72.2</b> | 2.5       | 12.2        | 21.5      | <b>65.2</b> | 1.2       |
| Joe Morolong (NC)    | 7.5         | 0.5       | <b>84.7</b> | 7.3       | 8.4         | 3.0       | <b>85.0</b> | 3.6       | 6.0         | 7.1       | <b>78.8</b> | 8.1       |
| Ephraim Mogale (LIM) | 6.3         | 2.3       | <b>79.8</b> | 11.6      | 8.7         | 3.3       | <b>83.7</b> | 4.2       | 24.4        | 17.2      | <b>68.8</b> | 0.9       |
| Makhuduthamaga (LIM) | 4.1         | 1.9       | <b>83.5</b> | 10.5      | 5.9         | 2.9       | <b>86.0</b> | 5.2       | 5.7         | 5.3       | <b>84.5</b> | 4.6       |
| Mohokare (FS)        | 20.1        | 10.0      | <b>65.2</b> | 4.7       | 18.4        | 8.0       | <b>70.3</b> | 3.4       | 16.7        | 16.4      | <b>65.2</b> | 1.7       |
| Gamagara (NC)        | 18.8        | 10.0      | <b>60.7</b> | 10.4      | 15.0        | 5.9       | <b>71.4</b> | 7.7       | 13.0        | 9.4       | <b>68.8</b> | 8.8       |

Source: Author Compilation based on unpublished S&P Global database. Note: (1) Purpose of Travel L=Leisure, B=Business, VFR=Visiting Friends and Relatives; and, O=Other. (2) Bold type indicates the most important purpose of travel in any year for each local municipality.

For South Africa as a whole VFR is the leading element of travel mobilities (Rogerson & Rogerson, 2021). Arguably, because of their large populations the country's major metropolitan areas invariably attract major flows of domestic VFR travellers. Nevertheless, it is shown that the greatest relative importance of VFR occurs outside the cities and instead in small towns and rural areas where split households are common because of historical flows of (usually male) jobseekers into the cities. Much of domestic VFR travel in South Africa therefore is the 'other side of the coin' with return visits occurring to the small town or rural 'home' at various times of the year including for social obligations

such as family events and funerals (Nengovhela, et al., 2024, 2025). This pattern of mobility is signalled by the high levels of VFR travel recorded in remote local municipalities of Northern Cape, Limpopo, Eastern Cape and Free State provinces (Table 5). In the most extreme cases, exemplified by the local municipalities of Joe Marolong in Northern Cape and Makhuduthamaga in Limpopo, VFR travel accounts for over 80 percent of tourism flows in these areas. By contrast, as a general pattern, the lowest proportion of VFR is recorded in the local municipalities of Western Cape province.

A second notable finding shown on Table 5 is of leisure being the dominant reason for travel to a handful of South Africa's 'left behind' tourism spaces. The broad pattern is for these low tourism trip or spend leisure-dominated local municipalities to be located in Western Cape province. In 2002 the tourism flows of eight of the 30 local municipalities were leisure dominated; of these five were found in Western Cape and three in Northern Cape province. In the 2010 and 2024 listings all the leisure-dominant local municipalities were in Western Cape; there were two such municipalities in 2010 and five in 2024. Across the over two decades covered by this investigation study only the two Western Cape municipalities of Prince Albert and Swellendam were consistently leisure dominated. Of note is that a small number of municipalities record a change in terms of which purpose of travel is dominant within certain years. Examples include for the period 2002-2010 leisure to VFR in Laingsburg, Richtersveld, Kannaland, Karoo Hoogland and Matzikama. During the period 2010-2024 the following shifts occurred, namely for Laingsburg VFR to return to leisure dominant; Kamiesberg leisure to VFR dominant; and, for both Kannaland and Matzikama a return from VFR to leisure as the dominant reason for travel. Overall, throughout the study period it is perhaps unsurprising to record that business travel is of limited importance. Likewise, these least visited places in South Africa are not attractive foci in terms of major travel flows for reasons of health or religion.

Finally, the question may be raised as to whether tourism is a sector of any significance in the country's 'left behind' tourism spaces. In this regard the S&P Global database allows an examination of the importance of tourism within the economies of local municipalities. Using calculations of the contribution of tourism spend to local Gross Domestic Product Table 6 provides the results of the data extraction for 30 such local municipalities across the period 2002-2024. For the majority of the least visited local municipalities the contribution of tourism to local GDP was smaller than the share contributed by tourism to national GDP. Nevertheless, Table 6 indicates that for several of South Africa's least visited or left-behind tourism spaces tourism is a critical sector in the economy of these local municipalities. Notwithstanding the small volume of recorded tourism trips and actual tourism spend, 11 of these local municipalities would be described as tourism-dependent in 2002, 10 in 2010 and rising to 11 in 2024. In all of these municipalities the share contributed to local GDP by tourism was higher than that for South Africa as a whole (Table 6). It is mainly those local municipalities where leisure trips rather than VFR are the primary purpose of travel that the tourism sector is vital for the economies of these localities. Examples are the municipalities of Laingsburg, Swellendam and Prince Albert in Western Cape province and the Northern Cape municipalities of Kamiesberg, Kareeberg, Ubuntu, or Karoo Hoogland. The case of Swellendam is unusual for it is a least visited destination which is patronised by international tourists as well as domestic travellers. As Donaldson (2021) highlights, the small town of Swellendam - the core of the local municipality - is a popular one-night stopover which serves (mainly) international travellers from Cape Town going on to stays in South Africa's coastal Garden Route.

Table 6. Tourism Spend as Contributor to Local GDP.

| Municipality            | 2002        | 2010        | 2024        |
|-------------------------|-------------|-------------|-------------|
| !Kheis (NC)             | <b>8.0</b>  | 6.5         | 6.9         |
| <b>Magareng</b> (NC)    | 7.3         | 5.4         | 5.0         |
| Laingsburg (WC)         | <b>20.5</b> | <b>11.5</b> | <b>10.2</b> |
| Kgatelopele (NC)        | 2.8         | 2.5         | 2.3         |
| Thembelihle (NC)        | 7.1         | 5.6         | 6.4         |
| Renosterberg (NC)       | 5.1         | 4.1         | 4.9         |
| Prince Albert (WC)      | <b>12.9</b> | <b>8.3</b>  | <b>9.7</b>  |
| Khai-Ma (NC)            | 6.6         | 5.2         | 6.8         |
| Dikgatlong (NC)         | 5.1         | 3.9         | 4.0         |
| Kamiesberg (NC)         | <b>12.4</b> | <b>10.1</b> | <b>14.5</b> |
| <b>Tsantsabane</b> (NC) | 2.9         | 2.5         | 2.4         |
| Richtersveld (NC)       | 7.4         | <b>8.3</b>  | <b>7.5</b>  |
| Kannaland (WC)          | 6.2         | 5.6         | 6.0         |
| Kareeberg (NC)          | <b>12.5</b> | <b>8.1</b>  | <b>8.0</b>  |
| Karoo Hoogland (NC)     | <b>11.3</b> | <b>8.6</b>  | <b>11.7</b> |
| Phokwane (NC)           | 5.5         | 4.5         | 4.7         |
| Tswelopele (FS)         | 4.4         | 4.8         | 5.6         |
| Matzikama (WC)          | 6.6         | 5.9         | 6.3         |
| Ntabankulu (EC)         | 6.1         | 4.2         | <b>8.0</b>  |
| Hantam (NC)             | <b>10.9</b> | <b>7.8</b>  | <b>7.4</b>  |
| Siyancuma (NC)          | 7.4         | 4.8         | 5.6         |
| Swellendam (WC)         | <b>15.7</b> | <b>12.1</b> | <b>9.6</b>  |
| Siyathemba (NC)         | 5.9         | 4.7         | 5.8         |
| Ga-Segonyana (NC)       | 2.9         | 2.6         | 4.3         |
| Ubuntu (NC)             | <b>11.2</b> | <b>8.4</b>  | <b>12.1</b> |
| Joe Morolong (NC)       | 3.4         | 2.7         | 2.9         |
| Ephraim Mogale (LIM)    | <b>11.4</b> | <b>7.7</b>  | <b>12.3</b> |
| Makhuduthamaga (LIM)    | 5.5         | 3.9         | 5.9         |
| Mohokare (FS)           | <b>7.3</b>  | 6.0         | <b>10.5</b> |
| Gamagara (NC)           | 3.4         | 2.8         | 3.3         |

Source: Author Compilation based on unpublished S&P. Global database. Note: (1) For South Africa as a whole, total tourism spend as % of GDP was 7.9% for 2002, 6.5 for 2010 and 6.9 for 2024. (2) Bold indicates a contribution to local GDP which is more than the national share contributed by tourism.

## CONCLUSIONS

Within contemporary conversations about regional economic development van Meeteren and Smit, (2025, p. 544) state “the issue of ‘left behind places’ looms large”. The growing literature on left behind spaces has triggered a laudable interest in understanding the unevenness of spatial development but so far with minimal attention to the unevenness of the development of tourism spaces. Nevertheless, as asserted recently by Hardy and Shoval (2025, p. 851) an understanding of “the essence of tourism flows is one of the fundamental undertakings of tourism geography research”.

Arguably, this study makes two contributions to tourism geography scholarship. First, the article offers a modest theoretical contribution by introducing the concept of left-behind spaces into tourism geographical debates. Moreover, the analysis and discussion is set within a Global South environment which Tups et al. (2024) isolate as in need of greater scholarly attention. Second, the paper makes a novel empirical contribution by mapping out the least visited tourism spaces in South Africa over a two-decade period and identifying certain continuities and changes in the patterns of low visitation. Indeed, this is the first research of its kind to isolate the geography of 'left behind' areas of the tourism space economy across a period of two decades. Future research that involves local case studies could advance further our understanding of the differentiated role of tourism in such areas.

## REFERENCES

- Adamiak, C., Rodriguez-Pose, A., Churski, P., Dubownik, A., Pietrzykowski, M., Szyda, B., & Rosik, P. (2026). Places that matter and places that don't: Territorial revenge and counter-revenge in Poland. *Territory, Politics, Governance*, 14(1), 66–91. <https://doi.org/10.1080/21622671.2024.2431702>
- Ahebwa, W.M., & Novelli, M. (2014). African tourism and hospitality in global society: Central or peripheral? *Tourism and Hospitality Research*, 14(1–2), 3–7. <https://doi.org/10.1177/1467358414536298>
- Benner, M., Trippel, M., & Hassink, R. (2024). Sustainable and inclusive development in left-behind places. *Review of Regional Research*, 44, 237–249. <https://doi.org/10.1007/s10037-024-00216-w>
- Bernard, J., Refisch, M., Grzelak, A., Banski, J., Deppisch, L., Konopski, M., Kostelecký, T., Kowalski, M., & Klärner, A. (2025). *Left-behind regions in Poland, Germany, Czechia: Classification and electoral implications*. Johann Heinrich von Thünen Institute, Thünen Working Paper No. 261.
- De Ruyter, A., Martin, R., & Tyler, P. (2021). Geographies of discontent: Sources, manifestations and consequences. *Cambridge Journal of Regions, Economy and Society*, 14(3), 381–393. <https://doi.org/10.1093/cjres/rsab025>
- Dlomo, T., & Rogerson, C. M. (2021). Tourism and local economic development in King Sabata Dalindyebo municipality. *African Journal of Hospitality, Tourism and Leisure*, 10(1), 145–164. <https://hdl.handle.net/10210/482408>
- Donaldson, R. (2021). *Small town tourism in South Africa revisited*. In C. M. Rogerson & J. M. Rogerson (Eds.), *Urban Tourism in the Global South: South African Perspectives* (pp. 193–211). Springer.
- Drakakis, P. (2022). Does tourism contribute to balanced regional development?: Evidence from Greece. In V. Katsoni & A.C. Şerban (Eds.), *Transcending Borders in Tourism Through Innovation and Cultural Heritage: 8<sup>th</sup> International Conference, IACuDIT, Hydra, Greece 2021* (pp. 185–201). Springer International.
- Ek, R., & Rauhut, D. (2024). Regional development, power and topological reach: To reach out or fold in? *Regional Studies*, 58(6), 1180–1191. <https://doi.org/10.1080/00343404.2023.22315104>

- Fiorentino, S., Glasmeier, A.K., Lobao, L., Martin, R., & Tyler, P. (2024). 'Left behind places': What are they and why do they matter?. *Cambridge Journal of Regions, Economy and Society*, 17 (1), 1–16. <https://doi.org/10.1093/cjres/rsad044>
- Fransham, M., Herbertson, M., Pop, M., Morais, M.B., & Lee, N. (2022). *Level Best? The Levelling Up Agenda and UK Regional Inequality*. Working Paper No. 80, London School of Economics International Inequalities Institute.
- Fuerst-Bjeliš, B., Leimgruber, W., Nel, E., & Pelc, S. (2025). Marginality: Centres, peripheries, margins and left behind places. In J. Bański (Ed.), *Research Companion to the Periphery and Peripheral Regions* (pp. 2–14). Edward Elgar.
- Gaussier, N., Lacour, C., & Puissant, S. (2003). Metropolitanization and territorial scales. *Cities*, 20 (4), 253–263. [https://doi.org/10.1016/S0264-2751\(03\)00032-5](https://doi.org/10.1016/S0264-2751(03)00032-5)
- Giddy, J.K., Rogerson, C. M., & Rogerson, J. M. (2022). Rural tourism firms in the COVID-19 environment: South African challenges. *GeoJournal of Tourism and Geosites*, 41(2), 343–353. <https://doi.org/10.30892/gtg.41202-836>
- Go, C., Li, H., & Li, M. (2014). A comparative analysis of domestic and international tourism spatial distribution: Trends and impacts. *Journal of China Tourism Research*, 10(4), 388–413. <https://doi.org/10.1080/19388160.2014.906933>
- Halford, E., Huggins, R., & gale, R. (2025). Community culture and development challenges in left behind places: The impact of historical legacies in the South Wales valleys. *Geoforum*, 164, 104353. <https://doi.org/10.1016/j.geoforum.2025.104353>
- Hall, C. M. (2012). Spatial analysis: A critical tool for tourism geographers. In J. Wilson (Ed.) *The Routledge Handbook of Tourism Geographies* (pp. 178–188). Routledge.
- Hardy, A., & Shoval, N. (2025). 25 years of tourist tracking: A geographical perspective. *Tourism Geographies*, 27(3–4), 851–862. <https://doi.org/10.1080/14616688.2025.2462222>
- Hertrich, T.J., & Brenner, T. (2025). When the past becomes the future: The challenges of policies in 'left behind' places in East Germany – A case study from the Gera region. *Regional Science Policy & Practice*, 17(8), 100195. <https://doi.org/10.1016/j.rspp.2025.100195>
- Houlden, V., Robinson, C., Franklin, R., & Rowe, F. (2024). 'Left behind' neighbourhoods in England: Where are they and why they matter. *The Geographical Journal*, 190, e12583. <https://doi.org/10.1111/geoj.12583>
- Hudson, R. (2022). 'Levelling-up' in post-Brexit United Kingdom: Economic realism or political opportunism? *Local Economy*, 37(1–2), 50–65. <https://doi.org/10.1177/02690942221099480>
- Kang, S., Kim, J., & Nicholls, S. (2014). National tourism policy and spatial patterns of domestic tourism in South Korea. *Journal of Travel Research*, 53(6), 791–804. <https://doi.org/10.1177/0047287514522875>

- Karagöz, D., Aktaş, S., & Kantar, Y. (2022). Spatial analysis of the relationship between tourist attractions and tourist flows in Turkey. *European Journal of Tourism Research*, 31, 3102. <https://doi.org/10.54055/ejtr.v31i.2745>
- Kiss, R., Patev, P. & Lan, K-W. (2025). The impact of COVID-19 on domestic travel: The spatial changes in Taiwan. *Modern Geográfia*, 20(1), 129–156. <https://doi.org/10.15170/MG.2025.20.01.07>
- Koeppen, L., Ballas, D., Edzes, A., & Koster, S. (2021). Places that don't matter or people that don't matter?: A multi-level modelling approach to the analysis of geographies of discontent. *Regional Science Policy & Practice*, 13 (2), 221–245. <https://doi.org/10.1016/rsp3.12384>
- Lenzi, C., & Perucca, G. (2021). People or places that don't matter? Individual and contextual determinants of the geography of discontent. *Economic Geography*, 97(5), 415–445. <https://doi.org/10.1080/00130095.2021.1973419>
- Leyshon, A. (2021). Economic geography 1: Uneven development, 'left behind places' and levelling up in a time of crisis. *Progress in Human Geography*, 45(6), 1678–1691. <https://doi.org/10.1177/03091325211011684>
- Li, H., Chen, J.L., Li, G. & Goh, C. (2016). Tourism and regional income inequality: Evidence from China. *Annals of Tourism Research*, 58, 81–99. <https://doi.org/10.1016/j.annals.2016.02.001>
- Liddle, J., Shutt, J., & Addidle, G. (2022). Editorial: Levelling up the United Kingdom? A useful mantra but too little substance or delivery? *Local Economy*, 37 (1–2), 3–12. <https://doi.org/10.1177/02690942221099835>
- MacKinnon, D., Beal, V., & Leibert, T. (2024). Rethinking 'left-behind' places in a context of rising spatial inequalities. *Regional Studies*, 58(6), 1161–1166. <https://doi.org/10.1080/00343404.2023.2291581>
- MacKinnon, D., Kempton, L., O'Brien, P., Ormerod, E., Pike, A., & Tomaney, J. (2022). Reframing urban and regional 'development' for 'left behind' places. *Cambridge Journal of Regions, Economy and Society*, 15(1), 39–56. <https://doi.org/10.1093/cjres/rsab034>
- Martin, R., Gardiner, B., Pyke, A., Sunley, P., & Tyler, P. (2021). *Levelling up left behind places: The scale and nature of the economic and policy challenges*. Taylor & Francis.
- Martin, R., Martinelli, F., & Clifton, J. (2022). Rethinking spatial policy in an era of multiple crises. *Cambridge Journal of Regions, Economy and Society*, 15(1), 3–21. <https://doi.org/10.1093/cjres/rsab037>
- Matamanda, A.R., Mugumbate, H., Bhanye, J.I., & Chatiza, K. (2025). Township economies as left-behind places: Case of Chitungwiza, Zimbabwe. *Journal of Asian and African Studies*, <https://doi.org/10.1177/00219096251401594>
- Mpungose, A., & Myeni, S.L. (2025). Regional development and the challenge of 'left behind' places in South Africa. In M. Mdlalose, I. Khambule & N.E. Khalema (Eds.), *Contemporary South Africa and the Political Economy of Regional Development* (pp. 93–115). Routledge.

- Nengovhela, M., Nethengwe, T., & Dafuleya, G. (2024). Funeral tourism in Northern parts of South Africa. *Tourism and Rural Development Studies*, 9(4), 140–153. <https://doi.org/10.15170/TVT.2024.09.04.07>
- Nengovhela, M., Nethengwe, T., & Dafuleya, G. (2025). Predicting behavioural intentions of funeral travellers to consume tourism-related products and services. *Tourism and Rural Development Studies*, 10 (4), 108–119. <https://doi.org/10.15170/TVT.2024.10.04.06>
- Perancho, R., Díaz-Dapena, A., & Viñuela, A. (2025). The multidimensional phenomenon of left behindness: A local approach. *Regional Science Policy and Practice*, 17, 100232. <https://doi.org/10.1016/j.rspp.2025.100232>
- Phelps, N.A., Atienza, M., & Arias-Loyola, M. (2025). The abandoned, the depressed, the sacrificed: Stretching the terms of the economic geographical debate on left-behind places. *Journal of Economic Geography*. <https://doi.org/10.1093/jeg/lbaf057>
- Pike, A., Rodriguez-Pose, A., & Tomaney, J. (2016). *Local and Regional Development*, 2nd Edition. Routledge.
- Pike, A., Beal, V., Cauchi-Duval, N., Franklin, R., Kinossian, N., Lang, T., Leibert, T., MacKinnon, D., Rousseau, M., Royer, J., Servillo, L., Tomaney, J., & Velthuis, S. (2024). 'Left-behind places': A geographical etymology. *Regional Studies*, 58(6), 1167–1179. <https://doi.org/10.1080/00343404.2023.2167972>
- Pruitt, L.R. (2024). Mustering the political will to help left-behind places in polarized USA. *Cambridge Journal of Regions, Economy and Society*, 17(2), 407–416. <https://doi.org/10.1093/cjres/rsae014>
- Rodriguez-Pose, A. (2018). The revenge of the places that don't matter (and what to do about it). *Cambridge Journal of Regions, Economy and Society*, 11, 189–209. <https://doi.org/10.1093/cjres/rsx024>
- Rodriguez-Pose, A., Lee, N. & Lipp, C. (2021). Golfing with Trump: Social capital, decline, inequality, and the rise of populism in the US. *Cambridge Journal of Regions, Economy and Society*, 14(3), 457–481. <https://doi.org/10.1093/cjres/rsab026>
- Rodriguez-Pose, A., Terrero-Dávila, J., & Lee, N. (2023). *Left-behind vs unequal places: Interpersonal inequality, economic decline and the rise of populism in the US and Europe*. Utrecht University Papers in Evolutionary Economic Geography 23.06.
- Rodriguez-Pose, A., Bartalucci, F., Lozano-Gracia, N., & Dávalos, M. (2024). Overcoming left-behindness: Moving beyond the efficiency versus equity debate in territorial development. *Regional Science Policy and Practice*, 16(12), 100144. <https://doi.org/10.1016/j.rspp.2024.100144>
- Rogerson, C. M. (2014). Reframing place-based economic development in South Africa: The example of local economic development. *Bulletin of Geography: Socio-Economic Series*, 24, 203–218. <https://doi.org/10.2478/bog-2014-0023>

- Rogerson, C. M. (2017). Less visited tourism spaces in South Africa. *African Journal of Hospitality, Tourism and Leisure*, 6 (3), 1–17.
- Rogerson, C. M., & Nel, E. (2016). Planning for local economic development in spaces of despair: Key trends in South Africa's distressed areas. *Local Economy*, 31(1–2), 124–141. <https://doi.org/10.1177/0269094215623731>
- Rogerson, C. M., & Rogerson, J. M. (2019). Tourism and accommodation services in South Africa: A spatial perspective. In J. Knight & C. M. Rogerson (Eds.), *The geography of South Africa: Contemporary changes and new directions* (pp. 213–220). Springer.
- Rogerson, C. M., & Rogerson, J. M. (2020). Coastal tourism in South Africa: A geographical perspective. In J. M. Rogerson & G. Visser (Eds.), *New directions in South African tourism geographies* (pp. 227–247). Springer.
- Rogerson, C. M., & Rogerson, J. M. (2021). Looking to the past: The geography of tourism in South Africa during the pre-COVID-19 era. In C. M. Rogerson & J. M. Rogerson (Eds.), *Urban Tourism in the Global South: South African Perspectives* (pp. 39–75). Springer.
- Rogerson, C. M. & Rogerson, J. M. (2025). South Africa's 'left behind' spaces: The historical evolution of the former Bantustans. In M. Mdlalose, I. Khambule & N.E. Khalema (Eds.), *Contemporary South Africa and the Political Economy of Regional Development* (pp. 75–92). Routledge.
- Rogerson, C. M., & Sixaba, Z. (2022). The limits of rural tourism in COVID-19 South Africa: Perceptions from 'left behind' rural spaces. *African Journal of Hospitality, Tourism and Leisure*, 11 (1), 362–378. <https://doi.org/10.46222/ajhtl.19770720.207>
- Rogerson, J. M., & Visser, G. (2020). Recent trends in South African tourism geographies. In J. M. Rogerson & G. Visser (Eds.), *New Directions in South African Tourism Geographies* (pp. 1–14). Springer.
- Rogerson, J. M., Lekgau, R., Mashapa, M. & Rogerson, C. M. (2022). Rural tourism challenges in South Africa under COVID-19: Greater Giyani local municipality, Limpopo province. *African Journal of Hospitality, Tourism and Leisure*, 11(3), 1099–1117. <https://doi.org/10.46222/ajhtl.19770720.278>
- Romão, J. & Saito, H. (2017). A spatial analysis on the determinants of tourism performance in Japanese prefectures. *Asia-Pacific Journal of Regional Science*, 1(1), 243–264. <https://doi.org/10.1007/s41685-017-0038-0>
- Royer, J., & Leibert, T. (2025). Suspended in time: Peripheralised and 'left behind' places in Germany. *Geographica Helvetica*, 79, 221–237. <https://doi.org/10.5194/gh-79-221-2024>
- Sanderson, R.K. (2024). *Understanding the Geographies of Left Behind Places Using Geospatial Data* [PhD dissertation, Newcastle University, UK].
- Schmallegger, D., Carson, D., & Tremblay, P. (2010). The economic geography of remote tourism: The problem of connection-seeking. *Tourism Analysis*, 15(1), 125–137. <https://doi.org/10.3727/108354210X12724734537551>

- Scholvin, S., & Lupin, M. (2026). Left-behind spaces in Latin America?: Refining the concept against the backdrop of extractivism in Tocopilla, Chile. *Progress in Economic Geography*, 4(1), 100061. <https://doi.org/10.1016/j.peg.2026.100061>
- Siakwah, P. (2018). Tourism geographies and spatial distribution of tourist sites in Ghana. *African Journal of Hospitality, Tourism and Leisure*, 7(1) 1–19. <https://hdl.handle.net/10210/271501>
- Todes, A., & Turok, I. (2018). Spatial inequalities and policies in South Africa: Place-based or people-centred? *Progress in Planning*, 123, 1–31. <https://doi.org/10.1016/j.progress.2017.03.001>
- Tosun, C., Timothy, D.J., & Öztürk, Y. (2003). Tourism growth, national development and regional inequality in Turkey. *Journal of Sustainable Tourism*, 11(2–3), 133–161. <https://doi.org/10.1080/09669580308667200>
- Tomaney, J., Natarajan, L., & Sutcliffe-Braithwaite, F. (2021). *Sacriston: Towards a Deeper Understanding of Place*. University College, London.
- Trejo-Nieto, A. (2025). Reconsidering development in left-behind places and a critical discussion of place-based strategies. *Geografiska Annaler: Series B Human Geography*, 107(4), 456–472. <https://doi.org/10.1080/04353684.2025.2501006>
- Tups, G., Sakala, E.N., & Dannenberg, P. (2024). Hope and path development in 'left-behind' places – A Southern perspective. *Regional Studies*, 58(6), 1219–1236. <https://doi.org/10.1080/00343404.2023.2235396>
- van Meeteren, M. & Smit, M. (2025). Episodes in Dutch policy to develop 'left behind places' (1945–2025). *Tijdschrift voor Economische en Sociale Geografie*, 116(5), 544–560. <https://doi.org/10.1111/tesg.70048>
- Visser, G. (2007). Geography of tourism. In R. George (Ed.), *Managing Tourism in South Africa* (pp. 34–52). Oxford University Press.

Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licence-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

This open access article may be used under the international license terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)

<https://creativecommons.org/licenses/by-nc-nd/4.0/>



Yakubu, Ibrahim<sup>1</sup> – Ngben, Joseph Mborijah<sup>2</sup> – Spocter, Manfred<sup>3</sup>

## Drivers of Housing Mobility in Low-Income Communities of Tamale, Ghana

### ABSTRACT

Meeting the housing needs of low-income populations remains one of the greatest challenges facing national and local governments in Ghana. As government policy continues to shift toward an enabling approach, access to housing for the poor has become increasingly constrained, and residential mobility in the pro-poor housing sector has become more prevalent. This paper examines the drivers of housing mobility in low-income communities in Tamale using a mixed-methods approach. We analysed participants' housing satisfaction to understand how relocation practices are informed by households' prior housing experiences in the city. The study recorded a high level of satisfaction with general living conditions in the low-income housing system. We found that residents derive a considerable degree of place utility; however, certain aspects of the living environment were found to generate dissatisfaction and to motivate household relocation decisions. In light of the renewed global interest in residential tenure security for the poor, research and policy efforts must seek to better understand housing practices and residential mobility dynamics in low-income communities, in order to propose measures aimed at integrating these practices into the urban fabric as part of the broader goal of achieving inclusive urban development. Accordingly, any policy seeking to promote a stable housing regime in low-income communities must recognise these mobility-enabling factors and devise context-specific measures to improve living conditions. In this regard, the primary entry point should be at the unit level, with efforts geared toward improving the management and use of in-house services to minimise conflicts over the use of and payment for utility services.

*Keywords: housing, mobility, urban development, Ghana, Tamale*

<sup>1</sup> Senior Lecturer, Department of Planning and Land Administration, University for Development Studies, Tamale, Ghana. Email: [iyakubu@uds.edu.gh](mailto:iyakubu@uds.edu.gh), ORCID: <https://orcid.org/0000-0002-4479-0417>

<sup>2</sup> Assistant Lecturer, Department of Planning and Land Administration, University for Development Studies, Tamale, Ghana. Email: [jmngben@uds.edu.gh](mailto:jmngben@uds.edu.gh)

<sup>3</sup> Associate Professor, Department of Geography and Environmental Studies, Stellenbosch University, South Africa, Email: [mspocter@sun.ac.za](mailto:mspocter@sun.ac.za), ORCID: <https://orcid.org/0000-0002-4040-3168>

## INTRODUCTION

The world is besieged by unprecedented rates of accelerated urbanisation and urban population growth, and it is now evident that the global population has crossed the urban divide, with urban dwellers surpassing the number of rural residents (United Nations, 2014; UN-Habitat, 2016). Most of the population growth underlying this transition has occurred in urban areas of the global South, and projections indicate that the majority of future urban population growth will take place in cities in this part of the world. The profound nature of this demographic shift calls for increased research attention and policy prioritisation in metropolitan areas, which will host much of the global urban population in the coming decades. This call is particularly pertinent given that urban transformation in the global South also exposes the deficiencies of formal planning and governance systems in addressing the challenges of new urban realities (Samara et al., 2013; Braathen et al., 2016).

Urban centres continue to confront the complexities of providing adequate housing to meet the escalating demands of rapidly growing populations. Millions of urban households reside in precarious and overcrowded conditions, frequently lacking access to essential infrastructure and basic services (Deboulet, 2016). However, the proportion of residents living under such conditions also varies depending on the criteria used to define them (Braathen et al., 2016; Deboulet, 2016; Turok et al., 2017). Overall, urban growth in the South is intrinsically linked to the development of informal, low-income settlements. These settlements play a crucial role in promoting inclusive urban development and should not be overlooked in public policy.

Fortunately, many countries have ratified international conventions that recognise and uphold housing rights for the poor. The impetus for these developments is derived from the goals and targets of past and present global development agendas. Low-income communities offer a vibrant and functioning downstream housing market, where very cheap—and sometimes free—accommodation is accessible to the poor. An extensive system of social and family networks exists within these communities, providing a considerable degree of agency for different socio-economic groups to secure stable housing through long-standing housing safety nets (Addo, 2013; Acheampong, 2016).

Acheampong (2016) argues that rapid urbanisation has significantly disrupted social networks and stable housing regimes in low-income communities in Ghana. This disruption is attributed to urban modernisation and the accompanying increase in the commercialisation of housing rights. These dynamics, coupled with the urban modernist drive of metropolitan authorities, may have increased housing insecurity and triggered a combined process of voluntary and involuntary residential mobility in Tamale's low-income housing system. While the deterioration of housing conditions in low-income communities appears to be well documented in the literature (Yakubu et al., 2014; Acheampong, 2016; Morrison, 2017; Danso-Wiredu, 2018), far less is known about residential mobility practices at the lower end of urban housing markets in the global South. Families frequently relocate in response to adverse living conditions, as well as shifts in the socio-economic and cultural dynamics associated with the contemporary urban transition. Yakubu et al. (2016) argue that residential mobility in low-in-

come communities of the South is symptomatic of housing insecurity, with household movements revolving around the same or familiar social spaces and driven by housing market constraints. Turok et al. (2017) make similar observations in South Africa's informal settlements; however, their findings suggest that a substantial proportion of mobility practices are progressive in nature, due to the extent of direct state involvement in pro-poor housing provision in South African cities.

In developed countries, low-income housing strategies have shifted toward assisted rental housing programmes, primarily aimed at stimulating the residential mobility of poor households out of areas of concentrated poverty while ensuring their effective integration into urban spaces (Rosenblatt & DeLuca, 2012; Basolo & Yerena, 2017). This is not the case in developing countries, where urbanisation has further complicated the housing needs of low-income households. The chaotic nature of urbanisation, together with the expansion of informal housing systems in developing countries, has led to the adoption of incremental upgrading approaches to ensure the provision of adequate housing for the poor (UN-Habitat, 2016; Bah et al., 2018).

Residential mobility has not featured prominently in urban development programmes implemented in Tamale or elsewhere in Ghana that seek to simultaneously improve access to housing and promote inclusive urban development. Most scholarly work on residential mobility has tended to frame the phenomenon in terms of its contribution to the uncontrolled physical expansion of cities in the global South (Andreasen et al., 2017a; Andreasen et al., 2017b). Although these studies provide useful insights for guiding the development of responsive urban management initiatives, their scope is not sufficiently broad to allow for a comprehensive assessment of the main drivers of residential mobility in low-income housing systems. In general, they fall short of accounting for the factors that induce residential mobility in low-income communities.

This paper addresses two key objectives. First, it examines the drivers of housing mobility practices in low-income communities of Tamale using a mixed-methods approach. Second, it analyses participants' housing satisfaction to understand how relocation practices are informed by households' prior housing experiences in the city. The remainder of the paper is organised into four main sections. First, relevant theoretical and empirical literature is reviewed to situate housing mobility practices within an appropriate analytical framework. Next, the study context and methods are presented, followed by the results and discussion. The final section offers conclusions and highlights key policy implications. This paper contributes to the existing literature on housing in developing countries through a micro-level analysis of the socio-economic drivers of housing mobility in low-income communities.

## LITERATURE REVIEW

Urban residents are frequent movers in search of residential accommodation, and the act of mobility tends to redistribute urban populations, recomposing neighbourhoods across space and time (Pacione, 2009; Knox & Pinch, 2010). Rossi (1982, p. 22) defined residential mobility as “a process by which

individuals adjust their housing to their needs within the constraints of income and market conditions.” This widely cited definition assumes a linear life-cycle framework in which residential mobility is expressed through relocation from one dwelling to another. However, such a linear explanation is less adequate for accommodating the repeat and cyclical mobility practices characteristic of contemporary urban housing markets. For this reason, Coulter et al. (2016) maintain that, given the dynamic nature of urban family structures and living arrangements, a purely linear conception of residential mobility overlooks a substantial proportion of non-discrete movements, wherein mobility functions as an adaptive strategy to life pressures and structural conditions.

Residential mobility encompasses all housing relocations whose origins and destinations lie within the same city. It may involve relocation beyond a given neighbourhood or simply a change of residence within the same neighbourhood. Crucially, such movements are typically short-distance in nature and do not usually result in major disruptions to the daily activity spaces of individuals or households (Coulter et al., 2016). Housing mobility, in its conventional spatio-temporal sense, may be considered a form of migration; however, because such movements occur within the boundaries of a given metropolitan area, they are often not classified as such (Gillespie, 2017).

Peter H. Rossi’s (1955) seminal work laid the theoretical foundation for life-cycle and life-stage perspectives on household residential mobility. He argues that the need for housing mobility arises when changes occur in the structure and composition of a household as it transitions through different phases of the life cycle, from union formation to dissolution (Clark, 2013). Life-cycle changes induce residential mobility either by altering housing or space requirements or by generating or eliminating demand for housing altogether. Conversely, the stage of a household’s life cycle influences both the nature and frequency of demographic changes and the types of housing needs or dissatisfaction these changes may generate (Clark & Onaka, 1983; Clark et al., 1984; Pacione, 2009). In addition to varying levels of housing stress experienced across life-cycle stages, the frequency of socio-economic and demographic changes also differs accordingly.

A range of diverse yet interrelated theoretical perspectives has established the central role of housing stress in the mobility process, conceptualising mobility practices as outcomes of household responses to housing dissatisfaction (Speare, 1974; Clark & Ledwith, 2006; Adriaanse, 2007; Diaz-Serrano & Stoyanova, 2010; Addo, 2016; Basolo & Yerena, 2017). The logic of housing dissatisfaction is grounded in the view that individuals’ ability to make optimal decisions is constrained by limited access to accurate and reliable information. To cope with this limitation, individuals construct simplified cognitive frameworks that enable them to interpret problems and act rationally within these frameworks (Speare et al., 1974; Lersch, 2014). Within this construct, a set of alternatives is typically identified and evaluated using a binary satisfaction criterion. If the current housing situation is deemed satisfactory, no action is taken; if it is unsatisfactory, a search is initiated for a more suitable alternative (Speare, 1974; Kährlik et al., 2012; Fattah et al., 2015).

These constructs likely derive from the underlying logic of Rossi’s (1955) three-stage mobility process: the decision to change residence, the search for alternatives, and the selection among these

alternatives. The decision to move depends on household demographic characteristics and residential satisfaction, typically measured through mobility potential and complaint indices, respectively. The former includes variables such as the age of the household head, household size, and tenure preferences, while the latter relates to housing characteristics with which a household is dissatisfied (Basolo & Yerena, 2017). Early applications of these indices in housing and residential mobility research following Rossi's (1955) pioneering work include studies by Speare (1974), Mohit et al. (2010), Addo (2016), and Zhang & Lu (2016).

Housing mobility practices are direct outcomes of stress arising from the disjuncture between households' housing needs and aspirations and their prevailing housing and environmental conditions. This stress may originate from both internal and external sources, including factors such as changes in household demographic structure and rent increases, respectively (Table 1). It may also stem from housing- or neighbourhood-specific conditions that create a mismatch between desired and actual living environments (Knox & Pinch, 2010; Coulton et al., 2012; Inah et al., 2014; Zhang & Lu, 2016). Importantly, stress mediates the relationship between a household's aspirations and its current housing conditions, and there exists a minimum threshold beyond which relocation becomes likely (Wolpert, 1966). This threshold varies according to socio-economic status, life-cycle stage, and lived experience, resulting in differing levels of tolerance for stress across households. For instance, low-income households in rental accommodation are more likely to relocate under relatively low levels of stress compared to their higher-income counterparts.

Table 1. Sources of Housing Stress and Residential Mobility

| Household             | Housing unit      | Social relation                             | Neighbourhood                                    |
|-----------------------|-------------------|---------------------------------------------|--------------------------------------------------|
| Life cycle stage      | House type        | Inter-household conflicts and contestations | Limited accessibility                            |
| Residential tenure    | Number of rooms   | Unhealthy relationship with neighbours      | Limited access to public services and facilities |
| Socio-economic status | Room size         | Social networks                             | Crime rate                                       |
| Household density     | Cost of housing   | Friends and family                          | Violence and conflicts                           |
|                       | In-house services |                                             |                                                  |
|                       | Privacy           |                                             |                                                  |

Source: Derived from (Pacione, 2009; Mohit et al., 2010; Addo, 2016)

In essence, housing dissatisfaction is engendered by changes in household characteristics, relationships with neighbours and co-residents, housing unit attributes, and neighbourhood conditions. Dissatisfaction may also arise from changes in the criteria used to evaluate these variables. Under conditions of housing stress, household decisions have traditionally been framed within a binary choice between moving and staying (Speare, 1974; Brummell, 1979; Pacione, 2009). However, Moore and Harris (1979) and Chisholm et al. (2016) argue that such decisions should be conceptualised within a broader set of choices subsumed under Hirschman's (1970) 'exit-voice' framework.

According to this framework, a household experiencing stress in relation to prevailing housing and neighbourhood conditions operates within a tripartite set of options. First, it may choose to move out, thereby exiting the existing housing and neighbourhood context, either voluntarily or involuntarily (Chisholm et al., 2016). Such movements may reflect a desire to dissociate from community-based initiatives aimed at contesting prevailing urban conditions, or simply a strategy to access better-quality housing and urban services in another neighbourhood.

The multiplicity of concepts and theories highlights the complex nature of household residential mobility and underscores that mobility practices are shaped by a combination of interdependent variables. Each theoretical perspective sheds light on particular aspects of household mobility behaviour; however, their limitations become evident when attempting to situate housing mobility within broader socio-spatial and institutional transformations in cities. Theories specifically addressing housing mobility among low-income populations also appear insufficient for capturing household experiences in an increasingly dynamic and postmodern urban context. Given the limitations of existing theoretical frameworks, it is difficult to dismiss any single theory outright or to adopt one as offering the most appropriate lens for understanding residential mobility in informal housing systems. Rather than viewing these theories as mutually exclusive, they should be considered complementary, collectively providing a more nuanced understanding of low-income housing mobility practices in the global South.

## METHODS

### Study Context

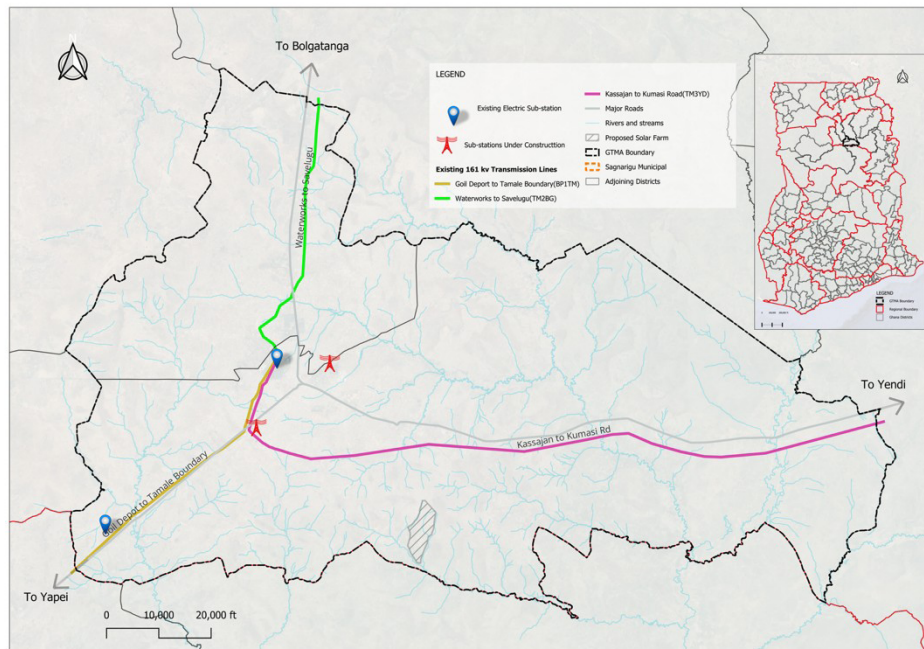
This study was conducted in Tamale (Figure 1), the capital of Ghana's Northern Region and the third-largest urban area after Accra and Kumasi (Fuseini et al., 2017). Tamale's rapid growth and development began when it was designated as the main administrative centre in the Northern Territories of the Gold Coast during the colonial period (Yakubu, 2021). The city's population increased from fewer than 1,500 in the early twentieth century to 17,000 in 1948 and over 58,000 in 1960. According to the 2021 census, the population reached 716,455 (Ghana Statistical Service, 2021).

In line with urban growth patterns observed across the African continent (Turok, 2017), Tamale's rapid urbanisation has been accompanied by limited economic development and insufficient housing capacity to accommodate the expanding urban population. Consequently, a significant proportion of residents live in substandard housing conditions characterised by high levels of housing instability. The city's housing situation—particularly in disadvantaged neighbourhoods—has contributed to the prevalence of housing mobility practices, thereby undermining residents' access to stable housing.

Access to housing is fundamental to all aspects of urban life, and for low-income households it provides a critical gateway to urban opportunities, including employment, education, family life, and the development of social capital (The World Bank, 2015). As in many other Ghanaian cities, housing

provision in Tamale is largely driven by informal private development, with minimal regulation and enforcement of standards. State-led housing provision remains limited and is predominantly occupied by elites and public servants (Yakubu et al., 2014; Yakubu et al., 2016).

Figure 1. Map of the Tamale Metropolitan Area



Source: Author's construct, 2026

A major challenge in the housing sector—particularly at the lower end of the market—is poor-quality, unplanned development, which places considerable strain on the provision of essential services (Fuseini et al., 2017). Rapid urbanisation has also led to increased occupancy rates in existing low-income communities, resulting in the infilling of vacant plots and the informal extension of housing units (Yakubu et al., 2014). Overall, it is argued that, aside from state-developed housing areas and a limited number of privately developed enclaves inhabited by the elite, most urban residents live in unplanned settlements with restricted access to public infrastructure and services (Fuseini & Kemp, 2016).

The compound house represents the dominant form of residential accommodation for low-income households in Tamale (Yakubu et al., 2014; Yakubu, 2021). It is the oldest architectural typology in the city and is characterised by a flexible, incremental development pattern that accommodates low-income households in shared residential arrangements. A typical compound house consists of multiple rooms organised around a central open space or courtyard. This housing form is relatively affordable and remains attractive to low-income residents. Compound housing can be understood as an adaptation of indigenous housing systems to meet pro-poor housing needs in the context of rapid urbanisation.

Schlyter (2003) conceptualises the social dynamics of sharing, negotiation, and cooperation in the use of limited residential space as *multihabitation*. Such arrangements foster a conducive environment for cooperation and collective living among low-income households. The shared nature of multihabitation tends to reduce rental costs and the expenses associated with housing services, thereby enhancing affordability for the poor (Addo, 2016).

## Study Design and Data Collection

The fieldwork for this research was conducted in Tamale as part of a broader project investigating housing mobility practices in low-income communities. A mixed-methods approach was adopted to provide a synergistic and mutually reinforcing framework for generating valid and reliable data to understand residential mobility patterns in these communities. This approach draws on pragmatism as an alternative philosophical framework to traditional positivist, post-positivist, and constructivist paradigms in social research (Bryman, 2006; Morgan, 2007; Creswell, 2009; Greene & Hall, 2010).

Given the multilayered nature of residential mobility practices in low-income communities, a mixed-methods approach proved particularly useful in unpacking this complex phenomenon into analytically meaningful themes by integrating complementary datasets. Quantitative data obtained through a household questionnaire survey provided numerical measures of various aspects of household mobility behaviour, while qualitative data from interviews enabled a more detailed examination of the personal and structural factors underlying housing mobility decisions.

The research context, coupled with the complexity of housing mobility practices in low-income communities, necessitated a three-phase data collection strategy. Phase one involved a series of in-depth interviews with nine (9) local government representatives (Assembly Members), with three drawn from each of the selected low-income communities located in indigenous, intermediate, and peri-urban residential areas. The inclusion of Assembly Members was informed by their in-depth knowledge of housing conditions and living environments in their respective communities. They also play key roles in facilitating vacancy searches, tenant recruitment, and mediating housing-related conflicts at the community level.

This was followed by interviews with public officials from relevant stakeholder institutions, including the Municipal and Metropolitan Planning and Coordination Units, the Land Use and Spatial Planning Authority, the Department of Urban Roads, and the Rent Control Department. These institutions are involved in policy formulation and implementation processes that directly influence housing practices and residential mobility decisions in low-income communities. Data obtained from these interviews informed the refinement of research instruments and data collection strategies used in subsequent phases.

The second phase involved a household survey of 395 households across nine low-income communities in Tamale. A structured questionnaire was used, comprising four main sections designed to address specific aspects of the study objectives. The survey collected baseline information on

households' socio-economic characteristics and tenure profiles, including housing types and living conditions across all dwellings occupied by the household in the ten years preceding the survey.

This background information was complemented by data derived from a set of questions assessing residential satisfaction. These data were intended to serve as potential predictors of residential mobility. A range of housing and socio-spatial characteristics was listed in the questionnaire, and respondents were asked to rate their level of satisfaction for each using a five-point Likert scale: not satisfied at all, not satisfied, neutral, satisfied, and extremely satisfied. For analytical purposes, these categories were later recoded into two groups: satisfied and not satisfied. This perceptual approach was considered more appropriate in the context of this study than objective indicators, which are often based on longitudinal spatial analyses of housing conditions.

## Sampling Design and Procedure

A stratified multistage sampling procedure was employed to select respondents for the household questionnaire survey. First, low-income communities in Tamale were classified into three zones based on guidelines provided in the 2017 fee-fixing resolutions for property rates in the Tamale Metropolitan and Sagnarigu Municipal Assemblies. These resolutions stratified residential areas of the city into zones for the purpose of levying property rates, using criteria such as housing type, structural quality, and amenity value.

Low-income communities were then delineated from this city-wide residential classification and regrouped into residential clusters, drawing on established approaches in the literature as well as insights from interviews with officials of the Metropolitan Planning and Coordination Units. Table 2 presents the resulting classification of low-income communities.

In the second stage of the sampling procedure, three localities were purposively selected from each cluster, and proportionate samples were determined based on each locality's share of the housing stock relative to the total stock within its respective residential cluster. In total, 400<sup>4</sup> houses were selected for the household survey. The sample sizes for the residential clusters were then proportionally allocated across the selected localities within each cluster (Table 3).

In the absence of a reliable sampling frame for the study population, and given the predominance of multihabited compound housing in the study localities (Yakubu et al., 2014), an adapted form of systematic sampling was employed to select houses for the household survey. First, central landmark features were identified in each sampled locality as starting points for house selection. For consistency, every other house to the north, south, east, and west of these landmarks was included in the sample.

<sup>4</sup> Sample size was derived from the formula:

$$n = \frac{N}{1 + N(e)^2}$$
 where n=sample size, N= population size and e is the level of precision. A 95% confidence interval was chosen. The calculated sample size was 389. Eleven houses were added to make provision for potential non-responding households.

Table 2. Classification of Low-Income Communities in Tamale

| Residential clusters*                  | Localities         | Households    | Housing stock |
|----------------------------------------|--------------------|---------------|---------------|
| Indigenous low-income communities**    | Aboaboo            | 1610          | 687           |
|                                        | Chengli            | 1889          | 740           |
|                                        | Moshi Zongo        | 2288          | 979           |
|                                        | Sabon-Gida         | 1522          | 577           |
|                                        | Gulkpegu           | 1524          | 603           |
|                                        | Tishigu            | 2388          | 1036          |
|                                        | <b>Subtotal</b>    | <b>11 221</b> | <b>4622</b>   |
| Intermediate low-income communities*** | Sagnarigu          | 1243          | 878           |
|                                        | Nyohini            | 6934          | 1334          |
|                                        | Sakasaka           | 633           | 380           |
|                                        | Zogbeli            | 2015          | 833           |
|                                        | Chogu Mmanayili    | 2675          | 1679          |
|                                        | Kukuo              | 953           | 674           |
|                                        | Gumbihini          | 889           | 516           |
|                                        | <b>Subtotal</b>    | <b>15 342</b> | <b>6294</b>   |
| Peri-urban communities****             | Nyohini yapala     | 292           | 157           |
|                                        | Kakpagyili         | 1267          | 962           |
|                                        | Vitting            | 394           | 273           |
|                                        | Banvim             | 257           | 363           |
|                                        | Bupiela            | 968           | 428           |
|                                        | Dabokpaa           | 1570          | 983           |
|                                        | Tunayili           | 372           | 224           |
|                                        | <b>Subtotal</b>    | <b>5120</b>   | <b>3390</b>   |
|                                        | <b>Grand total</b> | <b>31 683</b> | <b>14 306</b> |

Source: (Ghana Statistical Service, 2014b) Notes: \*Derived from the 2017 fee-fixing resolutions for the Tamale Metropolitan and Sagnarigu Municipal Assemblies. \*\*These are indigenous Dagomba communities located at the centre of the city. They constitute the pre-urban settlements of Tamale. Housing is of low quality, comprising predominantly very old compound houses, with isolated instances of traditional thatched structures. Property and amenity values in these communities are very low. \*\*\*These areas are inhabited by long-term urban migrants, alongside a small proportion of the indigenous urban population. The compound house form continues to dominate the housing stock; however, amenity values are slightly higher than in the indigenous core areas. Residential property values are relatively high, although considerable variation exists both between and within localities. \*\*\*\*Peri-urban communities consist of former rural settlement nuclei that have been incorporated into the city as a result of rapid and largely uncoordinated spatial expansion. This peri-urban interface is characterised by two principal housing types: traditional thatched houses occupied by indigenous rural households, and a diverse mix of compound houses and villas reflecting the housing aspirations of low-income and middle-class settlers, respectively. These areas are largely deprived of public service provision, and their amenity values are among the lowest in the city. Property values are also generally low, although significant variation exists across and within communities.

To be eligible for participation, household heads or their adult representatives (persons aged 18 years and above) must have relocated at least once within the ten years preceding the survey. An additional inclusion criterion required that a household's previous residence had been located within the city. This ensured the exclusion of recent rural migrants who may have settled in low-income neighbourhoods but lacked prior residential experience within the city.

Table 3. Distribution of the Sample Among Surveyed Localities

| Residential clusters                | Locality           | Housing stock | Sample size |
|-------------------------------------|--------------------|---------------|-------------|
| Indigenous low-income communities   | Aboaboo            | 687           | 33          |
|                                     | Moshi Zongo        | 979           | 46          |
|                                     | Tishigu            | 1036          | 49          |
|                                     | <b>Subtotal</b>    | <b>2702</b>   | <b>128</b>  |
| Intermediate low-income communities | Nyohini            | 1334          | 61          |
|                                     | Zogbeli            | 833           | 38          |
|                                     | Choggu Manayili    | 1679          | 77          |
|                                     | <b>Subtotal</b>    | <b>3846</b>   | <b>176</b>  |
| Peri-urban communities              | Tunayili           | 224           | 23          |
|                                     | Vitting            | 273           | 28          |
|                                     | Bupielu            | 428           | 44          |
|                                     | <b>Subtotal</b>    | <b>925</b>    | <b>956</b>  |
|                                     | <b>Grand total</b> | <b>7473</b>   | <b>399</b>  |

In multihabited compound houses, all eligible household heads available at the time of the survey were approached for interviews, except those who declined participation. Among those available, the most willing household heads or their adult representatives were selected. In practice, more houses were surveyed in each sampled locality than initially proposed in the sampling design. In localities such as Choggu Manayili, Nyohini, and Tishigu, the sampling approach did not yield the desired number of eligible households due to ineligibility and/or unwillingness to participate. Consequently, a snowball sampling technique was employed to identify additional respondents.

Information collected from the household survey was subsequently used to construct a sampling frame for follow-up interviews. Preliminary analysis of the survey data revealed emerging patterns and distinctive cases of residential mobility that warranted further exploration through in-depth, unstructured interviews. No fixed set of questions was used; instead, the interviews took the form of guided conversations aimed at uncovering the underlying reasons for observed mobility patterns.

## Data Analysis

A combination of qualitative and quantitative analytical techniques was employed to analyse the field data. Qualitative data derived from the survey were coded into relevant thematic categories and presented using tables. Interview data were transcribed verbatim, and emerging themes were classified in line with the study objectives. The resulting qualitative findings are presented through detailed discussions, narrative accounts, event descriptions, and graphical illustrations.

Quantitative data obtained from the household survey were processed using IBM SPSS (version 25). The statistical techniques applied included cross-tabulation, rates and percentages, and basic descriptive statistics. A parallel mixed-methods analytical framework was adopted to integrate

findings from the qualitative and quantitative strands. This approach enabled both datasets to inform each other throughout the analysis and presentation of results (Onwuegbuzie & Combs, 2010).

Despite the analytical independence of the two methods, their combined application contributed to a more comprehensive understanding of the drivers of housing mobility practices at the lower end of the urban housing market. The findings were effectively integrated to generate the meta-inferences presented in this study.

## RESULTS

### Socio-Economic Profile of Participants

To contextualise housing mobility, a range of relevant socio-economic variables (Table 4) was captured in the survey.

Table 4. Descriptive Statistics of the Socio-Economic Attributes of Survey Participants

| Variables                           | Frequency | Percentage (%) |
|-------------------------------------|-----------|----------------|
| Male                                | 283       | 71.6           |
| Female                              | 112       | 28.4           |
| Mean age (years)                    | 38        | SD=10.5        |
| Mean household size                 | 4.4       | SD=3.1         |
| Married                             | 278       | 70.4           |
| Not married                         | 84        | 21.3           |
| Divorced                            | 16        | 4              |
| Widowed                             | 17        | 4.3            |
| Employment status: Private informal | 229       | 58             |
| Private formal                      | 52        | 13.2           |
| Public sector                       | 100       | 25.3           |
| Unemployed                          | 14        | 3.5            |
| No formal education                 | 102       | 25.8           |
| Basic education                     | 63        | 16             |
| Secondary school                    | 111       | 28.1           |
| Tertiary                            | 119       | 30.1           |
| Household income less than GHS100   | 45        | 11.4           |
| GHS100-350                          | 105       | 26.6           |
| GHS351-550                          | 66        | 16.7           |
| GHS551-900                          | 85        | 21.5           |
| GHS901-1500                         | 64        | 16.2           |
| GHS1501-2200                        | 21        | 5.3            |
| GHS 2201 and more                   | 9         | 2.3            |
| Sample size                         | 395       |                |

The inclusion of these variables facilitated a deeper understanding of the context-specific drivers of mobility practices within the low-income housing system. Collectively, these variables provide a comprehensive backdrop for analysing residential mobility in this context. Descriptive statistics for the socio-economic variables obtained from the household questionnaire survey are presented in Table 4.

The average age of respondents was 38 years (standard deviation [SD] = 10.5), with a minimum age of 22 and a maximum of 82 years. Seventy-two per cent of surveyed households were male-headed, and 70% of respondents were married. Close to three out of five respondents (58%) were engaged in informal economic activities (e.g. farming, petty trading, and artisanal work), while only 3.5% were unemployed. The remaining 38.5% were employed in the formal sector (public or private).

The level of educational attainment among survey participants was relatively low, with one in four respondents (25.8%) having no formal education, compared to a national average of one in five (19.7%) (Ghana Statistical Service, 2014a). Approximately one-third of respondents had attained tertiary education, while the remainder had completed either basic (16%) or secondary (28%) education. The relatively low level of educational attainment may help explain the high prevalence of informal sector employment and the generally low levels of household income observed in the sample.

### **The Low-Income Housing System in Tamale**

In many parts of urban West Africa, housing occupied by low-income populations typically takes the form of compound houses (Amole et al., 1993). These structures vary considerably in size and layout, possess a distinctive incremental development pattern, and have a strong capacity to accommodate multiple households in shared residential arrangements.

A compound house (Figure 2) is a single-storey residential structure comprising several rooms arranged around a central open courtyard. The courtyard functions as a semi-public space, onto which all rooms open. In addition to this shared space, essential housing services (such as electricity and water) and facilities (including toilets, bathrooms, and kitchens) are communally used by resident households. All households share responsibility for the provision and maintenance of these facilities.

Approximately 97% of surveyed households in the study communities resided in compound houses of varying shapes, sizes, and layouts. The remaining households lived in bungalows or other forms of housing designed for single-household occupancy. Compound houses differ in terms of construction materials and the degree of completion of individual units, reflecting the incremental nature of housing development. Table 5 presents the main housing types identified in the study communities. This typology is based on construction materials and the relative size and level of completion of housing units. Fully completed compound houses constructed with cement blocks (referred to as “block houses” in Table 5) are widely distributed across all residential clusters in the city.

Figure 2. A Compound House in an Indigenous Low-Income Community, Tamale



Source: Field survey, 2017

Table 5. Types of Housing by Zone of Locality

| House type                         | Zone of locality                  |                                     |                                   | Total       |
|------------------------------------|-----------------------------------|-------------------------------------|-----------------------------------|-------------|
|                                    | Indigenous low-income communities | Intermediate low-income communities | Peri-urban low-income communities |             |
| Completed compound house (Block)   | 37 (28.9%)                        | 65 (37.6%)                          | 28 (29.8%)                        | 130 (33%)   |
| Uncompleted compound house (Block) | 25 (19.5%)                        | 54 (31.2%)                          | 36 (38.3%)                        | 115 (29.1%) |
| Completed mud house                | 45 (35.2%)                        | 32 (18.5%)                          | 16 (17.0%)                        | 93 (23.5%)  |
| Uncompleted mud house              | 11 (8.6%)                         | 13 (7.5%)                           | 9 (9.6%)                          | 33 (8.4%)   |
| Thatched house                     | 6 (4.7%)                          | 5 (2.9%)                            | 3 (3.2%)                          | 14 (3.5%)   |
| Other <sup>5</sup>                 | 4 (3.1%)                          | 4 (2.3%)                            | 2 (2.1%)                          | 10 (2.5%)   |
| <b>Total</b>                       | <b>128</b>                        | <b>173</b>                          | <b>94</b>                         | <b>395</b>  |

Source: Field survey, (2017)

The intermediate and peri-urban zones are dominated by block houses, accounting for 69% and 68% of housing stock, respectively, compared to 48% in the indigenous sector. These distributions are partly attributable to the relative age of these zones in relation to the onset of urbanisation in Tamale. The indigenous areas represent the pre-urban settlements of the city and therefore contain the oldest stock of compound housing, constructed using local materials and based on traditional architectural forms. Although many of these older compound houses have undergone transformation as a result of urban development, the housing stock remains dominated by a mixture of mud houses, with occasional instances of thatched compounds.

<sup>5</sup> This includes a hybrid of cement block and mud compounds as well as bungalows and other forms of housing meant for unique occupancy. In the latter category, households were persons who relocated into employer-provided housing or had previously lived in such housing and had relocated into the sampled communities upon retirement.

The dominance of such housing types declines with increasing distance from the urban core, as reflected in the combined proportions of all mud-based housing types (completed, uncompleted, and thatched) across the three zones: indigenous (49%), intermediate (29%), and peri-urban (30%) low-income communities. This pattern reflects a gradual shift away from the use of local building materials over time, as newer housing developments increasingly rely on modern construction materials and technologies.

The predominance of block houses in the intermediate and peri-urban zones also reflects a growing aspiration for homeownership among both middle- and low-income households, as evidenced by the outward expansion of informal housing development across these ecological zones (Larbi, 1994; Fuseini & Kemp, 2016; Fuseini et al., 2017). Interviews with community-level stakeholders further revealed that some long-term residents in the indigenous areas relocate to peripheral zones in order to consolidate ownership of two- to three-room compound houses. In contrast, a smaller, more privileged group invests in additional housing units to accommodate parts of their extended families, particularly in response to increasing density pressures within family compounds.

The density threshold—measured in terms of room occupancy—across all housing clusters was considerably high relative to average household sizes (Table 6). Half of the surveyed households (50%), regardless of size, occupied a single room in compound houses. The proportion of single-room occupancy was particularly pronounced across the zones, with 41%, 49%, and 63% of households living in single rooms in indigenous, intermediate, and peri-urban communities, respectively. This indicates a high level of residential density, especially when considered against an average household size of 4.4 persons and a standard occupancy benchmark of two persons per room for high-density, low-income communities (Town and Country Planning Department, 2011).

Such levels of crowding have the potential to undermine place utility and may prompt shifts in household preferences away from existing housing and neighbourhood conditions.

Table 6. Room Occupancy Rates by Housing Clusters

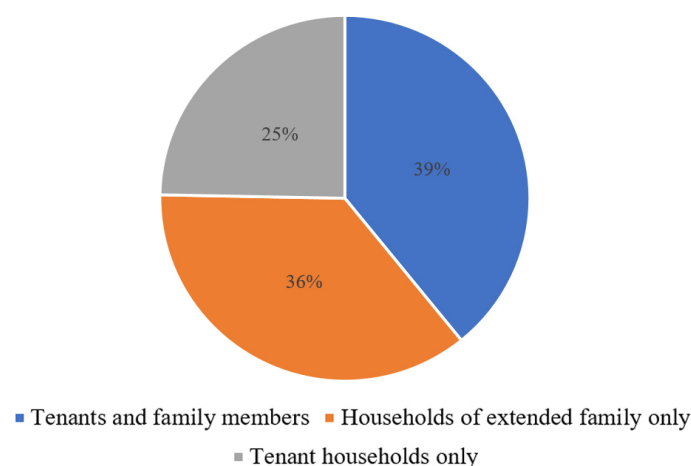
| Room occupancy             | Housing clusters                  |                                     |                                   | All households |
|----------------------------|-----------------------------------|-------------------------------------|-----------------------------------|----------------|
|                            | Indigenous low-income communities | Intermediate low-income communities | Peri-urban Low-income communities |                |
| Single room                | 53 (41.4%)                        | 85 (49.1%)                          | 60 (63.8%)                        | 198 (50.1%)    |
| Two rooms                  | 39 (30.5%)                        | 61 (35.3%)                          | 23 (24.5%)                        | 123 (31.2%)    |
| Three rooms                | 27 (21.1%)                        | 16 (9.2%)                           | 6 (6.4%)                          | 49 (12.4%)     |
| Four & above               | 9 (7.0%)                          | 11 (6.4%)                           | 5 (5.3%)                          | 25 (6.3%)      |
| <b>Sample size</b>         | <b>128</b>                        | <b>173</b>                          | <b>94</b>                         | <b>395</b>     |
| <i>Mean household size</i> | <i>4.46</i>                       | <i>4.02</i>                         | <i>5.05</i>                       | <i>4.41</i>    |

Source: Field survey, (2017)

In examining residential mobility trajectories in multihabited low-income housing systems, tenure composition and the social relations forged and sustained within housing units are as important

as the physical attributes discussed above. Compounds vary considerably in terms of kinship ties and the tenure composition of co-residents. Interviews with community-level stakeholders revealed that family compounds are typically inhabited by members of extended families. As many as 36% of survey participants had previously lived in family compounds (Figure 3). Residents may have co-inherited individual rooms from a common founding owner or may have been allocated space by a resident owner or the most senior family elder. This form of subsistence housing has been described in the literature as rent-free accommodation obtained either by right or by privilege (Korboe, 1992; Acheampong, 2016; Danso-Wiredu, 2018).

Figure 3. Tenure Types in Low-Income Communities in Tamale



Source: Field survey (2017)

Family compounds are often characterised as pseudo-public housing, accommodating households comprising siblings, parents, uncles, aunts, and grandparents. The interplay between the physical and social components of the low-income housing system, as discussed above, provides an important context for understanding the place utility of low-income urban residents in Tamale. Residents' self-assessments of housing satisfaction offer valuable insights into aspects of the housing environment that may generate dissatisfaction and, in turn, influence decisions to relocate.

## Housing Satisfaction and Residential Mobility Potential

Housing satisfaction reflects a household's level of contentment with place utility, which is broadly defined here to encompass dwelling unit characteristics, access to services, neighbourhood conditions, and the social environment (Yakubu & Spocter, 2020). When households report high levels of satisfaction with these aspects of their prior housing experiences, it suggests that residential mobility decisions are not primarily driven by dissatisfaction with housing and living conditions.

Participants' satisfaction ratings for these general housing attributes were assessed across four thematic domains using 15 variables (Table 7), selected based on their relevance to relocation practices



in the low-income housing system. The findings indicate that overall residential satisfaction among surveyed households was relatively high, at approximately 70%, compared to a lower residential mobility potential of around 30%.

Table 7. Housing Satisfaction and Indices of Residential Mobility Potential

| Housing attributes               | Variables                              | Satisfaction levels |               | Mobility potential indices <sup>1,2</sup> |
|----------------------------------|----------------------------------------|---------------------|---------------|-------------------------------------------|
|                                  |                                        | Satisfied           | Not satisfied |                                           |
| Housing unit characteristics     | Size of room(s)                        | 245 (62%)           | 150 (38%)     | 28.1%                                     |
|                                  | Design of house                        | 271 (68.6%)         | 124 (31.4%)   |                                           |
|                                  | Cooking and storage facilities         | 199 (50.4%)         | 196 (49.6%)   |                                           |
|                                  | Bath and toilet facilities             | 222 (56.2%)         | 173 (43.8%)   |                                           |
| In-house services                | Water                                  | 212 (53.7%)         | 183 (46.3%)   | 51.6%                                     |
|                                  | Electricity                            | 347 (87.8%)         | 48 (12.2%)    |                                           |
|                                  | Refuse handling                        | 166 (42%)           | 229 (58%)     |                                           |
|                                  | Quality of in-house services           | 201 (50.9%)         | 194 (49.1%)   |                                           |
| Social environment               | Safety and security                    | 129 (32.7%)         | 266 (67.3%)   | 71.1%                                     |
|                                  | Inter-household cooperation            | 80 (20.8%)          | 313 (79.2%)   |                                           |
|                                  | Privacy                                | 158 (40%)           | 237 (60%)     |                                           |
| Accessibility to public services | Quality of roads                       | 301 (76.2%)         | 94 (23.8%)    | 32.4%                                     |
|                                  | Proximity to places of worship         | 336 (85.1%)         | 59 (14.9%)    |                                           |
|                                  | Access to health facilities            | 150 (38%)           | 245 (62%)     |                                           |
|                                  | Access to basic education for children | 312 (79%)           | 83 (21%)      |                                           |
| Overall ratings                  | All variables                          | 268 (67.8%)         | 127 (32.2%)   | 32.2%                                     |

Notes: Mobility potential indices are based on the weighted sum of dissatisfaction ratings for all variables under each housing attribute. Mobility potential indices are classified into quintile classes, namely [0%–25%] = Very low; [25.1%–50%] = Low; [50.1%–75%] = High; [75.1%–100%] = Very high, following the work of (Mohit et al., 2010; Addo, 2016). Source: Field survey, (2017)

Satisfaction ratings were also high for both dwelling unit characteristics and accessibility to public services, with corresponding residential mobility potential indices of approximately 28% and 32%, respectively. These results suggest that neither dwelling unit characteristics nor access to public services constitute the primary drivers of household relocation decisions. This finding challenges dominant perspectives on the role of housing quality and living conditions in shaping mobility within low-income housing markets.

Taken together, these aggregate satisfaction ratings indicate that housing mobility practices in low-income communities are less strongly associated with dissatisfaction related to observable features of the residential environment—despite the well-documented effects of deteriorating housing and environmental conditions in previous studies (Yakubu et al., 2014; Fuseini & Kemp, 2016; Fuseini et al., 2017)—and are more closely linked to the structural and socio-cultural contexts of housing consumption within the pro-poor sector.

A focus on the aggregate picture masks the high residential mobility potential indices reported for in-house services (52%) and households' social environment (71%). In the next two subsections, greater attention is given to these two housing attributes, which exhibit relatively high residential mobility potential indices.

### **Residential Mobility Potential of the Social Environment**

A household's social environment, defined in terms of the safety and security of life and property, interhousehold cooperation, and the sense of privacy, evinced the highest residential mobility potential index among all assessed housing attributes (Table 7). The satisfaction ratings for all these variables ranged from low to very low, thereby producing a considerably high residential mobility potential index. In-depth discussions with participants at both household and neighbourhood levels revealed that dissatisfaction with the safety and security of housing is tied to inducements to move and/or displacement effects of perennial rainstorms, flooding, fire outbreaks, and spiritual beliefs and practices (Yakubu & Spocter, 2020). These factors interfere with the residential stability of households belonging to various tenure groups across all ecological areas. The informal nature of housing development exposes residents to recurrent flooding. The relative ease with which floodwaters washed away people's homes or rendered them uninhabitable in June/July 2017 (Figure 4) may have deepened participants' fears concerning the safety and security of their homes.

An engineer at the metropolitan administration explained that vast stretches of land in Builpeila and Gumani have been earmarked as flood-prone areas in the city's approved structure plan. The entire area has been built up, and the hazardous pattern of development makes flooding an annual occurrence, threatening the safety and security of low-income urban residents. Floods have subjected poor households to frequent seasonal relocation practices, whereby households temporarily vacate their homes when inundated and return once the waters recede. In other cases, owners have had to abandon their homes altogether because the premises are rendered unsafe for human habitation after seasonal floods (Figure 5).

Figure 4. Compound Inundated by Floodwaters in Tamale



Source: Field survey, June (2017)

Figure 5. Courtyard and Exterior Views of an Abandoned Compound House in Tamale



Source: Field survey, (May 2017)

The residential mobility potential indices for interhousehold cooperation and sense of privacy were 79% and 60% (Table 7), respectively. Interviews with participants revealed that the main areas of disagreement, which generated considerable dissatisfaction among households, include payment for the use of in-house services, home maintenance and cleaning schedules, family conflicts, and petty

quarrels among co-residents. In all study communities, informal daily duty schedules were drawn up for women to clean communal areas of the compound—courtyards, baths, and toilets—on a rotational basis. Mix-ups regarding assigned days and responsibilities often generate conflicts and contestations among women in the household. Daily duty schedules were reported to function more effectively in compounds inhabited by family relatives. Where compound residents comprise both family members and rent-paying tenants, it becomes extremely difficult to include unmarried men in the maintenance roster, even when there are few women in the compound. This is consistent with a highly patriarchal social context in which housekeeping in compound houses is conventionally regarded as the sole responsibility of women. In the few instances where maintenance rosters were compiled according to the number of rooms and included all occupants regardless of gender, unmarried men in residence often had difficulties cooperating. This was identified as a significant source of interhousehold conflict and infighting. Additionally, petty quarrels between children may escalate into major disputes among parents and can even sever interhousehold cooperation within compounds. Beyond the sharing arrangements for bathrooms, toilets (where available), and other facilities, residents also struggle to keep highly personal matters hidden from co-residents (Yakubu & Spocter, 2020).

### **Residential Mobility Potential for In-House Services**

Relatively better access regimes for water (88%) and electricity (79%) were reported for all households in Tamale in the 2010 Population and Housing Census (Ghana Statistical Service, 2013). Interviews with city authorities revealed that water supply is rationed across neighbourhoods, with the most serviced areas receiving water for two to three days per week, depending on the season (with supply becoming more erratic in the dry season). This rationed distribution operates within a three-tier system, comprising in-house connections (40%), outside-home connections (40%), and public standpipes (8%) (Fuseini & Kemp, 2016). In-house water connections are considerably better in indigenous low-income communities compared to intermediate and peri-urban zones; however, supply interruptions occur across all ecological areas (Ngben & Yakubu, 2023). Interviews further indicated that some households without access to in-house piped connections enter into sharing arrangements with neighbouring houses and contribute to the payment of monthly service bills, while the majority rely on water vendors and public standpipes. The rationed water supply system makes it necessary for households to maintain water storage containers in their homes. Residential dissatisfaction arises from a combination of some or all of these constraints. A key finding is that strained power relations in multi-inhabited compounds, combined with water supply interruptions, contribute to housing dissatisfaction even in dwellings with in-house pipe connections. A 43-year-old woman recounts how an unfair indoor water management system imposed by her landlord led to her relocation.

What worried me most was that his two wives conferred on themselves the right or privilege to fetch water before everyone else in the compound. They were always the first to fill their storage containers whenever the tap was opened, before anyone else in the compound gets

access. .... So, by the time the rest of us get the opportunity to fetch, the pressure becomes very low and the taps eventually get closed. I always bought water from vendors even though I paid my water bills on time. It was one of the reasons why I moved from that house (Interview with a participant, April 2017).

The embedded power relations in multi-inhabited compounds with diverse tenure compositions tend to structure cooperative behaviour among non-owning co-residents. Resident owners often take advantage of their privileged positions to confer undue benefits on themselves in relation to payments for the use of in-house services. In some cases, owners exempt themselves entirely from the payment of service bills; in most others, cost-sharing formulae for utilities are manipulated to their advantage.

Indeed, payment for electricity appears to be highly contested, even though electricity recorded the lowest residential mobility potential index (12.2%). This low rating is attributable to the very high incidence of in-house connections to the electricity grid across all ecological areas of the city. However, this is accompanied by numerous informal and illegal practices through which residents reconnect themselves, even after service providers have temporarily disconnected supply in response to the non-payment of electricity bills (Yakubu, et al., 2018). A respondent explained that his decision to relocate was premised on the irresponsible conduct of his landlady with respect to the payment of electricity bills.

I am told unpaid electricity bills in the house had piled up to unsustainable levels some time ago, and the landlady negotiated with the Northern Electricity Company [the service provider] to write off the debt and install a prepaid meter. From this point, she took up the responsibility to collect electricity bills from tenants. She puts pressure on you to collect contributions for electricity but ends up squandering the money. Then she goes behind to arrange for a quack electrician to do 'U-touch' [local jargon for tempering with pre-paid meters to steal power]. Before I left the house, the service providers detected the illegality and surcharged all residents. (Interview with a participant, May 2017).

In general, an important aspect of these narratives is that the provision, management, and use of housing services generate significant levels of stress at multiple scales—housing unit, community, and city—which may, in turn, drive residential mobility decisions within the low-income housing system. The intensity of this stress and its net effects on individual moving behaviour may vary depending on housing tenure prototypes and underlying power relations. Intrahousehold disagreements regarding the payment and use of in-house services partly explain the very high residential mobility potential index reported for the social environment attribute.

In sum, the housing system brings together people with modest or no incomes into forms of residential cohabitation that provide a considerable degree of utility for low-income families. It is evident, however, that certain features of the housing system and its embedded socio-cultural practices exert significant pressure on housing occupancy, generating dissatisfaction that, in turn, compels households to relocate.

## CONCLUSIONS

The low-income housing system in Tamale varies considerably in terms of physical appearance, layout, material composition, and, most notably, tenure prototypes. The different forms of compound housing highlighted in the discussion offer various possibilities for accommodating low-income populations through differentiated tenancies across the three defined ecological areas of the city. These compound housing types provide appropriate accommodation for urban households with modest or no incomes and help guarantee their right to the city.

Notwithstanding the unfavourable living conditions and the precarious nature of service provision reported in previous studies and national surveys, this study found a high level of satisfaction with overall living conditions in the low-income housing system. Against the odds, residents derive a considerable degree of place utility. However, certain aspects of the living environment were found to generate dissatisfaction and motivate relocation decisions. The majority of movers expressed satisfaction with the general attributes of the housing system, suggesting that residential mobility practices are not necessarily linked to deteriorating living conditions.

Analysis beyond the aggregate picture reveals very high residential mobility potential indices related to the use and management of in-house services, as well as to the social environment of households. Broadly speaking, residential mobility in the low-income housing sector reflects two interrelated processes. First, mobility practices result from choices exercised by households in response to the dynamics of the low-income housing system; these choices are shaped by changes in household needs or in the normative criteria used to assess those needs. Second, residential mobility may be imposed on individuals through direct state action or through the occurrence of extreme natural events, such as rainstorms, flooding, and fire outbreaks.

Whether households exercise a significant degree of control over their relocation decisions or not, mobility practices tend to occur within the same social spaces or become embedded in patterns and processes that reinforce the socio-economic disadvantages of the poor. This observation calls into question the widely held notion of a housing career, in which residential mobility is assumed to lead to direct improvements in housing and living conditions.

In light of this, policies aimed at promoting stable housing regimes in low-income communities must recognise these mobility-enabling factors and develop context-specific measures to improve living conditions. A key entry point is at the housing unit level, where efforts should focus on improving the management and use of in-house services to minimise conflicts over their use and the payment of utility bills. In the medium to long term, urban authorities should collaborate with utility service providers to increase the installation of service meters in multi-inhabited compounds in proportion to household occupancy. The current system, in which each housing unit is allocated a single service meter regardless of the number of households, contributes to disputes among co-residents and creates conditions that encourage residential mobility. Reducing the number of households sharing a single meter over time would help minimise interhousehold conflicts related to the use and payment of housing

services. This single measure could significantly enhance the stability of housing arrangements for low-income urban residents and should be incorporated into the implementation of current housing policies that recognise and promote the compound house form.

## REFERENCES

- Acheampong, R. A. (2016). The family housing sector in urban Ghana: Exploring the dynamics of tenure arrangements and the nature of family support networks. *International Development Planning Review*, 38(3), 297–316. <https://doi.org/10.3828/idpr.2016.17>
- Addo, I. A. (2013). Sharing, cooperation and conflicts: Multihabitation as an urban low-income housing strategy in Accra. In *West Africa Built Environment Research (WABER) Conference*, Accra, Ghana. <https://doi.org/10.13140/2.1.4032.3528>
- Addo, I. A. (2016). Assessing residential satisfaction among low-income households in multi-habited dwellings in selected low-income communities in Accra. *Urban Studies*, 53(4), 631–650. <https://doi.org/10.1177/0042098015571055>
- Adriaanse, C. C. M. (2007). Measuring residential satisfaction: A residential environmental satisfaction scale (RESS). *Journal of Housing and the Built Environment*, 22(3), 287–304. <https://doi.org/10.1007/s10901-007-9082-9>
- Amole, B., Korboe, D., & Tipple, G. (1993). The family house in West Africa: A forgotten resource for policy makers? *Third World Planning Review*, 15(4), 356–372.
- Andreasen, M. H., Agergaard, J., & Møller-Jensen, L. (2017a). Suburbanisation, homeownership aspirations and urban housing: Exploring urban expansion in Dar es Salaam. *Urban Studies*, 54(10), 2342–2359. <https://doi.org/10.1177/0042098016643303>
- Andreasen, M. H., Agergaard, J., Kiunsi, R. B., & Namangaya, A. H. (2017b). Urban transformations, migration and residential mobility patterns in African secondary cities. *Geografisk Tidsskrift-Danish Journal of Geography*, 117(2), 93–104. <https://doi.org/10.1080/00167223.2017.1326159>
- Bah, E. M., Faye, I., & Geh, Z. F. (2018). *Housing market dynamics in Africa*. Palgrave Macmillan.
- Basolo, V., & Yerena, A. (2017). Residential mobility of low-income, subsidized households: A synthesis of explanatory frameworks. *Housing Studies*, 32(6), 841–862. <https://doi.org/10.1080/02673037.2016.1240762>
- Braathen, E., Dupont, V., Jordhus-Lier, D., & Sutherland, C. (2016). Introduction: Situating the politics of slums within the “urban turn”. In E. Braathen, V. Dupont, D. Jordhus-Lier, & C. Sutherland (Eds.), *The politics of slums in the global South: Urban informality in Brazil, India, South Africa and Peru* (pp. 1–29). Routledge.
- Brummell, A. C. (1979). A model of intraurban mobility. *Economic Geography*, 55(4), 338–352.

- Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6(1), 97–113. <https://doi.org/10.1177/1468794106058877>
- Chisholm, E., Howden-Chapman, P., & Fougere, G. (2016). The application of Hirschman's exit-voice framework to housing studies: A review and some ways forward. *Housing, Theory and Society*, 33(4), 381–402. <https://doi.org/10.1080/14036096.2016.1188849>
- Clark, W. A. V. (2013). Life course events and residential change: Unpacking age effects on the probability of moving. *Journal of Population Research*, 30(4), 319–334. <https://doi.org/10.1007/s12546-013-9116-y>
- Clark, W. A. V., & Ledwith, V. (2006). Mobility, housing stress, and neighborhood contexts: Evidence from Los Angeles. *Environment and Planning A*, 38(6), 1077–1093. <https://doi.org/10.1068/a37254>
- Clark, W. A. V., & Onaka, J. (1983). Life cycle and housing adjustment as explanations of residential mobility. *Urban Studies*, 20(1), 47–57. <https://doi.org/10.1080/713703176>
- Clark, W., Deurloo, M., & Dieleman, F. (1984). Housing consumption and residential mobility. *Annals of the Association of American Geographers*, 74(1), 29–43. <https://doi.org/10.1111/j.1467-8306.1984.tb01432.x>
- Coulter, R., van Ham, M., & Findlay, A. M. (2016). Re-thinking residential mobility: Linking lives through time and space. *Progress in Human Geography*, 40(3), 1–23. <https://doi.org/10.1177/0309132515575417>
- Coulton, C., Theodos, B., & Turner, M. A. (2012). Residential mobility and neighborhood change: Real neighborhoods under the microscope. *Cityscape*, 14(3), 55–89. <https://doi.org/10.2307/41958940>
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed methods approaches* (3rd ed.). Sage.
- Danso-Wiredu, E. Y. (2018). Housing strategies in low-income urban communities in Accra, Ghana. *GeoJournal*, 83(4), 663–677. <https://doi.org/10.1007/s10708-017-9792-9>
- Deboulet, A. (2016). Rethinking precarious neighborhoods: Knowledge and recognition. In A. Deboulet (Ed.), *Rethinking precarious neighborhoods* (pp. 9–38). Agence Française de Développement.
- Diaz-Serrano, L., & Stoyanova, A. P. (2010). Mobility and housing satisfaction: An empirical analysis for 12 EU countries. *Journal of Economic Geography*, 10(5), 661–683. <https://doi.org/10.1093/jeg/lbp045>
- Fattah, H. A., Salleh, A. G., Badarulzaman, N., & Ali, K. (2015). Factors affecting residential mobility among households in Penang, Malaysia. *Procedia - Social and Behavioral Sciences*, 170, 516–526. <https://doi.org/10.1016/j.sbspro.2015.01.077>
- Fuseini, I., & Kemp, J. (2016). Characterising urban growth in Tamale, Ghana: An analysis of urban governance response in infrastructure and service provision. *Habitat International*, 56, 109–123. <https://doi.org/10.1016/j.habitatint.2016.05.002>

- Fuseini, I., Yaro, J. A., & Yiran, G. A. B. (2017). City profile: Tamale, Ghana. *Cities*, 60, 64–74. <https://doi.org/10.1016/j.cities.2016.07.010>
- Ghana Statistical Service. (2013). *2010 population and housing census: Regional analytical report (Northern Region)*. Ghana Statistical Service.
- Ghana Statistical Service. (2014a). *2010 population and housing census: District analytical report, Tamale metropolis*. Ghana Statistical Service.
- Ghana Statistical Service. (2014b). *2010 population and housing census: Sagnarigu district analytical report*. Ghana Statistical Service.
- Ghana Statistical Service. (2021). *Ghana 2021 population and housing census: General report (Vol. 3A): Population of regions and districts*.
- Gillespie, B. J. (2017). *Household mobility in America: Patterns, processes and outcomes*. Palgrave Macmillan.
- Greene, J. C., & Hall, J. N. (2010). Dialectics and pragmatism: Being of consequence. In A. Tashakkori & C. Teddlie (Eds.), *SAGE handbook of mixed methods in social and behavioral research* (2nd ed., pp. 119–144). Sage.
- Hirschman, A. O. (1970). *Exit, voice, and loyalty: Responses to decline in firms, organizations, and states*. Harvard University Press.
- Inah, S. A., Yaro, M. A., Agbor, E. A., & Ukene, D. (2014). Residential housing satisfaction of the urban poor in Calabar Metropolis, Nigeria. *Architecture Research*, 4(1), 1–8. <https://doi.org/10.5923/s.arch.201401.01>
- Kährik, A., Leetmaa, K., & Tammaru, T. (2012). Residential decision-making and satisfaction among new suburbanites in the Tallinn urban region, Estonia. *Cities*, 29(1), 49–58. <https://doi.org/10.1016/j.cities.2011.07.005>
- Knox, P., & Pinch, S. (2010). *Urban social geography: An introduction* (6th ed.). Pearson.
- Korboe, D. (1992). Family houses in Ghanaian cities: To be or not to be? *Urban Studies*, 29(7), 1159–1171.
- Larbi, W. O. (1994). *Urban land policies and the delivery of developable land in Ghana* (Doctoral dissertation, University of Reading).
- Lersch, P. M. (2014). *Residential relocations and their consequences: Life course effects in England and Germany*. Springer.
- Mohit, M. A., Ibrahim, M., & Rashid, Y. R. (2010). Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia. *Habitat International*, 34(1), 18–27. <https://doi.org/10.1016/j.habitatint.2009.04.002>
- Moore, E. G., & Harris, R. S. (1979). Residential mobility and public policy. *Geographical Analysis*, 11(2), 177–181.

- Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, 1(1), 48–76. <https://doi.org/10.1177/2345678906292462>
- Morrison, N. (2017). Playing by the rules? New institutionalism, path dependency and informal settlements in Sub-Saharan Africa. *Environment and Planning A*, 49(11), 2558–2577. <https://doi.org/10.1177/0308518X17730581>
- Ngben, J. M., & Yakubu, I. (2023). “You just have to stay awake and keep spying on the pipes”: Everyday experiences of piped water access in Tamale, Ghana. *Habitat International*, 138, 102865. <https://doi.org/10.1016/j.habitatint.2023.102865>
- Onwuegbuzie, A. J., & Combs, J. P. (2010). Emergent data analysis techniques in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *SAGE handbook of mixed methods in social and behavioral research* (2nd ed., pp. 397–430). Sage.
- Pacione, M. (2009). *Urban geography: A global perspective* (3rd ed.). Routledge. <https://doi.org/10.1017/CBO9781107415324.004>
- Rosenblatt, P., & DeLuca, S. (2012). “We don’t live outside, we live in here”: Neighborhood and residential mobility decisions among low-income families. *City & Community*, 11(3), 254–284. <https://doi.org/10.1111/j.1540-6040.2012.01413.x>
- Rossi, P. H. (1955). *Why families move: A study in the social psychology of urban residential mobility*. Free Press.
- Rossi, P. H. (1982). Residential mobility and public policy issues: “Why families move” revisited. *Journal of Social Issues*, 38(3), 21–34.
- Samara, T. R., He, S., & Chen, G. (2013). Introduction: Locating the right to the city in the global South. In T. R. Samara, S. He, & G. Chen (Eds.), *Locating the right to the city in the global South* (pp. 1–20). Routledge.
- Speare, A., Jr. (1974). Residential satisfaction as an intervening variable in residential mobility. *Demography*, 11(2), 173–188.
- Schlyter, A. (2003). *Multi-habitation: Urban housing and everyday life in Chitungwiza, Zimbabwe*. Nordiska Afrikainstitutet.
- Speare, A., Goldstein, S., & Frey, W. H. (1974). *Residential mobility, migration, and metropolitan change*. Ballinger Publishing.
- The World Bank. (2015). *Rising through cities in Ghana: Ghana urbanization review overview report*. World Bank.
- Town and Country Planning Department. (2011). *Zoning guidelines and planning standards*.
- Turok, I. (2017). Urbanisation and development: Reinforcing the foundations. In G. Bhan, S. Srinivas, & V. Watson (Eds.), *The Routledge companion to planning in the global South*. Routledge.

- Turok, I., Budlender, J., & Visagie, J. (2017). Urban “slums” and social mobility. *Development Policy Review*, 35(4), 3218–3221. <https://doi.org/10.1111/ijlh.12426>
- UN-Habitat. (2016). *World cities report 2016: Urbanization and development—Emerging futures*. United Nations Human Settlements Programme.
- United Nations. (2014). *World urbanization prospects: The 2014 revision*. United Nations. <https://doi.org/10.4054/DemRes.2005.12.9>
- Wolpert, J. (1966). Migration as an adjustment to environmental stress. *Journal of Social Issues*, 22(4), 92–102.
- Yakubu, I. (2021). From a cluster of villages to a city: Housing politics and the dilemmas of spatial planning in Tamale, Ghana. *Land Use Policy*, 109.
- Yakubu, I., & Spocter, M. (2020). To move against the odds: A portrait of socio-spiritual underpinnings of residential mobility decisions in pro-poor housing systems of Tamale, Ghana. *Cities*, 105, 1–8. <https://doi.org/10.1016/j.cities.2020.102698>
- Yakubu, I., Akaateba, M. A., & Akanbang, B. A. A. (2014). A study of housing conditions and characteristics in the Tamale Metropolitan Area, Ghana. *Habitat International*, 44, 394–402.
- Yakubu, I., Spocter, M., & Donaldson, R. (2016). Residential mobility practices: A revolving door syndrome for low-income families in the global South? In R. Donaldson, G. Visser, J. Kemp, & J. de Waal (Eds.), *Proceedings of the centenary conference of the Society of South African Geographers* (pp. 38–46). Society of South African Geographers.
- Yakubu, O., Babu, C. N., & Adjei, O. (2018). Electricity theft: Analysis of the underlying contributory factors in Ghana. *Energy Policy*, 123, 611–618. <https://doi.org/10.1016/j.enpol.2018.09.019>
- Zhang, C., & Lu, B. (2016). Residential satisfaction in traditional and redeveloped inner-city neighborhoods: A tale of two neighborhoods in Beijing. *Travel Behaviour and Society*, 5, 23–36. <https://doi.org/10.1016/j.tbs.2015.08.001>

Ez a mű a Creative Commons Nevezd meg! – Ne add el! – Ne változtasd! 4.0 nemzetközi licence-feltételeinek megfelelően felhasználható. (CC BY-NC-ND 4.0)

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

This open access article may be used under the international license terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

