RESIDENCIAL - IMBURI III			
Gilvaneide 36 years old, resident from 1 to 6 years old, lives with 4 other people		**Do you like to live in the house?** *Yes.* **Why?** *I like it because I didn't have a home, but it's far from everything, I love this forest next door."* **What would you like your home to look like?** *"I'd like my environment..."*	*"... We don't have security, only God Himself, because he doesn't even guard us, they want to stay. Kitchen my little girl is very small, the living room is good, plus the bedrooms are very small, in these houses there is no heater, for me there would be more space because we have spaces, we don't have health and I hate the bathroom in the living room it's embarrassing."*
Dilma Rosalina 47 years old, resident of 1 month, lives with 2 other people		**Do you like to live in the house?** *"Yes",* **why?** *"It's a paradise here, I've always worked at Pilar, quiet, there's free transportation on Saturdays."* **What would you like your home to look like?** *"I'd like my environment..."*	*"... It's going to wall the backyard, it's going to make the 1st first floor, it's going to make the kitchen smaller, and make an American kitchen, it's going to make a bedroom suite, size of the rooms ok. Room ok. Bathroom ok, but in the living room it bothers you."*
Camila Vanessa 21 years old, 2-year-old resident, lives with 2 other people		**Do you like to live in the house?** *"Yes",* **why?** *"Quiet, clean street, transport passes by the door, no one walks in anyone's house."* **How would you like it tofosse sua casa?** *"Eu gostaria que o meu ambiente..."*	*"... Increased made the front wall, walled the backyard to enlarge the kitchen, living room ok, bathroom bothers because it is in the living room, size of the rooms ok, no aquecedor e as houses have slabs it's good it just heats up a lot in the summer"*
Luiz Jorge 41 years old, 6-month-old resident with 4 other people.		**Do you like the house you live in?** *"yes, you just don't like the place",* **why?** *"Quiet".* **What would you like your home to look like?** *"I'd like my environment..."*	*"... It's going to enlarge, put another bedroom, it's going to wall in front, backyard will just wall, bathroom ok, bedroom ok, bedroom ok, living room ok, kitchen is smaller than bedrooms and living room."*
Amanda Leite 23 years old, 1-year-old resident with 3 other people.		**Do you like the house you live in?** *"Yes",* **why?** *"Quiet without fuss, the distant center is no problem."* **What would you like your home to look like?** *"I'd like my environment..."*	*"... It's going to enlarge, put another bedroom, it's going to wall in front, backyard will just wall, bathroom ok, bedroom ok, bedroom ok, living room ok, kitchen is smaller than bedrooms and living room."*
Arthur Ferdinand 42 years old, 2-year-old resident with 4 other people. **Ednilza da Conceição** 39 years old, 2-year-old resident with 4 other people.		**Gosta da casa que mora?** *"sim",* **por than?** *"Quiet, free transportation, on Saturdays the garbage is ok, negative point, weeding that the city hall leaves something to be desired".* **What would you like your home to look like?** *"I'd like my environment..."* **Do you like the house you live in?** *"Yes",* **why?** *"Quiet, quiet, transport of thanks on Saturdays."*	*"... He enlarged the kitchen, used the backyard, land, enlarged the kitchen, made a cut of the living room's aquarium, did not change the structure of the house, used the backyard to enlarge the kitchen, opened a small window, thinks of making a garage, barbecue, there is no heater, observation, the size of the rooms is different from the others, sets I and II, the rooms are either larger or smaller, living room, bathroom, floor and ceramic tile and has a mini chicken coop".* *"... Very small kitchen, I would like to enlarge and enlarged, living room ok, bedroom ok, bathroom ok, no heater, ceramics here better than the others, I and II. res, living room, bathroom, floor and ceramic and has a mini chicken coop."*
Quitéria Pereira 52 years old, 2-year-old resident with 2 other people.		**Do you like the house you live in?** *"Yes",* **why?** *"Quiet, negative access to the center a bit far".* **What would you like your home to look like?** *"I'd like my environment..."*	*"... He raised the wall in front of the house, for safety, he pulled out the kitchen, there is no cover, the bathroom in the living room doesn't bother him, maybe because there aren't many people, the houses are better compared to I and II, there is no heater, bathroom ok, living room ok, bedrooms, ok."*

| Lorrane Oliveira 23 years old, resident of 2 months with 4 other people.

Maria Rosa 33 years old, living from 1 to 6 months with 4 other people. | **NOTE:** Maria Rosa agreed to participate in the interview, but did not authorize the photographic and physical records (measurement) | **Do you like the house you live in?** *"Yes",* **why?** *"Don't worry, I have a car."* **What would you like your home to look like?** *"I'd like my environment..."*

Do you like the house you live in? *"Yes",* **why?** *"Because we're paying for a business that belongs to us, it's easy to live in, but there's a lot of mischief."*tag. | *"... He's going to build a wall in front, he's going to make a backyard, he's going to make a part of the land, rooms are ok."*

"... One more room, boys' priority, increase kitchen, bathroom in the room bothersomes, bathroom size ok, room size ok, room size ok." |

5. Results and Discussions

The following is relevant information about the changes made to the houses, offering a comprehensive and organized view of the data related to this topic. *Table 3*, to simplify the understanding of the residents' needs for social housing, allows for a clearer and faster understanding of the elements involved.

Based on the information provided about the changes made to the Imburi I, Imburi II, and Imburi III houses, it is possible to observe a series of modifications that occur in each of them. These changes cover different areas and purposes, making each house unique in terms of adaptations and use of space. Below, we highlight the main changes made to each of the houses and future suggestions for new development:

Table 3. Changes and suggestions from participants (Source: Costa, Arruda, Olivera, 2023).

ANÁLISES DOS RESULTADOS		
Descrição	**Alterações que foram feitas nas casas**	**Sugestões dos participantes para as habitações sociais futura possível Imburi IV**
Imburi I	- Expansion of the kitchen; - Use of the front space for the opening of commerce: workshop and grocery store - Expansion of the backyard – area de serviço.	- Wheelchair accessible space; - Kitchen and bedrooms larger and added one more bedroom; - Bathroom close to the bedrooms, but away from the living room; - Smaller wooden windows
Imburi II	- Expansion of the kitchen; - Use of the front space for the opening of commerce: workshop and grocery store - Expansion of the backyard – service area.	- Larger kitchen; - Kitchen (American); - Bathroom close to the bedrooms, but away from the living room; - Front with wall, space for garage; - Colors in the house; - Smaller glass windows;
Imburi III	- Expansion of the kitchen and opening of the window. - Use of the backyard for animal production, - Use of the living room wall for the installation of an aquarium; - Added the wall to every house.	- Kitchen and larger bedrooms plus one more bedroom; - Bathroom close to the bedrooms, but away from the living room; - Front and backyard with wall; - Colors in the house.

The text presents a compilation of participants' suggestions for the development of social housing in the potential Imburi IV project. The suggestions aim to create more accessible, functional, and attractive spaces for future residents, taking into account diverse needs and preferences. The objective is to improve qualitative criteria and identify new characteristics that follow the biophilic guidelines *(See Table 4)*, transforming the environment into a pleasant and sustainable space.

Table 4. Guidelines for the built environment (Source: Costa, Arruda, Olivera (2023).

Universal Accessibility							
User-Centered Design	User Journey Mapping	Environment al Design	Technology Integration	Acessibilidad e Universal	Fluxo Layouts	Testing and Iteration	Sustainabil ity
It involves understanding the needs, behaviors, and expectations of end-users when designing physical spaces. This includes collecting feedback, pesquisa de user and user involvement in the design phases.	Design of digital products and services, understanding the user's journey in the physical environment is essential. This involves identifying points of contact, needs, and opportunities for improvement throughout the user experience in a space.	Create comfortable and pleasant physical environments considering lighting, ventilation, acoustics, and temperature. Effective signalling systems and wayfinding They are essential for guiding users through complex environments, improving their experience with clear signage, maps, and visual information.	Enhance the user experience in the built environment. This includes implementing mobile apps, lighting control systems, and others Technological solutions que melhoram usability and convenience.	Ensuring that built environments are accessible to all users, regardless of their physical or cognitive abilities, is critical. This includes the use of ramps, elevators, signage and other inclusive design elements.	Careful planning of the layout and flow of the space is crucial to ensure that users can navigate intuitively and effectively. This includes the provision of móveis, a organization of spaces and the consideration of orientation.	As with the design of digital products, it is important to evaluate the physical spaces after occupying them with users and iterate based on feedback to improve them continuously experience.	Sustainabilit y consideratio ns in the design of physical spaces are also important. This involves the incorporatio n of práticas construction

MASLOW'S HIERARCHY OF NEEDS				
Physiological Needs	Social Needs	Personal Fulfillment	Security Needs	Esteem Needs
Provides access to clean water and basic sanitation in buildings and public spaces. Ensure proper ventilation and indoor air quality to promote health.	Create public spaces and community spaces that encourage social interaction, such as parks, squares, and social areas. Design housing that promotes cohabitation and community, such as co-homes and shared play areas	Foster the creation of inspiring spaces for learning, innovation, and creativity, such as libraries, labs, and collaborative workspaces. Support accessibility to educational and cultural opportunities such as museums, theaters, and training centers.	Design safe buildings and neighborhoods, with adequate lighting, security systems, and access control. Incorporate fire prevention and evacuation systems into buildings. Plan streets and roads with clear signage and safety for pedestrians and cyclists.	Enable the personalization of spaces so that people can express their identity and personal style. Design work environments that value and recognize employees, fostering a sense of professional fulfillment.

LIDWELL'S HIERARCHY OF NEEDS				
Functionality	**Reliability**	**Accessibility**	**Usability**	**Desafabilidade**
Ensure that the built spaces have a clear function and meet the basic needs of the users. For example, a residential building should provide functional spaces for living, such as bedrooms, kitchens, and bathrooms.	Ensure that buildings are constructed with reliable materials and systems, minimizing the need for constant maintenance and creating a safe and reliable environment for occupants.	Make built spaces accessible to all people, regardless of their physical abilities. This involves the inclusion of ramps, elevators, accessible restrooms, and other accommodations for people with disabilities.	Make built spaces accessible to all people, regardless of their physical abilities. This involves the inclusion of ramps, elevators, accessible restrooms, and other accommodations for people with disabilities	Consider the aesthetic design and visual attractiveness of the built environment. Use design elements that make spaces attractive and enjoyable, such as colors, textures, and lighting

Within UX design concepts, various principles and approaches can be recommended to be applied in the built environment. It is essential to adapt them to the needs of each project, considering the target audience and the characteristics of the space. Applying Maslow's Hierarchy of Needs requires a holistic approach, considering people's physical, psychological, and emotional needs. This can result in healthier, safer, and more satisfying environments, and by applying Lidwell's Needs, it creates functional, easy-to-use, reliable, desirable, and accessible spaces, promoting the well-being and quality of life of users.

The application of biophilic design standards, even if unconsciously, is evident due to the user's needs and the relationships that the resident establishes with the dwelling. This promotes a sense of belonging, calm, well-being, and improved quality of life, covering physical, emotional, cognitive, and social aspects, stressing that these guidelines will be taken into account in artificial intelligence projects as an alternative for future deployment.

6. Layout Proposal

Based on the interviews conducted, the detailed physical survey, and the observation practice, three residences in the Imburi I, II, and III complexes that did not undergo structural changes were selected. These dwellings were chosen to serve as the basis for defining new guidelines and developing a model layout for a potential project in Imburi IV.

To provide an environment that meets the basic needs to offer greater comfort and safety to the user in the built environment, it is important to consider the possibilities of the Minimum Neighborhood Control Plan (PMCV). It is essential to emphasize that the PMCV consists of general guidelines, and the practical implementation may vary according to the specific characteristics of each project and community, taking into account the needs and particularities of each social housing context *(See Figure 3)*.
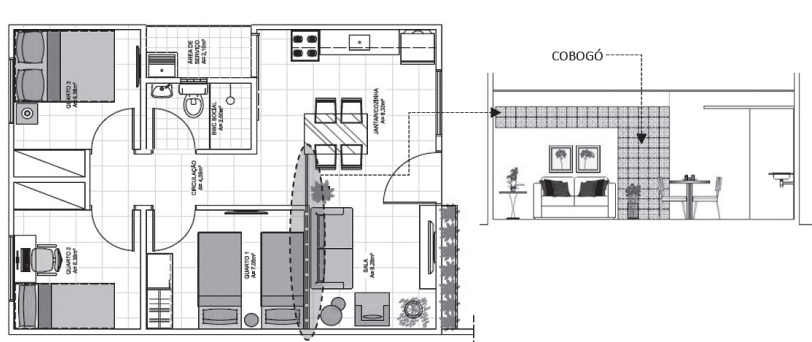
Figura 3. Layout suggestion (Source: Costa, Arruda, Olivera, 2023).

Suggestions were made for the layout of Imburi IV, involved the inclusion of another bedroom, the removal of the bathroom from the living room, and the expansion of the kitchen. This is due to the dissatisfaction of the inhabitants due to the small kitchen, the scarcity of rooms due to the number of people in the house, and the discomfort generated by the bathroom next to the living room. The windows were positioned at the standard height and continue to be made of glass, providing security, which is essential to prevent inconvenience to residents.

The suggestion presented by cobogós focuses on solving the passage of air and light to the first room, aiming to provide better ventilation and lighting to the environment. This measure aims to enhance not only the comfort but also the functionality of the space, meeting the practical and well-being needs of the occupants.

7. Final Considerations

The applicability of biophilic guidelines, Maslow's hierarchy of needs, Lidwell's concepts, and UX design demonstrate the importance of considering residents' emotional, physical, and social well-being in the development of residential environments. By integrating these principles, it is possible to create spaces that not only meet basic needs but also promote a sense of belonging, calm, well-being, and quality of life. These approaches contribute to the development of more balanced, harmonious environments adapted to individual and collective needs, promoting a positive impact on people's lives and communities as a whole. The study in question sought not only to fill gaps in existing knowledge, but also to contribute to the promotion of socially just, aesthetically enriching, and, above all, conducive housing environments for the well-being and prosperity of local communities.

Our future studies will use artificial intelligence tools, under participatory processes with residents of the residences under analysis, to evaluate different iterations with AI under

biophilic approaches to built environments. We believe that the consonance between the applicability of biophilic guidelines and artificial intelligence has possibilities to develop interior designs that contribute to well-being and meet the expectations of the user. We also believe that the concomitance between biophilic guidelines and artificial intelligence will contribute to the continuous development of more sustainable, inclusive, and user-centered design practices with the well-being of communities in mind.

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Resumen: Los estudios sobre patrones biofílicos surgen como una herramienta esencial y continua para mejorar las conexiones entre la naturaleza, la biología humana y la interacción de los usuarios en los entornos construidos. Este trabajo tiene como objetivo aplicar las directrices en la vivienda social, utilizando el análisis de los patrones biofílicos. El estudio en cuestión analizó treinta propuestas para diferentes complejos habitacionales Imburi I, II y III, ubicados en la aldea de Mangabeiras, en la ciudad de Pilar, región metropolitana de Maceió-AL, que demostraron la aplicación intuitiva de las normas mencionadas en las residencias, apuntando a proyectos y trazados basados en las necesidades de

los residentes. Las directrices seleccionadas incluyen los siguientes parámetros: evaluar la viabilidad de incorporar estándares biofílicos en el entorno construido a través del diseño de la experiencia del usuario (UX); permitir la aplicación de la Jerarquía de Necesidades de Maslow, adoptando un enfoque holístico que considere las diversas necesidades de las personas en diferentes contextos; y beneficiarse de las necesidades de Lidwell para crear espacios funcionales, fáciles de usar, fiables, deseables y accesibles, promoviendo el bienestar y la calidad de vida de las personas que los utilizan. Estas sugerencias pueden proporcionar la proposición de nuevas soluciones funcionales, que ayudarán desde la concepción de nuevas ideas hasta la simulación realista. Estas sugerencias pueden aportar la propuesta de nuevas soluciones funcionales, que ayudarán desde la concepción de nuevas ideas hasta la simulación realista. De este modo, se espera promover entornos más sostenibles y acogedores que propicien el bienestar de los usuarios. Los desarrollos futuros utilizarán la inteligencia artificial para prospectar nuevos escenarios de uso de los espacios construidos.

Palabras clave: Diseño - Patrones biofílicos - Usuario - Vivienda social - Entorno construido - Inteligencia naturalista - Generador de imágenes - Diseño UX - Diseño biofílico - Sostenibilidad.

Resumo: Estudos sobre padrões biofílicos surgem como uma ferramenta essencial e contínua para melhorar as conexões entre a natureza, a biologia humana e a interação do usuário em ambientes construídos. Este trabalho tem como objetivo aplicar diretrizes em habitações sociais, utilizando a análise de padrões biofílicos. O estudo em questão analisou trinta propostas para diferentes conjuntos habitacionais Imburi I, II e III, localizados no povoado de Mangabeiras, na cidade de Pilar, região metropolitana de Maceió-AL, que demonstraram a aplicação intuitiva dos padrões supracitados nas residências, visando a projetos e layouts baseados nas necessidades dos moradores. As diretrizes selecionadas incluem os seguintes parâmetros: avaliar a viabilidade da incorporação de padrões biofílicos no ambiente construído por meio do design de experiência do usuário (UX); possibilitar a aplicação da Hierarquia de Necessidades de Maslow, adotando uma abordagem holística que considere as diversas necessidades das pessoas em diferentes contextos; e beneficiar-se das necessidades de Lidwell para criar espaços funcionais, fáceis de usar, confiáveis, desejáveis e acessíveis, promovendo o bem-estar e a qualidade de vida das pessoas que os utilizam. Essas sugestões podem proporcionar a proposição de novas soluções funcionais, que ajudarão desde a concepção de novas ideias até a simulação realista. Essas sugestões podem proporcionar a proposição de novas soluções funcionais, que ajudarão desde a concepção de novas ideias até a simulação realista. Dessa forma, espera-se promover ambientes mais sustentáveis, acolhedores e propícios ao bem-estar dos usuários. Desenvolvimentos futuros usarão a inteligência artificial para prospectar novos cenários de uso para espaços construídos.

Palavras-chave: Design - Padrões biofílicos - Usuário - Habitação social - Ambiente construído - Inteligência naturalista - Gerador de imagens - Design de experiência do usuário - Design biofílico - Sustentabilidade