ACCESSIBLE HOUSES FOR PEOPLE WITH DISABILITIES IN GREECE: A CRITICAL VIEW

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Abstract
Accessible housing for people with disabilities (PwD) poses a significant issue within a complex building system that involves both social and economic aspects. Despite the existence of accessibility standards and legal frameworks, practical implementation is limited, and many homes fail to meet the requirements for mobility and independence. This study highlights the ongoing challenges and emphasises the need for comprehensive planning, inclusive design, and policy enforcement to ensure equitable housing opportunities for individuals with disabilities in Greece. These issues were discussed in a focus group meeting with twelve experts (n=12). Participants identified that bedrooms, kitchens, and bathrooms should provide specific services according to the needs of each type of disability. Additionally, accessible services outside the home, in the neighbourhood and city contexts are similarly important. Enhancing inclusive housing and infrastructure in Greek cities could also boost accessible tourism, thereby strengthening the country's strong tourism industry. Considering the environmental and social inputs of accessible housing seems to lead to higher sustainability. To address these issues, it is essential to require the close cooperation of all stakeholders.

This study offers valuable insights to enhance accommodations for individuals with disabilities, benefiting both practitioners and policymakers.

Keywords: *Accessible Housing; People with Disabilities (PwD); Accessible Tourism; Inclusion; Accessible Infrastructure.*

1. INTRODUCTION

Approximately 1.3 billion people globally live with some form of disability, representing 16% of the world's population. This figure increases when the elderly population is included, as the population over 60 years old is expected to reach 2.1 billion by 2050 (World Health Organization, 2022). These people have specific needs in their daily lives, including accommodation. Only 5–10% of housing worldwide is fully accessible, having ramps, suitable doors, elevators, and other infrastructure, with 30% of people with disabilities (PwD) living in non-accessible homes in the EU (Eurostat, 2020; WHO, 2022). In recent years, property prices worldwide have been rising, particularly in major cities (e.g., New York, London, Shanghai), and housing affordability has become a critical issue, leaving many households unable to access the market. Climate change impacts global habitation, especially in coastal areas, which are vulnerable to climate-related events such as floods, storms, and rising sea levels. This factor must be considered in house construction. The provision of

accessible housing to reasonably accommodate the needs and preferences of PwD should be a priority for governments, and this issue is highlighted in the United Nations Sustainable Development Goals (United Nations, 2018). Thus, the United Nations Convention on the Rights of Persons with Disabilities (2006) emphasises in Articles 9 and 28 that access to adequate, safe, secure, accessible, and affordable housing is a fundamental human right.

Housing accessibility for PwD is a critical issue connected to architecture, urban planning, and social policies (Goldsmith, 1976; Leventi et al., 1998). Architects, as professionals engaged with housing and urban environments, can significantly contribute by proposing solutions integrating the needs of PwD into housing design and urban infrastructure (Leventi et al, 1990). In addition, the active involvement and cooperation of all stakeholders are required to provide the proper accommodation services in a safe, healthy, and suitable manner, according to PwD needs, which include access to affordable housing and low-cost residences that align with the financial capacities of this group. Furthermore, housing should promote social inclusion, prevent marginalisation, and contribute to the social integration of residents (United Nations, 1994). More accessible housing contributes to improved health outcomes and quality of life (Bentley et al., 2011; Greiman & Ravesloot, 2016), leading to lower depression, mortality rates, falls and injuries and higher social participation (Carnemolla & Bridge, 2014; Cho et al., 2016), improving independence, safety, privacy, and self-confidence for PwD (Goodwin et al., 2022), and minimising costs for the provision of health services and other government resources (Vaughan et al., 2021). To achieve these benefits, it is essential to remove barriers that limit access to housing. We need to develop and implement effective policies, introduce necessary interventions to improve accessible housing, and recognise the significant impact that adequate accessible housing has on the health and well-being of PwD (Lindsay et al., 2024).

In this environment, Greece has made significant progress in implementing policies that enhance accessible housing. Nevertheless, additional initiatives are needed to meet the genuine needs of PwD. This study confidently presents practical solutions to strengthen accessible housing, employing a holistic approach grounded in the extensive expertise of professionals in the field. A focus group was conducted with twelve participants (n=12), guided by the first author, yielding valuable information.

The main findings of the study show that more accessible housing primarily requires important interventions within houses, particularly in bedrooms, kitchens, and bathrooms, as well as in the outside environment, in neighbourhood and city contexts. Therefore, a more comprehensive approach is suggested to improve the daily experiences of PwD. The lack of enforcement of legislation regarding access to workplaces, entertainment venues, public buildings, and public spaces is also a critical issue. Smart technologies provide valuable services more for technology-oriented PwD. The benefits of the Country's tourism industry, providing accessible housing services and attracting PwD from various countries, a significant market segment, can be important. To achieve all these, the cooperation of all parties involved in the specific subject is essential.

Policymakers, practitioners, and academics can gain valuable insights from the current study, which provides significant knowledge that can influence decision-making and practices in their respective fields.

2. LITERATURE REVIEW

Global urbanisation is reshaping social, economic, and spatial structures. The urban population is projected to reach 5 billion by 2028 and 6 billion by 2041, shifting the centre of economic activity and services from rural to urban areas (United Nations, 2018, a). This trend reflects not only the increase in the number of city dwellers but also the gradual shift of the

centre of economic activity, innovation, and social services from rural to urban areas. Accessible housing for PwD remains limited worldwide, representing the weakest aspect of social inclusion (World Health Organization, 2022). The following table 1 presents interesting figures on a global and European basis, which show that a large number of PwD and an ageing population face significant problems mainly related to accommodation.

Table 1

Global and European Statistics on Disability, Housing, and Socioeconomic Indicators

Indicator	Global Statistics	European Statistics
Population with disabilities	15% of the global population (~1.3 billion people)	16% of the EU population (~80 million people)
Ageing population	The population over 60 is projected to reach 2.1 billion by 2050	20% of the EU population is over 65 years old
Housing &PwD	40% of PwD lack accessible housing	30% of PwD in the EU live in inaccessible homes
Energy poverty	10% of the global population experiences energy poverty	15% of PwD and 20% of the elderly in the EU face energy poverty
Unemployment of PwD	Unemployment is 50% higher than in the general population	The unemployment rate of PwD in the EU is nearly double that of the general population

Note. Data compiled from global and European disability, housing, and socioeconomic reports (World Health Organization, 2022; Eurostat, 2024).

However, this explosive growth of vulnerable and PwD citizens' numbers raises significant challenges related to housing adequacy, environmental sustainability, social cohesion, and, most importantly, the need to ensure equal access to essential infrastructure and services for all residents (United Nations, 2018, b). Statistics on accessible housing worldwide and in Europe highlight a growing need for accessibility, as the populations of older adults and PwD rapidly increase. In contrast, the necessary infrastructure to meet these needs remains underdeveloped in many regions. It is important to understand the most promising practices, policies, and interventions that facilitate accessible independent housing for PwD (Lindsay et al., 2024). In this process, PwD, builders, policymakers, architects, and research institutions must collaborate effectively to construct and deliver housing that is genuinely accessible. Initially, identifying the specific needs of various PwD groups, as each group has distinct requirements, and providing them with the proper services accordingly, is vital (Poli & Malagas, 2024). Environmental and functional issues are related to adaptations; therefore, households from larger cities, wealthier regions, and those with significant disabilities tend to spend more on adaptations (Alonso-Lopez, 2020). The following four dimensions influence decision-making regarding modifications: a) personal (including safety, privacy, sense of freedom, and independence), b) societal (such as costs, limitations of service providers, and government standards for public access), c) physical (like the available space within the home), and d) temporal (which encompass health status and family conditions) (Aplin et al., 2013).

To improve accessibility, it is essential to implement suitable interventions that address home characteristics (Norin et al., 2021). Universal design, flexibility, simplicity, and minimal physical effort are the fundamental principles of creating accessible housing that can

be used by everyone, regardless of their physical abilities (Primior Team, 2023). Eliminating specific barriers significantly improves accessibility for individuals with more complex functional profiles (Pettersson et al., 2018). The essential design features for housing include step-free access to the living space, spacious step-free showers, ground-floor bedroom accessibility, and reinforced bathroom walls to support the installation of grab rails after construction (Wellecke et al., 2022). Additionally, key considerations for an accessible house include step-free entrances for wheelchair access, wider hallways and doorways for more effortless movement, and eliminating barrier hazards to prevent tripping (Primior Team, 2023). Additionally, proper modifications are necessary to facilitate cleaning, improve mobility within the home, enhance safety, and enhance the home entrance (Greiman et al., 2022). Bathing adaptations enhance key aspects, including usability, safety, independence, choice, control, confidence, and overall quality of life (Whitehead & Golding-Day, 2019). Bathroom modifications are often accompanied by changes in entryways, living areas, interior stairs, doorways, bedrooms, kitchens, and flooring, all of which require significant attention and effort (Lindsay et al., 2024). A well-designed space layout should avoid the need to turn around in small enclosed areas; it should eliminate differences in floor levels; minimises the number of interior doors; avoids sharp corners in circulation paths; special attention should be given to the placement of door handles, bathrooms and communal areas should be spacious enough to accommodate a walker; kitchens should be L-shaped or I-shaped, and garages and parking areas must have sufficient space for a walker (Kuboshima & McIntosh, 2021). Lighting is crucial and must be appropriate, sufficient, easily adjustable, sustainable, energy-efficient, and adaptable (Fisk & Raynham, 2014). Ensuring good colour contrast on steps and proper lighting for light switches, along with underfloor heating, helps limit the risk of tripping and falling (Rooney et al., 2017). Protecting against humidity and temperature changes is crucial, especially in rural areas (Lee et al., 2018). The broader implementation of universal design promotes the availability of accessible housing (Imrie, 2003), which benefits all stakeholders.

Caregivers significantly impact the daily lives of PwD, although most prefer to live independently (Kuboshima & McIntosh, 2021). In addition, cohabitants participate in both recreational and daily activities while also impacting housing decisions and adaptations, though these appear to be just ‘a piece of the puzzle’ (Granbom et al., 2017). The involvement of PwD in the community is crucial and influences the home usability program (Greiman et al., 2022). These issues significantly contribute to

Education plays a crucial role in shaping students' understanding of universal design, fostering a mindset that embraces accessibility and inclusivity for all (Busby & Harrison, 2018). Architecture students must address these challenges by learning to design homes that are accessible and inclusive for people with diverse backgrounds and abilities. Therefore, interventions within the educational system to promote accessibility are crucial.

A smart home is equipped with advanced sensors and antennas that actively generate warning signals about obstacles, empowering users to navigate their living space safely and confidently (Poli et al., 2023). The home appliance control system offers convenience, accuracy, and sanitation, enabling PwD to live independently (Chen et al., 2007). Assistive products serve various functions, especially those in the bathroom, which enhance independent performance (De-Rosende-Celeiro et al., 2019; Poli, 2021). With smart devices, users can control lighting, TVs, coffee machines, and shutters, making their lives easier and safer (Kosmyna et al., 2016). Therefore, smart homes enhance the independence and safety of PwD by providing essential services, and their effectiveness depends on the users' familiarity with technology (Ding et al., 2023; Poli et al., 2023; Poli & Malagas, 2024, b).

House builders often lack a comprehensive understanding of the needs of PwD and are hesitant to innovate or invest in the customisation of accessible homes (Tucker et al., 2022).

Collaborative partnerships among all stakeholders—such as the disabled community, builders, lenders, landlord associations, and subcontractors—along with ongoing dialogue, can promote accessible housing with significant benefits (Heller et al., 2022).

Financial incentive policies for PwD, builders, and other stakeholders are essential for creating accessible housing (Lindsay et al., 2024). Housing vouchers that subsidise rental costs and enhance access to community services (Jenkins Morales & Robert, 2020), along with grants for housing adaptations (Fänge & Iwarsson, 2005), are essential.

Housing is not only a social or economic issue; it also has a profound environmental dimension. Accessibility addresses not only the immediate needs of PwD and older adults but also contributes to long-term social, environmental, and economic sustainability. In the modern era, sustainability, energy poverty, civil protection, and the protection of vulnerable groups, such as PwD, are central to housing discussions. Research on community resilience has demonstrated that inclusivity enhances social cohesion and facilitates community adaptation to challenges (Norris et al., 2011). On the environmental dimension, accessible housing often overlaps with sustainable design principles. Providing the required features allows buildings to accommodate diverse users across their life cycles, minimising the need for costly renovations or demolitions (Goldsmith, 1976). This adaptability contributes to resource efficiency and waste reduction, which are central goals of sustainable architecture and planning. Economically, accessible housing is a driver of economic sustainability, as it reduces long-term public spending on institutional care by enabling individuals to live independently. At the same time, universal design increases the market value of properties by making them adaptable to a broader demographic, including ageing populations (World Health Organization, 2022). Accessibility in buildings and public spaces is a fundamental value to ensure the rights of PwD and has important social benefits, such as higher and equal participation and inclusion. Sustainable housing aims to reduce the environmental footprint of buildings while simultaneously ensuring quality of life for residents and, of course, accessibility. Therefore, accessible housing is closely related to higher sustainability.

The provision of the proper regulatory framework that supports accessibility, housing, and social support of PwD and the elderly population groups is vital. In the European context, the European Disability Strategy (2021–2030) encourages investment in accessible housing and public services to promote social inclusion (European Commission, 2021). The 2021–2030 Disability Strategy aims to advance the social inclusion of PwD in Europe, with particular emphasis on housing accessibility, public services, and infrastructure. The European Directive 2019/882 also guides the accessibility of products and services (European Union, 2019). Countries implement international regulations and policies and adapt these to the local requirements, to ensure that PwD can live in accessible environments.

3. THE GREEK REALITY

In Greece, accessible building design has improved in recent years, but challenges remain. However, an important part, about 33%, of PwD face excessive housing costs, higher than in other EU countries (NEVRONAS, 2025). The majority of buildings—especially those constructed before 2000—are not accessible and require significant interventions to become suitable. Key issues include the lack of ramps, elevators, wide corridors, and ergonomic bathrooms, mainly due to insufficient standards in older buildings. This absence of appropriate standards hinders mobility during natural disasters, highlighting the need for specialised evacuation plans, and the inclusion of PwD in the early warning systems is vital (Poli & Malagas, 2025).

The implementation of the New Building Regulation (Law 4067/2012) and other regulations (Laws 4488/2017, 4674/2020; KYA (Joint Ministerial Decision) 52907/2009)

established requirements for ramps, elevators, and ergonomic layouts (Ministry of Energy & Environment, n.d.; OpenGov, n.d.). Also, the European Directive 2019/882 (European Union, 2019) has been gradually incorporated into Greek law, concerning the accessibility of products and services. These laws and regulations require the construction of ramps, elevators, specialised sanitary facilities, and other infrastructure to facilitate access and use of buildings by PwD. In addition, the Greek Ministry of Infrastructureand Transport has issued technical accessibility guidelines, and there are state subsidy programs to upgrade homes to be accessible (e.g., the "Exoikonomo" program with a disability-focused extension), covering up to 90% of costs for projects such as ramps, elevators, bathroom renovations, etc. Beneficiaries must have an official disability certification fromthe Unified Disability Percentage Determination Table (KEPA) ≥67% (NewMoney, 2024).

In the majority of new buildings (both private and public), accessibility ramps are now mandatory, according to the Hellenic Organization for Standardisation (ELOT 1439, 2013)[1] guidelines. Additionally, new buildings must have at least one door per floor with a minimum width of 90–100 cm to accommodate wheelchair passage. Elevators in multi-story buildings must be accessible to PwD and meet specific dimensions and functions, such as a platform lift for wheelchair users. Modern designs should also incorporate visual guidance, utilising, for example, different floor materials or high-contrast markings on walls, to facilitate navigation for individuals with visual impairments. Finally, although legislation exists (New Building Code, KENAK (Regulation of Energy Performance of Buildings), etc.) and mandates accessibility, a large portion of the existing housing stock is not accessible in practice. The new constructions, to a large extent, often neglect accessibility needs due to cost or lack of awareness, leading to problems such as the absence of elevators, ramps, and ergonomic layouts.

Greece is making efforts to improve design and accessibility in public spaces, particularly in urban areas and transport networks. In major cities such as Athens and Thessaloniki, sidewalk and public space upgrading projects are being implemented to enhance accessibility, including the installation of ramps and wheelchair-accessible parking spaces. Accessibility in public transportation has also improved, with the introduction of accessible stops, lifts, and designated areas on buses and the metro. Nevertheless, Greece remains a poor example of an accessible country within the EU, and much more should be done.

4. METHODOLOGY

The focus group method was utilised in this study. This well-known qualitative approach has the potential to capture genuine, qualitative data through the participants' candidness and spontaneous interactions in a dynamic group setting (Jamieson & Williams, 2003). The roles of the moderator and observer are critical for guiding the discussion and gathering both verbal and non-verbal information (Acocella, 2012).

In the current study, twelve experts (n = 12) convened in a lecture room at the University of West Attica. Four of these experts joined the discussion remotely via Zoom. The participants included an architect, a builder, an interior designer, a professor of architecture, a professor of social sciences, a person with mobility challenges and his caregiver, a visually impaired individual, a high-ranking manager from the Ministry of Energy and Environment, a city mayor, a manager of social issues in a town, and a business owner who constructs

[1]The ELOT 1439:2013 standard, entitled "Disability-friendly organization – Requirements and recommendations", sets out the criteria for evaluating organizations with regard to the conditions of unhindered access and service to people with disabilities. Its aim is to ensure respect for the rights of people with disabilities and the provision of equal services to all citizens.

assistive devices. All participants were purposefully selected for their extensive knowledge of the subject matter. The first author of the study led the three-hour meeting. Following a productive discussion, the group generated valuable insights.

5. THE FOCUS GROUP MEETING OUTCOMES

All participants agreed that accessible housing is essential and should be made available to PwD. They noted that specific housing requirements depend on the type and severity of the disability, the location of the housing, and the condition of the house, whether it is rented or owned by the individual. Life for PwD is especially challenging in rural areas due to inadequate infrastructure. Additionally, individuals with severe mobility issues face further challenges, as their mobility can be minimal. Bedrooms, kitchens, and bathrooms are the most demanding areas in homes and require specific adaptations to meet the needs of PwD. All these spaces must be on the same level to avoid the challenges of using stairs, which can make movement difficult. Appliances and cabinets should be positioned at a height that allows for easy accessibility. In addition, the flooring should be designed to minimise slipping, as slippery surfaces increase the risk of falls. Proper lighting and colour contrasts between the floor and walls are recommended for the visually impaired.

Outside the home, sidewalks are often in poor condition, with potholes and uneven surfaces that make movement difficult. Even if a house is accessible, the neighbourhood may not be; for example, a lack of ramps, inadequate public transportation, and public buildings can present challenges. Accessible housing located far from essential services, shops, or social opportunities can lead to isolation and hinder independence. In recent years, there has been a growing focus on improving mobility for individuals who are blind in public spaces, enabling them to navigate more easily with the aid of specialised canes. The recent implementation of personal assistant services by the Greek government for PwD has dramatically improved their daily lives. Smart solutions provide valuable services to young and technology-oriented PwD. They highlighted that increasing the accessibility of housing on Airbnb can have significant benefits for the country by attracting PwD tourists from abroad. It is essential to address environmental concerns by recognising the significant role accessible housing plays in sustainability, given its considerable economic and social impacts. It is crucial for all stakeholders—including the PwD community, builders, research institutions, and policymakers—to collaborate closely to create solutions and services that address the needs of PwD. Ultimately, everyone noted that individuals with severe disabilities and mobility issues need more modifications in their homes. Finally, all highlighted that Greece has made significant progress in addressing disability issues; however, more can be done within and outside the home, such as improvements in sidewalks, public transportation, and public buildings.

A person with mobility issues emphasised the necessity of government financial support for making adaptations and constructing new homes. He added that the required turning space for a wheelchair of a minimum diameter of 1.50 meters, wide doors for easy access, especially in places with non-straight paths, comfortable corridors, and low light switches at an average height of 80 cm are essential. Narrow elevators, entrances with uneven floor steps, places that, with a smooth ramp, facilitate anyone using a cane, having a baby carriage and people with permanent or temporary disabilities.

Additionally, the two professors noted that university curricula should incorporate more content on accessible housing to better prepare students for future challenges, and this should apply to architects, civil engineers, and social and economic scientists.

6. DISCUSSION AND CONCLUSIONS

Contemporary housing production is primarily dominated by the private market, with limited state intervention. Housing construction often serves investment purposes (e.g., tourism Airbnb units, luxury apartments) rather than addressing the actual needs of residents. However, the state's role in introducing relevant regulations and policies is vital.

The number of citizens with some form of disability is steadily increasing, and they require particular housing services. Housing today is not merely a matter of shelter; it is a multifaceted issue encompassing politics, social concerns, environmental considerations, and ethical implications. The concept of accessible housing is intrinsically linked to the broader framework of sustainability, laying the foundation for resilient, inclusive, and sustainable communities.

Apart from the environmental and economic issues, home modifications to become more flexible increase safety, boost confidence, enhance mobility, and promote independence and community participation, leading to positive societal outcomes (Carnemolla & Bridge, 2014), help overcome stigma, redefine family roles, and provide opportunities for sensory development (Costa et al., 2020).

Architects today are required to balance aesthetics, technical competence, and social responsibility, proposing innovative solutions for sustainable and affordable housing. They play a key role in shaping housing standards that are fair, accessible, and sustainable. In Greece, architects are making efforts to design accessible buildings and public spaces; however, implementing these regulations faces challenges. Most daily activities take place in bedrooms, kitchens, and bathrooms, so these spaces should be fully accessible for PwD (Lindsay et al., 2024; Sukkay, 2016). Outside the home, accessible neighbourhoods and cities, with proper sidewalks, public buildings, transportation means, and other facilities, are essential. Both within-home and outside-home services are interrelated and are necessary to provide a more comprehensive approach. Although progress has been made, further steps are needed in education, enforcement of regulations, and infrastructure upgrades to fully integrate accessibility into daily life.

An extensive dialogue and cooperation among all stakeholders is needed to provide sufficient services to the disabled people's community in both housing and non-housing contexts. In particular, PwD, architects, builders, sub-contractors in building houses, research institutions, and policymakers at all government levels may work together to plan, design, and implement services and policies that make those people's lives easier and safer within and outside the home through the promotion of accessible housing (Lindsay et al., 2024). Ongoing assessment and awareness of the needs of PwD is crucial, and it is imperative to adjust the provision of services accordingly (Malagas et al., 2023).

The literature presents conflicting perspectives on housing adaptations among individuals with different levels of disability. On the one hand, Tsuchiya-Ito et al. (2022) suggest that individuals with lower disability levels, lesser lower extremity impairment, or poor balance are more likely to implement housing adaptations. Conversely, Bishop et al. (2015) found that individuals with severe mobility limitations are more likely to make such adaptations, which aligns with the current study.

It is recommended that higher education programs be strengthened by integrating accessible housing design into the curricula of architects, civil engineers, economists, and social scientists, thereby ensuring that future professionals are equipped to create inclusive and sustainable living environments.

In conclusion, all stakeholders must work together more efficiently to create accessible housing, neighbourhoods, and cities, as these concepts are interrelated, and a more holistic approach should be applied. Bedrooms, kitchens, and bathrooms are fundamental spaces that

should cater to the specific needs of PwD. Smart technologies can provide valuable services to those who use them. Policies that protect and address the needs of PwD are necessary and should be encouraged. The higher education system must better address the need for accessible housing. The continuous monitoring of the real needs of PwD and their active participation in designing a more accessible environment is imperative. Greece should do more to improve the PwD's daily lives both at home and outside the home.

Those involved in providing accessible housing gain valuable insights from the current study.

Limitations of the study and recommendations for future research

The study offers a general overview of how accessible housing can meet the needs of PwD in Greece. However, to gain deeper insights, more focused research on specific types of disabilities—such as mobility impairments, visual impairments, and cognitive disabilities—would be highly beneficial. Understanding the unique challenges and requirements of these groups can lead to more effective housing solutions that are tailored to their specific needs. Furthermore, conducting quantitative studies with larger sample sizes is recommended to provide more comprehensive and statistically significant data.

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