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## Rethinking the public *loggia* to improve urban resilience to climate change

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### Abstract

Microclimates within *loggia* spaces near public walkways and building entrances are potentially strategic for resilience to extreme weather conditions. However, the public *loggia* may also be a space of conflict of appropriation and vulnerability, resulting in obsolete voids problematic for buildings and cities. This raises questions about its morphology and essential requirements to improve its functional performance. Therefore, a transdisciplinary study based on qualitative research was developed combining spatial experiences of experts and users. The results suggest that a public *loggia* needs to consider local climate, social behaviour, usability, urban cleaning, visibility and connections, as far as possible, with the main urban walkways. The findings also suggest that the public *loggia* only contributes toward urban resilience if its architectural details approach affordances and diversity within its users.

**Keywords:** Climate Change; Inclusive Architecture; Public Health; Resilient Cities; Spatial Justice; Urban *Loggia*

### 1. Introduction

The scientific community has been addressing the issue of climate change for decades. In Portugal the first paper was published in 1987 (Carvalho et al. 2014). Since the end of the 20th century, several international agreements have been made with the aim of reducing the emission of greenhouse gases in order to mitigate global warming. However, the practical results are insufficient. There are estimates that point to a minimum increase of ten degrees in temperature in the next century (Lukose 2017).

The evidence of heat waves in Europe, verified at the beginning of the 21st century, demonstrated that mortality risk increases, specifically by between 0.2 and 5.5 % for every 1 °C higher, being pertinent to implement mitigation and adaptation actions to climate change (Jole et al. 2008).

The urban heat island phenomenon increases the risk of heatstroke during extreme temperatures generated by heat waves (Amen, 2021, Aziz Amen, 2022), being pertinent to adapt pedestrian mobility spaces with microclimates generated by architecture and urbanism. Therefore, the public *loggia*, our study object, may provide shaded environments and contribute to an intermediate space with lower temperatures during heat waves. Moreover, it may also increase the temperature during winter, which is useful in different latitudes (Sinou & Steemers 2004). The public *loggia* could be defined as an outdoor covered area integrated in the ground floor of urban buildings (Figure 1).

Therefore, these microclimates may contribute to energy saving of building entrances that are connected indoors. Furthermore, during uncomfortable weather conditions, the public *loggia* will induce more pedestrian mobility and less use of transport, providing energy savings and more physical activity with advantages on public health.

However, the public *loggia* could be a conflict territory in terms of social justice, as it does not consider the rights and diversity of its users. Sadri (2019) argues that, to sustain our lives, built environments must be resilient to risks and vulnerabilities and promote inclusion in its use, thus promoting spatial justice.

Often, the local climate is not considered in the design of the public *loggia*. Equally, it can be a space of socialisation, as well as of conflict, when its appropriation is verified by homeless people. Also, its design can interfere with accessibility for users with impairments, as well as with urban cleaning (Amen et al., 2023, Amen & Nia, 2020).

The public *loggia* can also be a vulnerable space, with risk of crime due to poor visibility, and could become obsolete when not considering pedestrian flows due to the presence of obstacles. Therefore, it is pertinent to question its morphology and identify spatial attributes of the public *loggia*, aiming to improve social justice, public health and adaptation to climate change.

The complexity of this objective, combined with the fact that the public *loggia* has both the micro and macro scales of the building and the city, requires a transdisciplinary approach involving an experts' experience from different research fields related with the study object. Moreover, it requires the involvement of users with and without impairments, in order to allow a representative diversity of experiences to analyse.



Figure 1. Buildings with public *loggia* spaces in Lisbon.

## 2. Methodology

An exploratory approach based on qualitative research was used, seeking answers to questions and meanings through social experience (Denzin & Lincoln 2005).

A transdisciplinary study was developed combining different research fields. Specifically, we interviewed experts in anthropology (Maria de Fátima Amante, ISCSP-UL), bioclimatic architecture (Manuel Correia Guedes, CiTUA, IST-UL), ecological economics (Cristina Marta-Pedroso, MARETEC, IST-UL), environmental psychology (Fátima Bernardo, CiTUA, IST-UL), human kinetics (Rita Cordovil de Matos, FMH-UL), inclusive design (Marta Bordas-Eddy, UPC; TUT), landscape architecture (Isabel Loupa Ramos, CiTUA, IST-UL), public health (Helena Cardoso de Menezes, H. Menezes Risk Vision) and urban planning (Joana de Castro e Almeida, CiTUA, IST-UL).

Moreover, we interviewed 26 citizens of different ages and abilities, with and without impairments. To facilitate participation, part of the interviews were carried out remotely. We used a semi-structured questionnaire, allowing complementary questions with the aim of clarifying doubts resulting from the answers of the interviewees.

Interviews with deaf people were assisted by a sign language interpreter and interviews with non-adults were attended by school staff, facilitating their participation.

The obtained data was analysed through coding, assigning labels in order to classify and organise the different statements (Flick 2009). None of the interviewed experts requested anonymity.

## 3. Results

Combining spatial experiences from experts and users, it was possible to find diverse attributes related with the spatial performance of a public *loggia*. Specifically related to the following topics: 1. Climate adaptation, 2. Social behaviour, 3. Cleaning and maintenance, 4. Usability, 5. Visibility and 6. Pedestrian mobility.

Concerning **climate adaptation**, Guedes identifies inherent aspects of a public *loggia*:

“It is a necessary space to protect from the sun, to protect the shop windows themselves from UV rays, which degrade the exposed objects. (...) and in winter to protect from rain, wind and cold. (...) it is a bioclimatic space. (...) it is an excellent solution, as a meeting space, as a way to protect shopkeepers, as the creation of a comfortable circulation area, (...) the *loggia* exists as an answer (...) to the aggressiveness of the climate. (...) it is a typology (...) vernacular (...) that has shown over the centuries (...) that it is very functional and (...) beautiful (...).”

Moreover, Guedes identifies the requirement you consider most important in the design of a *loggia*:

“We must avoid new construction, because we are collecting more materials from Nature, more energy to implement all this. We mainly try to keep the ones that already exist. (...) rehabilitation is the priority.”

However, he mentions that in the construction of new *loggia* spaces dimensioning is important, in order to allow environmental comfort and a passive performance of adjacent indoor spaces.

Furthermore, Bernardo identifies energy saving related to mobility, mentioning her own experience in the use of a public *loggia* near her home when it is raining:

“Increases my tendency to walk instead of using the car.”

Even in uncomfortable weather situations, two of the 35 interviewees prefer sidewalks without *loggia* spaces, specifically a 9-year-old girl, who mentioned that she likes the rain, and a 53-year-old man, who considered that covered spaces present pandemic risk.

Regarding **social behaviour**, Amante mentions about public *loggia* spaces:

“They are covered but have an open (...) part (...) they protect (...) and give a feeling of being outdoors (...) they are very good spaces for socializing.”

In this scope, Bernardo also notes:

“We could very easily imagine (...) those images of people talking underneath these spaces. (...) works as a space for public interaction.”

Moreover, Menezes notes:

“I consider social life to be absolutely fundamental for mental health (...) nowadays a large percentage of the population live alone (...) meeting spaces are really important.”

Also refers about public *loggia* spaces:

“They have to be comfortable and when they start to get too dark, or too humid, or cold, or one shivers, nobody wants to go there. (...) for me they are not just places to pass through, they are also places to stay and socialize.”

A 65-year-old interviewee mentions:

“I really like this space. It is very pleasant and I sit here to sunbathe and to rest. (...) I sit here like other people (...) these *loggia* spaces are good for (...) when it rains to walk or play with the children (...) to ride a bicycle, to ride a tricycle (...) it is very good because they are sheltered from the rain and the wind (...) despite the noise of cars passing by on the avenue.”

He also mentioned another quality of this *loggia* - “it has a garden” - as it is just a bed with some plants.

Ramos refers to his experience of having worked in a building with a public *loggia* at the entrance:

“The positive thing is exactly that interface, that is, us being inside and being outside at the same time. We manage to have a space for conversation (...) protected

(...) a meeting space. Before entering (...) or leaving at the end of the day (...) a transition between formal and informal, which was very attractive in the experience of that space.”

Furthermore, Bernardo identifies the *loggia* as an informal space for socializing, mentioning:

“Sometimes the shopkeeper himself is outside talking to customers (...) a space for public interaction (...) very interesting (...).”

A 51-year-old interviewee also mentions the public *loggia* spaces:

“They are a plus. (...) I feel protected, I don’t get all wet and that way we can go shopping on the street (...) I can drink coffee outside and it’s raining.”

Marta-Pedroso highlights the economic potential of commercial spaces in the public *loggia*, “mainly in pandemic situations.”

Moreover, she notes that these indoor spaces may benefit in “energy savings due to temperature control that as associated economic advantages”.

However, a 50-year-old interviewee mentions:

“For us (...) shopkeepers, it was more useful that the stores were next to the sidewalk (...). These *loggia* spaces hide a bit (...) the shops. (...) it will have an advantage for a shopkeeper who has a coffeehouse, to make a terrace (...). There are negative things. These *loggia* spaces are used for the homeless, which is currently a problem for us.”

Also, a 56-year-old resident in a building with a public *loggia* mentions the same negative issues:

“It happens at night because of the homeless. It’s not that they (...) hurt anyone, but it’s always uncomfortable”.

He even said that they should be taken out of the *loggia* and given other living conditions because they get cold.

In this context, Menezes notes:

“There are many situations that are both positive and negative. (...) I am happy when I see that a homeless person finds shelter in one of these *loggia* spaces. On the other hand, I am not happy that there are homeless due to (...) lack of support (...).” The homeless are people who (...) have difficulties in dealing with life - it’s not just for monetary reasons. Sometimes it also has to do with issues of an inability to organize themselves (...) they are not criminals. (...) there must be spaces that are more protected from the weather, to shelter them (...) of course I do not advocate that this should be done on the public road.”

A 73-year-old homeless man mentions that he uses “this or that, or any other” *loggia*, stating:

“When I don't feel good on one side, I go to the other. Sometimes there are certain companies that I don't like (...).”

Likewise, he identified environmental comfort in spatial motivation for the use of a *loggia*, mentioning:

“I would choose the one there because of the rain, and the wind always comes from the north and there is less of it.”

He adds:

“if they went there, it would be a lot of people and a lot of people together is bad”. (...) it's not okay for any human being to sleep in these conditions (...) there are some institutional shelters (...) but they don't have conditions for humans, they have more conditions for pigs (...) I was there for three days and I left (...) I'd rather be on the street than there (...) bedbugs, cockroaches, lice (...) and then there are a lot of people. Between 150 and 200 people between men and women”.

Regarding the *loggia* spaces, he mentioned:

“We don't have any privacy (...) but at least I don't have bugs” (Figure 2).



Figure 2. Homeless man sleeping in a public *loggia*.

Also, a 38-year-old homeless man mentions the motivation for using that *loggia* instead of another:

“I like this one better because there's not so much noise (...) those nasty things, some just want to wage war (...) and here it's more relaxed (...) it's more sheltered, there's a corner (...)”

He suggested that his work experience in construction could contribute to the rehabilitation of houses in ruins and thus provide spaces for the homeless.

Concerning **cleaning and maintenance**, Almeida mentions these topics as relevant in the design of a public *loggia*:

“The floor has to be comfortable, it has to look good. It's not that kind of floor (...) poorly maintained.”

Furthermore, Menezes also mentions the risk that the floor of the *loggia* spaces could be slippery and have pockets of moisture:

“The type of floor, the type of material, the inclination of the floor, the drainage of water, the accumulation of sludge, can make the floor slippery.”

A 73-year-old interviewee mentions the motivation for using a public *loggia*:

“I like it for a reason. It is always very clean, there is a lady who lives here in the building that maintains it (...) which is very difficult to find in Lisbon today.”

By contrast, a 47-year-old interviewee identifies a negative aspect in a *loggia*:

“The graffiti on the walls bothers me a little.”

Menezes notes the risk of accidents during works on building facades:

“I know in some cases people were injured (...) I have noticed that nowadays, at least in urban works (...) that scaffolding is much better protected so that things do not fall down. (...) “What I notice most about these façade works (...) is the permanent lack of respect for pedestrians. No space is left for pedestrians to circulate. They have to go by the street, or by the road. Or even when it's underneath it's a narrow space. (...)”

A 32-year-old deaf interviewee mentioned that the most dangerous architectural spaces for people with hearing impairments are:

“Outside (...) when they are doing construction work (...) a deaf person cannot hear and something might fall.”

She prefers a *loggia* protruding from the facade:

“For example, if something falls, when a person goes out on the street, it can fall on top of them, but not with the roof cover.”

Regarding the **usability** of a public *loggia*, Bordas-Eddy mentions:

"The positive part (...) is to have a covered space where we do not get wet because it is raining. You get some shade because it is so hot outside and you can not be in the sunshine.

Of course, you have to ensure that (...) between the covered space and the outdoor space (...) it is an accessible connection."

Moreover, about the floor of the *loggia* Bordas-Eddy mentions:

"For me as a wheel-chair user, I will not be comfortable in a *loggia* with a very high inclination (...) until four per cent is not considered ramp (...) and it is ok, but if it is (...) much higher (...) it is hard. (...). If you build a new one, you can choose the perfect conditions (...) the flat one, but if you have an existing one, until the four per cent, is ok (...). Higher it would be a much more difficult space to be in, maybe it still works as a space to circulate, but not to stay (...)."

A 12-year-old interviewee with low vision mentions, regarding public *loggia* spaces in commercial areas:

"When I come from the street and go inside (...) I see for some time (...) a bit dark."

The interviewee considered that the presence of the *loggia* gives time for ocular adaptation and thus contributes to greater visibility, both when entering and exiting indoor spaces."

A 68-year-old blind interviewee mentioned that public *loggia* spaces should be covered with automatic skylights that could be closed when it rains, referring to her difficulties during the pandemic:

"The rain is uncomfortable because it wets the mask (...) who uses a cane, as I do and an umbrella, I have no hand to carry anything."

A 46-year-old interviewee with deafness mentioned the disadvantage of poorly lit spaces, referring:

"We have more difficulty lip reading."

Bordas-Eddy identifies the materiality as a quality to consider in the design of a public *loggia*, mentioning that it is often existent in the traditional buildings and would be considered in new buildings:

"If we think in an existing *loggia*, like the Praça Reial, an old building (...) and this are the traditional ones and the very good ones (...). If you think about new *loggia* spaces as we build now (...) it is important to pay attention to the materials (...) to not get too hot".

A 36-year-old quadriplegic interviewee mentioned about public *loggia* spaces:

"Would be excellent. Even if we couldn't have kilometres that way (...)."

She said it was "excellent" for shopping on a rainy day and also mentions thermal advantages:

"We suffer a lot from heat, because we heat up more than other people, because we don't breathe as well (...) due as we have little sensitivity, when we start to feel hot, it's because the heat is already reaching the upper limbs, already the rest of the body is really hot".

Concerning **visibility**, Almeida identifies risk spaces in the public *loggia*, mentioning:

"They can be spaces with little security (...) because they are poorly lit (...) or more hidden."

In this scope, Bernardo refers to his experience in the use of public *loggia* spaces:

"In many contexts, the way they are constructed raises clear questions about the perception of insecurity. In neighbourhoods, or places that people know less about, which is why they are more afraid, or when they have some structures that create more hidden spaces. (...) here (...) in my area it's not that much, they are very open (...) only with columns (...) there are not many corners. (...) There are many contexts (...) where I avoid going through these types of areas, or even if it's at night I take the road (...) because sometimes there are walls instead of columns. (...) it gives me the feeling that someone might be there (...) who could be a source of insecurity."

Four deaf interviewees identified aspects related to visibility in public *loggia* spaces. Specifically, a 46-year-old prefers cantilevered *loggia* spaces, noting:

"It's easier to see the road. With columns it is not so easy."

Moreover, another 44-year-old says:

"The columns make the area darker (...) it feels like a tighter space."

Furthermore, a 49-year-old mentions:

"The strongest feature of deaf persons is sight, so anything that is more visual is good."

Also, a 33-year-old referred to the importance of illumination to avoid shade.

Matos refers to the importance of the existence of the public *loggia* having shop windows instead of walls, mentioning:

"It is much nicer (...) to walk."

Regarding **pedestrian mobility**, Almeida argues that public *loggia* spaces should be:

"Guided in areas of greater commercial use and pedestrian circulation for this purpose."

Moreover, Ramos states:

"In the planning of these spaces, continuity is very important (...)."

She reflects on her experience using an urban *loggia* in the city of Évora and mentions:

“We were able to go under the *loggia* space through the whole street (...) and we were able to get in and out of the stores with ease and in a more protected way (...) the terraces inside the loggias is something that should be rethought (...) if you want to put a flow we can not put obstacles inside (...)”

A 36-year-old quadriplegic interviewee mentioned, in relation to spaces with a high concentration of people:

“I don't like it when it's too crowded (...) because when we're sitting in a chair there are people who sometimes walk over us, because they don't see us.”

Furthermore, Matos states, in regards to public *loggia* spaces:

“In these areas there is sometimes a large concentration of people, who are perhaps attracted (...) to greater thermal comfort and sometimes these spaces are a little confusing, in my perception.”

A 47-year-old interviewee mentioned the length of the *loggia* as a motivating factor, referring:

“There are many here on this (...) avenue that are small and this one gives me pleasure to walk because it is so long.”

Moreover, Almeida mentions:

“Sometimes these *loggia* spaces are narrow in width, which does not allow for a large influx of pedestrians.”

Another negative space often referred to is the floor connection, identified by a 56-year-old interviewee, who mentions the risk of the steps between a flat *loggia* floor and an inclined sidewalk:

“Some people have already fallen, mostly elderly people who stumble (...)” (Figure 3).



Figure 3. Steps between the *loggia* and adjacent walkway.

Matos argues that designers of public *loggia* spaces “should privilege the indoor/outdoor connection in a natural, greener way.”

Moreover, Menezes advocates the existence of green environments to connect *loggia* spaces in urban rehabilitation, noting:

“I can't perceive a continuous covered corridor across the city. (...) hence the importance of trees. (...) the very trees that can refresh and provide some shade, in summer or during heat waves.”

Furthermore, Ramos states:

“One of the main aspects is afforestation. That is, the presence of vegetation in urban space. (...) Urban trees have multiple functions (...) when we are in certain situations, it is almost as if it were a natural *loggia*. (...) we have the trunks of the trees and we have a continuous canopy, which also creates an interface space. We are sheltered, in a way, and we are also in contact with the outside world. Furthermore, the plant material has the characteristics of promoting water infiltration, of evapotranspiration and when the water evaporates, (...) it also reduces the temperature and creates shading conditions. I think that an investment that we should make in the context of

increasing resilience (...) or being more prepared for what climate change may be, is actually investing in afforestation in urban areas.”

Concerning resilience to fire risk, she mentions:

“In the urban environment we can have exactly species (...) less combustible.”

Moreover, Amante highlights the potential of “the public garden” for urban resilience to climate change.

Furthermore, in the scope of ecological economics, Marta-Pedroso argues:

“The most relevant spaces are (...) the existing ones, especially the green spaces, many of which can be improved to fulfil (...) in addition to an aesthetic function, temperature control.”

#### 4. Discussion

The potential of transitional spaces, such as the *loggia*, to generate urban microclimates is present in several research studies (Sinou & Steemers 2004; Foruzanmehr & Vellinga 2011; Sharmin, Steemers & Matzarakis 2015; Masoumi, Nejati & Ahadi 2017).

Climate change, in a sociocultural dimension approaching space, is explored by Crate (2011) and Roesler (2017).

However, the public *loggia* as a transdisciplinary approach, connecting experiences of experts and users with and without impairments, is not found in literature. Therefore, the findings assessed may contribute to an exploratory knowledge approaching spatial resilience to climate change.

The bioclimatic potential of the *loggia* was argued by Guedes, mentioning rehabilitation as a priority.

Concerning **climate adaptation**, specifically in unfavourable weather conditions, it appears that a significant majority of the interviewees perceive the *loggia* as an advantage. However, covering the entirety of a walkway with a *loggia* would impose a disadvantage on pedestrians, during periods when direct sunlight or the breadth of open sky views may be stimulating. Also, in regards to auditory perception, the *loggia* may not be a very stimulating space. Possibly for this reason, a 68-year-old blind interviewee suggested a *loggia* solution with open skylights, which would only be closed during periods of rain. These openings in the roof would alter the hearing space and make it more natural. It is a creative but complex solution, resorting to these automatic devices on a city scale. However, it is more feasible to provide sidewalks that allow users to opt for spaces with or without a *loggia*, through partially covered sidewalks (Figure 4).

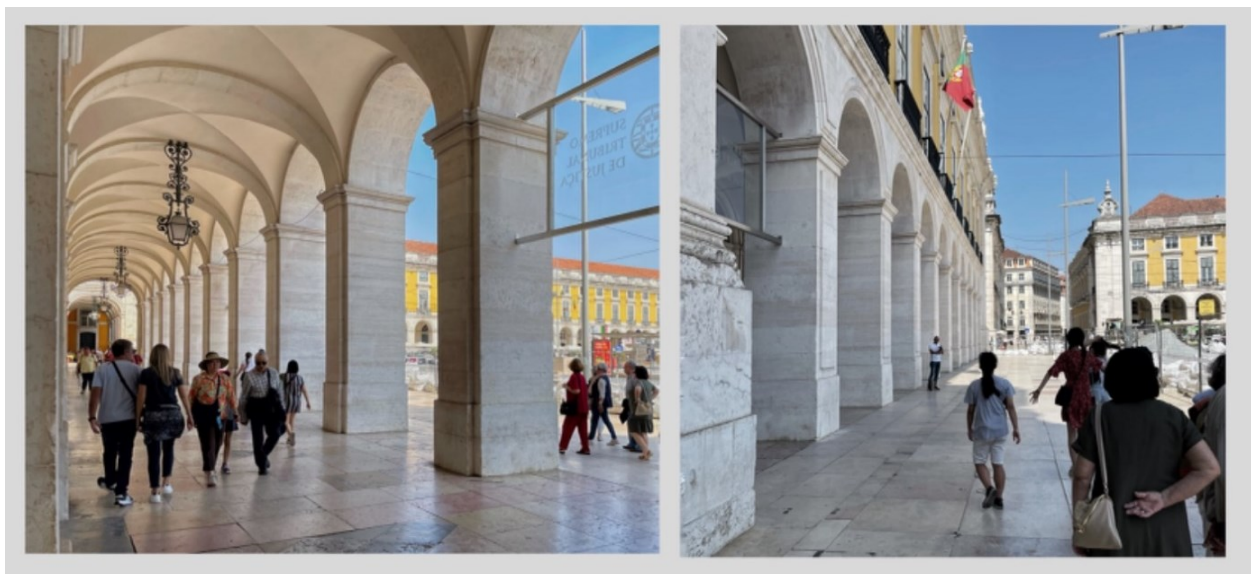


Figure 4. Partially covered sidewalk with public *loggia*.

Amante suggested the *loggia* as a space for socialising, which is also referred to as a quality by several interviewees. Relatively to **social behaviour**, the *loggia* presents itself as a place of conflict of interests when we consider the homeless. At the level of spatial justice, we understand both positions. The homeless, without resorting to a fundamental right such as housing, seek to reduce their suffering in microclimates generated by *loggia* spaces. We also understand the inconvenience for shopkeepers and residents that concentrations of homeless people in store or building entrances are a nuisance.

We believe that the construction of more public *loggias* does not contribute to the increase in the number of homeless people, as it may reduce the concentration of this community in these spaces and promote the reduction of this conflict.

The homeless interviewed mentioned that they prefer *loggias* with fewer people in their condition. However, we argue that in a fair city, the homeless should have the right to social housing.

Almeida considered **cleaning and maintenance** as fundamental requirements to guarantee in urban planning.

By introducing a *loggia* in urban rehabilitation, with the solution of a roof protruding from the façade, there are advantages in terms of continuity in the flow of pedestrian circulation. Likewise, users are protected during façade recovery works, as mentioned by a 32-year-old deaf interviewee.

By contrast, introducing a *loggia* in building plots becomes impractical, resulting in porch *loggias*, with walls generated from the encounter with existing buildings, mainly the ones with heritage value (Figure 5). Furthermore, corners of walls are difficult to clean.



**Figure 5.** Introduction of a *loggia* in urban rehabilitation: roof protruding from the façade versus building plot.

Social inclusion seems fundamental in the planning and design of public loggia spaces, considering **usability** in the broadest possible way, mainly, not forgetting vulnerable populations such as children, the elderly, or people with impairments.

As Bordas-Eddy mentioned, the materiality, the constructive details, such as the existence of steps between the *loggia* and adjacent walkways, may not allow for usability. Furthermore, we consider that it may induce the risk of falling, mainly in the elderly.

We think that the continuity of a levelled floor, or through a sloped floor when this is not possible, could contribute to facilitating urban cleaning. The *loggia* provides a space for light transition, helping to alleviate visual discomfort for people with low vision, as mentioned by the 12-year-old interviewee with visual impairment.

Likewise, a well-sized *loggia* makes it possible to eliminate awnings in shop windows, mitigating the occurrence of collisions with the heads of blind people, as they are not detectable with a long cane.

Almeida and Bernardo mentioned that the public *loggia* may have obstacles in its morphology that compromise its **visibility**, inducing security risks. Likewise, deaf interviewees preferred *loggias* with cantilevered structural solutions allowing greater visibility of the *loggia* (Figure 6). The absence of columns also contributes to obstacle elimination in regards to the mobility of blind people and facilitates urban cleaning.

*Loggias* that are too dark can induce insecurity. Likewise, a 46-year-old deaf interviewee mentioned the difficulty in lip reading in these spaces. It appears that many residential buildings built since the appearance of reinforced concrete have public *loggias* that are too deep to be well lit naturally.





Figure 6. Loggia with cantilevered structure.

It is argued that in buildings with no heritage value, these public *loggia* spaces could be partially converted into offices or shops, resulting in more guarded circulation areas with adequate lighting.

Matos mentioned that the public *loggia* could generate confusing spaces due to the concentration of people. Some contradiction was identified in the use of the public *loggia*. Ramos defended it as a space for **pedestrian mobility**, with priority being given to an unobstructed flow.

Other interviewees suggested the public *loggia* as a place to stay with terraces. Ramos' solution is more adequate, due to the objective of this research being to adapt urban pedestrian mobility to climate change, mainly during heat waves. However, there may also be spaces for rest, mainly in areas of greater width, without interrupting the pedestrian flow.

Menezes suggested the continuity of shady trees in adapting urban areas where it is impossible to introduce public *loggia* spaces. Moreover, Marta-Pedroso mentioned the rehabilitation of green areas as a potential for reducing the temperature with advantages in terms of ecological economy. Furthermore, Ramos defended the continuous canopy as a natural *loggia* for pedestrian circulation (Figure 7).

Interestingly, *loggia*, according to Nonaka (2017), seems to derive etymologically from the mediaeval German *laubja*, meaning arbor or pergola.



Figure 7. Continuous canopy as a natural *loggia*.

## 5. Conclusion

Aiming to improve public health and social justice through urban mitigation and adaptation to climate change, mainly heat waves, this research approached the public *loggia* as a study object. In this scope, we developed a study based on qualitative research interviewing experts and users with and without impairments.

In short, the findings suggest that a public *loggia* needs to consider local climate, social behaviour, usability, urban cleaning, visibility and connections, as far as possible, with the main urban walkways. Moreover, when it is not possible to build public *loggia* spaces, the inclusion of pedestrian circulations shaded by trees should be implemented to facilitate urban rehabilitation. The findings also suggest that the public *loggia* only contributes toward urban resilience if its architectural details approach affordances and diversity within its users.

Portugal is particularly vulnerable to climate change, specifically to the phenomenon of heat waves, due to its geographical position at the southwest part of Europe (Carvalho et al. 2014). In this context, the interviewees sample was centred on the Iberian Peninsula, allowing the assessment of exploratory knowledge centred on more representative experiences. However, as noted by Sinou and Steemers (2004), the *loggia* allows a functional performance both in southern and northern Europe. It would be useful to develop similar studies in different climatic and social contexts to broaden a deeper understanding of the public *loggia*.

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## Conflict of interests

The authors declare no conflict of interest.

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