

# Housing Improvements: a review of Brazilian initiatives

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## ABSTRACT

*Housing improvements are interventions that aim to solve inadequacies in housing. These actions are part of Brazilian housing policy; however, they are few and on a small scale. To plan larger-scale service actions, this research aims to investigate the various initiatives for adapting self-built urban housing in Brazil. The focus is on surveying the processes adopted, through a systematic literature review (SLR). The results showed the most active regions and agents, the organization and production of these actions. It concluded that there is a need for advances in scale-up processes and tools. As a contribution, the research strengthens the need to redesign approaches for more comprehensive actions.*

**Keywords:** Social housing. Housing improvements. Housing inadequacy. Scaling.

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## I. INTRODUCTION

Housing improvements are interventions in homes that present deficiencies harmful to the habitability, safety, sanitation, and accessibility of the residents, with the aim of fully or partially addressing these issues. Currently, the indicator of inadequate housing in Brazil is five times higher than the number of households in a situation of housing deficit (FJP, 2021). Despite the high levels of housing needs and precariousness, housing improvements constitute a scarcely explored axis of housing policy in Brazil, which in recent decades has focused on the construction of new homes.

In 2008, the Technical Assistance Law, Federal Law 11,888, was approved, introducing Technical Assistance for Social Housing (ATHIS) into housing policy. This law guarantees the right of families with an income of up to three minimum wages to free public technical assistance for the design and construction of their homes, including housing improvements. It is worth noting that such experiences have been occurring in Brazil since the 1970s, at that time identified as technical advisory services, which supported organized movements in the construction and adaptation of their homes.

Despite being practiced for over 40 years in the country, housing improvement actions are still sporadic and on a small scale. In 2022, the Inter-American Development Bank (IDB) published a survey of Brazilian initiatives, citing six from the federal public sector, eight from the municipal and state public sectors, and seven from the private sector, not all of which cover housing improvements. Municipal and private sector actions, which effectively reach the final beneficiary, were identified as isolated and each with its own specific characteristics.

In this context, this article presents a survey of ATHIS initiatives for the improvement of self-built homes in urban areas across various regions of Brazil. Through a Systematic Literature Review (SLR), we sought to identify the processes and results that supported the analysis of the initiatives. In this way, the intention is to contribute to the planning and implementation of more structured and large-scale housing improvement actions.

## II. MATERIAL AND METHODS

The Systematic Literature Review (SLR) is a secondary research method that synthesizes a set of primary studies and contributes to the development of new research (Setei et al., 2018). It involves defining the research question, keywords, databases to be consulted, exclusion and inclusion criteria for the texts found, methods for data collection and organization, and the filters for selecting the texts.

The protocol for this research was based on the guiding question: how are housing improvement actions for the adaptation of self-built homes implemented in urban areas across various regions of Brazil? The

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combination of keywords with Boolean operators resulted in the following search string: housing improvements OR self-construction OR housing inadequacy AND social housing. The search was conducted in Brazilian publications in Portuguese, and the types of publications included peer-reviewed articles, dissertations, and theses.

In addition to article databases, thesis and dissertation databases were included in the research to expand the scope of the search, particularly in terms of regional representations. Thus, the following databases were selected: Google Scholar, Web of Science, USP Journal Portal, and the CAPES Thesis and Dissertation Database. The research period covered was from 2018 to 2023. The selected areas were self-construction, technical assistance, informal settlements, infrastructure, and vernacular architecture.

The search in the databases returned 420 titles. Selection filters were then applied according to the inclusion and exclusion criteria presented in Table 1, through the reading of titles, abstracts, and identification of the type of research. In the first selection, 75 titles were filtered and read in full. After a second selection, 26 publications were chosen for analysis, as shown in Table 2.

**Table 1: Inclusion and exclusion criteria for selecting bibliographic productions.**

Criteria for exclusion		Criteria for inclusion	
1	Undergraduate thesis	1.	Thesis
2	Specialization thesis	2.	Dissertation
3	Literature reviews	3.	Peer-reviewed article
4	General Discussions on ATHIS - not specifically on housing improvements	4.	Case study of housing improvement actions in self-built homes without technical assistance
5	Does not present a case study	5.	
6	Case study of improvements in housing designed and built with technical assistance	6.	Case study of land regularization actions that included housing improvements

Source: prepared by the authors.

**Table 2: Selected publications for the analyses.**

Database	Keywords	Findings	Selection 1	Selection 2	Type
Google Scholar	Complete string	137	27	6	Articles/ Thesis/ Dissertations
Web of Science	Complete string	14	7	1	Article
USP Journals Portal	Self-construction and social interest housing	16	1	0	Articles
Theses and Dissertations Catalog - Capes	Housing improvements	10	40	19	Thesis/ Dissertations
	Technical Assistance	97			
	Self-construction and social interest housing	146			

Source: prepared by the authors.

After analyzing the cases presented in the selected publications to answer the guiding question, the main promoting and financing agents of the actions were identified, as well as the Brazilian states where the initiatives were implemented. Additionally, the duration of the actions, the procedures adopted in the interventions, the types of products delivered, and the number of families benefited were identified.

The results of the research were organized according to the main promoting agents of the actions, as they constitute important differentiators of processes, given that they have different limits of action. Thus, the presentation of the results begins with the programs from the municipal governments, followed by the states, Non-Governmental Organizations (NGOs), Council of Architecture and Urbanism (CAU), universities, and social businesses.

### III. RESULTS

The findings revealed 26 cases in 30 Brazilian cities, located in the South, Southeast, Central-West, and Northeast regions. However, the cases are only in 10 of the 26 Brazilian states, with a significantly higher representation in the states of Rio Grande do Sul and São Paulo, which together encompass 50% of the selected initiatives. In the South region, all publications referred to cases located in Rio Grande do Sul, while in the Southeast region, cases were presented in all four states. The other analyzed cases are in the states of Rio de Janeiro, Minas Gerais, Espírito Santo, Distrito Federal, Bahia, Alagoas, Paraíba, and Maranhão.

Among the described processes, whether individually or in partnerships, there are cases promoted by state governments, the Federal District, municipal governments, non-governmental organizations (NGOs), universities, architecture firms, and the Council of Architecture and Urbanism (CAU) of the states. The services delivered vary between guidance for project design and execution, credit facilitation, training, construction management, resident registration, social analysis, beneficiary selection, surveys, diagnostics, project licensing, project and construction, design only, provision of construction materials, and budgeting.

### Municipal programs

Few municipalities were found to be organized for the implementation of ATHIS, and even fewer for housing improvements. Information from the CAU/BR website indicates only 20 out of the 5,568 Brazilian municipalities have legislation on ATHIS in their legal framework. Municipal initiatives are isolated, meaning they lack national coordination. However, it was found that these initiatives exhibit some innovative aspects capable of enabling a more comprehensive housing policy (Cardoso, 2021). Table 3 presents a summary of the analyses of the municipal programs found in the 26 selected publications.

**Table 3: Summary of the results of the municipal programs found in the analyzed publications.**

Municipal Programs					
City and State	Funders	Start-End	Characteristics	Services	Total un/year
Jundiaí - SP	Municipality	1981	Public Office; Municipal Foundation of Social Action (FUMAS); Access by registration; Work by staff; Free for families with incomes up to 3 minimum wages; 20% fee on income for families with incomes between 3 and 10 minimum wages; Service for regularized areas; Construction by families.	Customized projects for constructions, renovations, expansions, and regularizations of up to 70 m <sup>2</sup> ; Documentation for approval.	3.243
		-220			111,8
Limeira - SP	Municipality	2015	Public Office; Access by registration or referral; Site visits; Work by staff; Free for families with incomes up to 3 minimum wages; Service for regularized areas; Workers for the Limeira Social Reintegration Center construction; Materials bank and brick kiln.	Customized projects; Technical assistance for constructions; Documentation; Labor; Some materials.	61 (Partial data - 6 months)
		-2019			
Santo André - SP	Municipality, EU	2003	Favela Regularization and Urbanization; Melhor Ainda Program; Provision of resources for contracting services; Private technical advisory; On-site offices; Partnerships with universities, NGOs, and architecture and engineering firms.	Customized projects for renovations and expansions; Materials; Constructions.	67
		-2004			67
Taboão da Serra - SP	Municipality, PAC, FNHIS, PSH	2005	Favela Regularization and Urbanization; Access by application; Work by staff; Hiring of construction companies.	Customized projects; Constructions.	429
		-2008			143
Diadema - SP	Municipality FGTS, CEF, PSH, PAC	2005	Improvements in consolidated areas; Work by staff; 1st - Revitalization of facades and roofs; 2nd - Renovations: lighting, ventilation, bathrooms, stairs, and installations; 3rd - Embryo module; Local workers in the construction; 8 technicians on the municipal team; Service for regularized areas.	Customized projects; Constructions.	510
		-2008			170
Mauá - SP	PAC	2014	Favela Regularization and Urbanization; Generic solutions for the most common problems in local housing; Budget spreadsheets; Project adaptations at the beginning of construction.	Solution package; Budget; Advisory for adjustments in construction; Constructions.	Not reported
		-2016			
Rio de Janeiro - RJ	UE, CEF	2001	Improvements in consolidated areas; Presentation through assemblies; Access by application; Work by staff; Large team; Division of beneficiaries according to their financial capabilities	Survey and projects.	394
		-			197
		2003		Projects and constructions.	116
					58
Belo Horizonte - MG	Municipality	2004	Public Office; Urbanization and Housing Company of Belo Horizonte (URBEL); Scoring method for social and physical indicators; Work by staff; Free depending on income; Service for regularized areas.	Technical guidance; Stability report; Project kits, Budgets; Monitoring of structural reinforcement works; Temporary housing allowance; Municipal shelter.	80
		-2014			8
Salvador - BA	Municipality	2001	Public Office; Work by staff; Service for regularized areas; Partnership with 6 universities; Assistance from the Public Defender's Office for regularization; Service requests at the office; Family assessments by social workers.	Regularization assistance; Surveys; Customized projects.	5.000
		-2021			250
		2015			Improvements in consolidated areas; Viver Melhor Program; Focus on facade renovations; Registered families classified according to neighborhood precariousness; Pre-established criteria; families choose three priority interventions with predetermined values.
-2022	4.714				
Conde - PB	Municipality	2017	Public Office; Land regularization, housing improvements, and public space revitalization; Projects executed by accredited architecture firms; Improvements carried out in irregular areas of the city.	Customized projects.	63
		-			15,75
		2020		Constructions.	4
					1

Source: prepared by the authors.

Among the municipal actions, it was possible to classify three types of services: public offices; programs for the favela regularization and urbanization; and programs for improvements in consolidated areas. Public offices are characterized by the continuity of services to citizens, provided and financed by the municipal administration. The favela regularization and urbanization programs aim to regularize and urbanize a specific territory. Meanwhile, the improvement programs in consolidated areas seek to provide some form of housing enhancement in areas already established in the city. In general, the communities served are those that have undergone regularization and urbanization processes long ago and have developed with many precarious housing conditions.

Among the cities in the state of São Paulo, only Jundiaí and Limeira are not in the metropolitan region of the capital city. The operations of these two cities are similar, based on the establishment of a public office that operates with the work of municipal employees, providing construction and renovation projects for the regularization of housing. Both public offices have been functioning for quite some time; however, the city of Limeira started providing renovation projects only five years ago, while the city of Jundiaí has been active since 1969 (Carvalho, 2020; Fiorini, 2019).

The housing improvement programs in Santo André (Pinto and Denaldi, 2019), Taboão da Serra (Hadad, 2022; Cardoso, 2021), and Mauá (Petratori and Boari, 2018; Petratori, Boari, and Carvalho, 2019) were established as the final stage of favela urbanization processes. The case of the Tamarutaca settlement, in Santo André, stands out due to a long process characterized by democratic management based on negotiations with the population. Housing improvements occurred after the urbanization process, encompassing renovations and expansions conducted by the offices set up in the community, in addition to hiring private technical consultancies. The program executed the works with financing from the municipal government and resources from the European Union (EU).

In Taboão da Serra, the improvements ranged from structural requalification to finishes. Initially, the program was funded by the municipality and later received resources from the Growth Acceleration Program (PAC), the National Fund for Housing of Social Interest (FNHIS), and the Social Housing Subsidy Program (PSH). This situation brought some complications for the approval of projects and budgets, due to the lack of flexibility in the documentation required by financing agents and the rapid changes in self-constructed housing, which quickly invalidated surveys (Hadad, 2022; Cardoso, 2021).

In Mauá (Petratori, Boari, and Carvalho, 2019), the inflexibility of the requirements for financing by the PAC also occurred in the urbanization project of the Chafick settlement in the Jardim Zaíra neighborhood. A solution found by the project team was the development of generic solutions for the most recurring problems, along with budget spreadsheets containing various inputs. These solutions served as the basis for contracting services, which, immediately before the start of the works, received adaptations of the project for the specific case.

In Diadema (Haddad, 2022), the Tá Bonito Program was created to carry out improvements in housing and common areas in regions that had already undergone regularization and urbanization processes, but still presented housing precarity. In the first phase, the program revitalized facades and roofs. In the second phase, the interventions included the interior of the houses. In the third phase, embryo units were built. The Caixa Econômica Federal (CEF) acted as the financing agent, with the residents' counterpart contribution being subsidized by the municipality, as a non-repayable grant. Additionally, it was necessary to resort to financing from the PSH to complement the municipal contribution in a long-term program conducted in phases.

In addition to the cities in the state of São Paulo, the state capitals cities Belo Horizonte – MG (Tibo, 2020) and Salvador – BA (Cardoso, 2021; Hadad, 2022) also have their consolidated municipal public offices. In the capital of the State of Minas Gerais, the work on housing improvements involves preparing detailed documentation of projects, reports, and budgets. The services performed follow the usual procedures for large works, making the program's effectiveness challenging, as they result in budgets greater than the value of the existing house.

The Public Office of Salvador (Cardoso, 2021) works in partnership with six universities in the city, predominantly focusing on renovation and expansion projects for housing. The services include assistance with property regularization, for which they rely on the partnership of the Public Defender's Office. The construction works are the responsibility of the residents. The technical staff is small, and the service is little publicized; however, it continues and has been operating for over 20 years. In addition to the public office, the municipality of Salvador launched the Morar Melhor Program in 2015 (Haddad, 2022). The program is subsidized by municipal funds and was planned for five years but was renewed in 2020. The housing improvement services are carried out by a company contracted through bidding.

In Paraíba, the management of the Conde municipality (Galbiatti, 2022; Cardoso, 2021) also worked in the format of a public office. Beginning its operations in 2017, the Public Office of Technical Assistance (EPA) operates in land regularization, housing improvements, and the requalification of public spaces. In partnerships with the National Union of Popular Housing, the Civil Society Organization of Public Interest (OSCIP) LabRua,

the Federal University of Paraíba (UFPB), and private companies, personalized housing and renovation projects were executed. In partnership with CAU/PB, they executed four works; however, the service did not continue after the change in management in the municipality.

In Rio de Janeiro - RJ, between 2001 and 2003, the city's municipal government implemented the Professional Improvement Program (PAP), in partnership with IAB/RJ and the Support Program for Disadvantaged Populations in the Metropolitan Region of Rio de Janeiro (APD-Rio), funded by the European Union through an agreement. In APD-Rio, there was a Habitat component responsible for carrying out actions in urban planning projects, land regularization, and housing improvements. The PAP was implemented in neighborhoods with up to 500 households or 2,000 inhabitants, and its main objectives were to eliminate risks to life and property, sanitary adequacy, and achieving satisfactory levels of environmental comfort and energy conservation (Souza, 2022).

### State Programs

The state governments that organized ATHIS programs with housing improvements are presented in Table 4. These are Alagoas, Maranhão, and the Federal District. The State of Rio Grande do Sul works in conjunction with several of its public agencies as a partner in local programs; however, since it is not the main promoter, it has not been considered here. Among the state programs, the following stand out: public office, regularization and urbanization of favelas, and resources directly to beneficiaries for the execution of renovations.

**Table 4: Summary of the results of the state programs found in the analyzed publications.**

State Programs					
State	Founders	Start-End	Characteristics	Services	Total un/year
Alagoas	State Government, CAU/AL, ONU Habitat.	2016 - 2021	Favela Regularization and Urbanization; Vida Nova nas Grotas Program; UN Habitat collects data and shares methodologies aligned with the Sustainable Development Goals (SDGs); Architects hired through CAU public notice; Works tendered with state funds.	Projects;	132
				Constructions.	26,4
Distrito Federal	SFH, FUNDURB E FUNDHIS – DF, Parliamentary Amendments.	2015 - 2023	Public Office; Na Medida Project; On-site offices; Work done by public servants; Service by registration.	Surveys;	403
				Customized projects; Constructions.	50,37
Maranhão	State Government.	2016 - 2020	Cheque Minha Casa Project; Partnerships with IPHAN, the municipality, the federal university, and private companies; Access through registration; Selection by pre-established criteria; Implementation through public notices; Work done by public servants; Actions are enabled through public notices; Participating construction material suppliers receive tax exemption.	Financial resources;	9.000
				Technical assistance.	2.250

Source: prepared by the authors.

Since 2016, the Government of Alagoas has been implementing in its capital city, Maceió, the Vida Nova nas Grotas program. The "grotas" are environmentally fragile valley bottoms, occupied by settlements in precarious conditions of sanitation, safety, and infrastructure. The focus of the program is to bring accessibility and mobility to the region, including housing improvement actions (Sombrio and Zanoni, 2021; Schüssler, Moraes, and Zacarias, 2021).

In the Federal District, in 2015, the Housing Development Company (CODHAB) launched the housing improvement program Na Medida, based on the establishment of 10 service centers in the communities. The program includes a team of architects, engineers, and social workers. Additionally, it partners with local universities (Nagazawa, Guinâncio, and Zanoni, 2019) and private companies hired through public tenders for project development and construction work execution (Medvedovski et al., 2021; Cardoso, 2021). From 2018, with the change in the district administration, the number of service centers was reduced, leaving only four in operation (Tibo, 2020).

In Maranhão, in 2016, was instituted a housing improvement policy called Cheque Minha Casa, prioritizing families with incomes up to three minimum wages, including the elderly, people with disabilities, and children. Each family receives R\$5,000.00 to purchase construction materials and is responsible for labor costs (Haddad, 2022). Although it is a state-level policy, its activities are concentrated in the metropolitan area of São Luís. In 2019, the focus shifted to the city's historic center through the Nosso Centro program. To achieve this, partnerships were established with IPHAN, the city hall, the federal university, and private

companies, across various sectors, including housing, with the Habitar no Centro project (Sombra, Masullo, and Lopes, 2021; Haddad, 2022).

### **Actions of NGOs, State CAUs, and Universities**

Some Non-Governmental Organizations (NGOs) involved in housing improvement actions were identified (Table 5) and are concentrated in the southeast region. As for the councils, only CAU/RS and CAU/DF were mentioned as promoters of actions that implemented improvements, despite the determination by CAU/BR to allocate at least 2% of the revenue to ATHIS actions.

**Table 5: Result, in summary, of the actions of NGOs, State CAUs, and universities.**

Actions of NGOs, State CAUs, and Universities					
Institutions	Founders	Start-End	Characteristics	Services	Total un/year
<b>NGO - Habitat for Humanity - São Paulo SP</b>	Donations.	2009 - 2022	Hired employees; Labor for construction, local or community work; Operates in regularized areas; Partnership with public authorities; 70% of the work subsidized; Selection by pre-established criteria; Partnership with OSCIP and Banco do Povo.	Customized projects.	769
				Solidarity credit; Constructions.	34,95
<b>NGO -Soluções Urbanas - Niterói RJ</b>	FNHIS.	2008	Arquitetos da Família Project; Selection by pre-established criteria; On-site office; Progressive renovation; Training residents to work on the construction; Solidarity exchange fair.	Diagnosis; Surveys; Projects of standardized and adaptable interventions; Budget spreadsheet.	100
					100
<b>Banco do Bem, Ateliê de ideias e Onze8 Vitória - ES</b>	Community bank	2006 - 2021	Partnerships among institutions; Partnership with UFES.	Projects; Credit	350
					23,33
<b>Ateliê de ideias e ONG Onze8 – ES</b>	Unimed Institute Donations.	2019	Saúde Habitacional Project. Projects to address sanitation, hygiene, and structural problems.	Projects, Constructions.	4
					4
<b>NGO Reparação Bragança Paulista SP</b>	Donations.	2013 - 2022	Voluntary work; Selection with the help of municipal technical assistance; Pre-established criteria; 40 days of planning, 3 days of execution.	Construction.	21
					2,33
<b>NGO Arquitetos Sem Fronteiras Brazil - MG</b>	Foundations and socio-environmental funds; Workshops; Donations; Private companies.	2013 - 2019	Arquitetos na Periferia (AnP) - Empowers women to make improvements to their homes.	Technical Assistance; Trainings; Projects; Credit.	Not informed
<b>Casa Saudável Santa Rosa RS</b>	CAU RS; Secretary of Works and Housing of RS; Public Defender's Office RS; FAMURS.	2020	Architect integrated into the Family Health Strategy (ESF) teams - 4 architects.	Projects; Budgets; Constructions.	16
					16
<b>Nenhuma Casa Sem Banheiro RS</b>	CAU RS, Municipality; State of RS; ONU Habitat.	2020- 2022	Partnership with 6 municipalities for the execution and renovation of bathrooms in homes; Hiring of architects through a public tender; Hiring of construction through bidding.	Projects; Budgets; Constructions.	426
					213
<b>Nenhuma Casa Sem Banheiro DF</b>	CAU DF; CODHAB DF.	2021- 2022	Execution and renovation of bathrooms in homes; Hiring of architects through a public tender; Hiring of construction through bidding.	Projects; Budgets; Constructions.	20
					20
<b>Adote uma Casa Vila Velha ES</b>	Patrocínio de empresas privadas	2015- 2019	Involves the architecture and urbanism, civil engineering, and product design courses at UVV; Pre-established criteria; Assistance from community leadership to select families.	Projects; Budgets; Constructions.	4
					1

Source: prepared by the authors.

Among the NGOs mentioned, Habitat for Humanity (HFH) is the most active and structured. It is an American organization present in over 70 countries, promoting dignified housing. In Brazil, it operates in several states with housing improvement actions focused on eliminating the most urgent precarities. In São Paulo, since 2009, it has promoted housing improvements (Silva 2019; Haddad, 2022).

The NGO Soluções Urbanas aims to carry out housing improvements focused on health promotion (Haddad, 2022). The NGO relies on donations, funding tenders, or contracts with the government, making the flow of resources unstable (Medvedovski, 2021). In 2008, it signed a contract with the State of Rio de Janeiro to

receive resources from FNHIS for the Arquitetos da Família project, which developed renovation projects for 100 homes in Morro Vital Brazil. Reports demonstrate the difficulties in meeting the strict requirements of FNHIS. The services included executive projects, complementary plans, and detailed budgets, with financing for the works left to the residents themselves (Cardoso, 2021). After realizing the impracticality of overly elaborate projects, the NGO opted for "progressive renovation," with standardized and adaptable interventions based on a budget spreadsheet (Luz, 2020; Haddad, 2022).

In Vitória, ES, the Banco do Bem, a community bank created by the Associação Ateliê de Ideias, has been offering interest-free housing loans since 2006 to residents of a city area known as Território do Bem. In addition to having its own team of architects and engineers, the bank established a partnership with the Teaching Practices Office of Architecture and Urbanism at the Federal University of Espírito Santo (UFES) to develop renovation and housing projects for the housing loan recipients.

During the economic crisis of 2016, the bank had to let go of its architecture team. The architects then created the NGO Associação Onze8, which works in partnership with Ateliê do Bem to raise funds and continue promoting housing improvements in the area. In 2019, they developed the Saúde Habitacional Project, focused on preserving the health of residents during the COVID-19 pandemic. Funded by resources from the Unimed Institute and donations from individuals, they renovated four homes in six months (Silva Junior, Grisoni, and Rocha, 2021).

In Bragança Paulista, SP, the NGO Reparação is dedicated to renovating precarious housing with the help of volunteer work and donations. Souza's (2018) research describes a renovation planned 40 days in advance and completed in three days. Flooring, coverings, ceilings, tiles, new frames, roof repairs, land containment, and painting were installed.

The Arquitetos na Periferia (AnP) project in Belo Horizonte, MG, began with a master's student from UFMG in 2013. In 2015, AnP became part of the NGO Arquitetos Sem Fronteiras Brasil (ASF). The project empowers women to make improvements to their own homes in three local communities: Ocupação Eliana Silva, Ocupação Paulo Freire, and Ocupação Dandara (Mendonça and Borel, 2019).

Since 2016, the Architecture and Urbanism Council of Brazil has reinforced its support for promoting actions in ATHIS (Habitat Technical Assistance), allocating at least 2% of its budget for this purpose. In 2017, CAU/RS began launching annual sponsorship tenders for projects with this aim. In 2019, a project for housing improvements in the municipality of Santa Rosa, RS, called the Casa Saudável Program, was selected. In this experience, the architect and urban planner were integrated into the teams working with the Family Health Strategy (ESF). In 2020, four architects were hired for 16 residences with plans for expansion (Galbiatti, 2022).

In 2020, as an offshoot of the Casa Saudável Program, during the COVID-19 pandemic, CAU/RS launched the Nenhuma Casa Sem Banheiro program, aimed at promoting sanitary improvements in homes. The CAU tenders finance the hiring of architects to develop the projects, and the works are made possible through partnerships with municipalities, the state government and its entities, and other institutions such as UN Habitat. By 2022, the program established partnerships with 6 municipalities in the State of Rio Grande do Sul, with plans to assist 426 families (Galbiatti, 2022). In 2021, CAU/DF replicated the program in the Federal District, hiring 7 architects to carry out 35 projects and oversee the 20 works executed in partnership with CODHAB-DF (Participant observation).

The architecture and urbanism courses at universities, in their extension activities, play an important role in supporting the preparation of technical projects and training in housing improvement actions. Generally, these are advisory actions in conjunction with municipal, state, or NGO programs. Among the analyzed publications, one case stands out for its process management, from the selection of families to the execution of the work. This is the extension project of the Architecture and Urbanism course at Vila Velha University (UVV), Adote uma Casa.

In addition to preparing projects that assist residents, the Adote uma Casa has secured private partnerships to carry out housing improvement works. The project was initiated in 2015 and involves the Architecture and Urbanism, Civil Engineering, and Product Design courses. With the support of community leaders, the team developed criteria for selecting families. Technical visits are conducted, projects and budgets are prepared, and private partnerships are sought to finance the works. By 2019, they had completed projects for four homes (Muniz, Nicolau, and Loureiro, 2019).

### **Social businesses**

Social businesses operate in housing improvements through initiatives aimed at creating solutions for social problems (ASSAD, 2012). Among the social business models mentioned in the analyzed publications were companies offering financing and others providing project and construction consulting services. Haddad (2022) presents a map with 69 companies identified as social businesses or popular architecture offices. However, in the selected publications, only one case study was presented in this category: the renovation carried

out by the AH Arquitetura office in Porto Alegre, RS. The service proposals of the companies Moradigna and Nova Vivenda were also mentioned in some studies. Table 6 shows the companies operating in this segment.

**Table 6: Summary of the results of actions related to social businesses**

Social Businesses					
Company and Location	Founders	Start-End	Characteristics	Services	Total un/year
<b>AH Arquitetura Humana Porto Alegre RS</b>	MCMV-E CAU RS	2018	Architecture office; 20 de Novembro Settlement Project; Conversion of an abandoned building in the city center; Initial voluntary work	Projects; Budgets; Constructions	40 40
<b>Moradigna São Paulo SP</b>	Credit companies; Partner companies.	2014 – 2020	Renovations using kits; Quick – 3 to 6 days; low complexity, no technical responsibility; Local outsourced labor	Projects; Budgets; Constructions; Credit	500 83,33
<b>Nova Vivenda São Paulo SP</b>	Own resources; Company donations; Investment fund.	2014 - 2023	Renovations using kits by rooms; Partnership with UN Habitat Brazil; Family selection for subsidies with the help of Social Assistance Reference Centers - CRAS and Basic Health Units - UBS; Online platform with process agents; Management of contacts and contracts between consumers and construction agents in various regions of the country	Projects; Budgets; Constructions; Credit.	3000 333,33

Source: prepared by the authors.

Among the private architecture firms that aim to work with ATHIS, AH Arquitetura Humana from Porto Alegre - RS is highlighted in one of the analyzed publications for having developed the revitalization project of an apartment building housing 40 families, known as the 20 de Novembro Settlement in the capital of RS (Scotton, 2020). The occupation had existed for 10 years when, in 2016, they received the grant of the real right of use for the building, originally intended for a hospital that had been abandoned for 40 years. The initial work was voluntary, but the firm managed to get the project approved by the financial agent Caixa Econômica Federal to receive funding from the Minha Casa Minha Vida Entidades (MCMV-E) program. Later, for the environmental sustainability project, they received funding from CAU/RS (Medvedovski et al., 2021).

The company Moradigna, founded in 2014 in São Paulo - SP, carries out small renovations for low-income families through the sale of kits (kitchen, bathroom, service area, living room, and bedroom). These renovations are quick, taking 3 to 6 days, are of low complexity, and do not require technical responsibility. Generally, they only cover one room of the house. Financing is provided by partner credit companies, and the amounts can be paid in up to 12 installments without interest. The company partners with large construction industry firms, and the construction professionals are outsourced. By 2020, they had already completed 500 renovations (Moreno, 2022; Haddad, 2022).

Another company in São Paulo - SP focused on small renovations, Vivenda, began its work by seeking to facilitate access to credit, which was non-existent for residents who do not have property ownership. Thus, in addition to technical consulting, labor, and materials for renovations, the company also provided credit access services, which until 2018 were funded by the company itself. After a restructuring, the company started receiving resources from other companies that were donated for the renovation of homes for families in high vulnerability situations (Chiavone, 2022). For clients who could take on the credit, they created an investment fund to provide loans at low interest rates. Renovations were sold through kits - by rooms, like the Moradigna model (Moreno, 2022; Haddad, 2022).

In 2020, to increase the number of renovations carried out, Vivenda partnered with UN-Habitat Brazil and created a network of agents linked to housing issues. In this arrangement, they organized an online platform to connect them through what is now called Nova Vivenda, which earns a commission on the transactions (Chiavone, 2022).

#### IV. DISCUSSION

The analyzed evidence shows that there are notable differences between the actions of various promoting agents, particularly in terms of funding modalities, characteristics of service delivery, and quantitative results, specifically in the number of housing units served over a period. These differences are intrinsically linked to the operational strategies adopted by the promoting agents, who, in their positions, access resources, tools, and beneficiaries in distinct ways. Furthermore, these agents differ in their interests, even though adequate housing is a common agenda.

Among the governmental programs from the six public offices described in the analyses, five are exclusively funded with municipal resources. Most of the studied public offices deliver projects and documents for the regularization of buildings, a service that not only ensures project quality but is also related to the

municipality's interest in building regularization. It is worth noting that the execution of works depends on a greater availability of resources, something that municipalities, especially smaller ones, generally do not possess.

CODHAB-DF was the only public agent that executed works with its own resources or federal resources from the SFH and parliamentary amendments. As a federated entity with state and municipal competencies, the DF has certain advantages in processes due to being managed by only one governmental instance and being physically close to its district and federal deputies in Brasília.

For the programs aimed at the favela regularization and urbanization, as well as improvements in consolidated areas, there was a predominance of federal funding and, in two cases, the receipt of international resources. Nevertheless, it is noted that the cities executing these programs are state capitals or cities within the metropolitan region of São Paulo. The evidence shows that smaller cities are unable to access these resources. Generally, municipalities are unprepared to organize projects and receive external funding.

Regarding NGOs, their funding is based on donations from individuals or legal entities, characterizing them as promoters of philanthropy rather than social rights. Only the Arquitetos da Família project in Niterói received resources from the FNHIS for one year to act as an agent of housing policy. However, it faced difficulties with the required bureaucracy. The complexity and timelines of the projects did not align with the timeframe needed for modifications in self-built housing, and few works were executed.

As for social businesses, the renovation processes in Porto Alegre - RS that were included in the MCMV-Entidades stand out. This mechanism can facilitate improvements in housing to reach a large number of beneficiaries. At the Virada da Habitação 2023 event in the DF, planners of the Novo MCMV-Entidades program expressed concern about facilitating financing for technical assistance actions, but this does not necessarily mean programs for housing improvements, as the renovation process is more complex and still lacks standardization.

Companies operating within the market economy need to sell financed renovations to remain in business, providing services that must be paid for by clients through financing facilitated by partner credit companies or their own. Despite facilitating access to housing adequacy for many families and donating some renovations, the role of these companies is more related to a consumer relationship and philanthropic actions than to the guarantee of a social right. In this regard, the testimony of Fernando Assad at a seminar hosted by Institute for Applied Economic Research (IPEA) in 2023 stands out, where he mentioned the purpose of acting as an agent in minimizing housing precariousness in the country. In his communication, he emphasized the need to establish agreements with governments so that social businesses become tools of housing policy, just as NGOs can be.

Regarding the characteristics of the services provided, most actions deliver customized projects for interventions in housing, but difficulties are noted concerning timelines, approvals from funding agents, and challenges in scaling up these procedures. Some initiatives have already proposed alternatives, such as pre-approved and adaptable design solutions, kits for specific rooms, or focusing on a specific problem to be solved, as is the case with the Nenhum Casa Sem Banheiro program. Another approach that helped align intervention timelines with residents' timelines was the establishment of service posts in communities. In addition to offering design solutions and construction, some actions provided training for residents, credit, or resource donations.

Government programs offer advantages in the project and construction approval process, as they are not only promoting agents but also regulatory and oversight agents, in addition to having an interest in legal urban development. In this sense, it seems logical that the state should not operate in irregular areas, as there is no security in the possession of the property. However, in smaller municipalities, this aspect seems to be a significant obstacle. In their communications at the IPEA 2023 Seminar about the implementation of the EPA, Márcia Lucena (mayor of Conde – PB) and Karine Faiade (mayor of Rio Branco do Sul – PR) both stated that in small cities, almost all areas are irregular, and the situation of housing precariousness is urgent. The dynamics of smaller municipalities are not the same as those in larger centers, and therefore they should be treated differently.

The analyses conducted revealed that establishing partnerships was essential for the actions presented in the selected publications, whether for financing, diagnosis and assessments, project approvals, or expanding the workforce. Through partnerships with the state, especially municipal governments, other promoting agents can broaden their role as tools of housing policy. Partnerships for construction or renovation yield more widespread results.

Regarding the reach of the services provided, in terms of families served per year, government programs that delivered the most projects and works were those that received federal funding. However, other factors influenced the results, such as well-structured teams, a reduced scope, or more simplified processes. There are concerns about oversight and accountability difficulties when resources allocated for more families exceed the demand that the technical team can handle. In this sense, it is crucial to ensure a suitable balance between the number of services provided and the size of the technical assistance team.

Social businesses that sell low-complexity room kits and facilitate credit can execute a significant number of improvements annually. However, the renovation of the room chosen by the resident does not always adequately address the habitability of the home, which often involves structural and health-related issues. Promoting simplifications merely to serve more beneficiaries is not an adequate solution. Improvements should achieve some degree of habitability adequacy, and promoting agents need to be prepared for all stages of the process.

NGOs were identified as having the lowest numbers of services provided. Most depend on donations or resources from funding announcements, resulting in an unstable financial flow, which compromises the maintenance of a permanent technical team and the continuity of improvement offerings. Habitat for Humanity is the NGO that performed best due to the institution's solidity and the continuity of its service in the community.

## V. FINAL CONSIDERATIONS

The evidence identified in the Systematic Literature Review enabled the analysis of Brazilian initiatives for housing improvements, revealing that, although the number of municipalities with such programs remains limited, municipal governments play a fundamental role as driving agents of these public policies. State programs or those promoted by Architecture and Urbanism Councils expand their reach by involving municipal governments. Each city has distinct characteristics, and its administration, being more familiar with the local reality, is better equipped to propose solutions for housing inadequacies.

To achieve these objectives, cities must be capable of seeking funding at both the federal and international levels and presenting projects that encompass all stages, from conception to execution. In this regard, strategic partnerships with universities, NGOs, and social enterprises that have experience can play a crucial role, providing support in training, consulting, and service execution. These institutions represent valuable tools for scaling up housing policies when they collaborate with the state.

Very strict and detailed requirements regarding projects, documentation, and territory regularization have posed significant barriers to the development of actions. Streamlining the process is important to meet the time constraints of beneficiaries and funding requirements. However, simplification must occur in a way that does not compromise the goal: improving housing adequacy, considering habitability.

The expansion of these initiatives to achieve significant results in reducing the indicators of inadequate housing appears to depend on effective interaction between federal, state, and municipal governments, facilitating the articulation between financing, organization, and execution. Additionally, streamlining processes and collaborating with NGOs, Architecture and Urbanism Councils, universities, and social enterprises are essential to leverage their specialties and reach within territories.

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