



**RESIDENCY IN SCIENCE, TECHNOLOGY AND SOCIETY (CTS)
HABITAT, AGROECOLOGY, SOLIDARITY ECONOMY AND ECO-SYSTEMIC
HEALTH: INTEGRATING POSTGRADUATE AND EXTENSION**

Andrade . Neder . Tostes . Wiesinieski . Aureliano . Pazos (Orgs.)



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Liza Maria Souza de Andrade | Ricardo Toledo Neder
Simone Parrela Tostes | Livia Barros Wiesinieski
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2023

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PRESENTATION

This book aims to present the fundamentals and the basis of the multi professional course in CTS - Science, Technology, and Society in residency (Lato Sensu Graduation + Extension), characterized by a pedagogical practice and educational planning type PEX - research associated with teaching and integrated with extension. The proposal socially and territorially articulates three interdisciplinary themes: Habitat (Housing, Architecture, Urbanism, and Environment in the Countryside and the City); Agroecology (Food Sovereignty, Family Farm, Field, and City Integration); Health (Epidemiological Surveillance, Collective Health, Family Health, Sanitation, Ecosanitation, and Ecological Infrastructure) and a fourth transdisciplinary theme: Associated Work (Solidarity Economy, Training and Education, Occupation, Income, and Solidarity Technology).

The contents of the chapters were developed in the discipline of Special Studies in Technology, Environment, and Sustainability of the Graduate Program of the Faculty of Architecture and Urbanism of the University of Brasília (PPG-FAU/UnB), offered in 2021, integrated into the Extension Course Fundamentals in Science Technology and Society (CTS) - Habitat, Agroecology, Solidarity Economics, and Ecosystem Health, a partnership of the Science Policy Center, Technology and Society (NPCTS/CEAM/UnB) and professors of the Faculty of Architecture and Urbanism (PPG-FAU), the Faculty of Planaltina (FUP), the Faculty of Agriculture and Veterinary Medicine (FAV) and CDS/UnB, the Collective Health course of the Faculty of Ceilândia (FCE), the Faculty of Education (FE) and the Institute of Humanities (IH).

Thus, the process of construction of the Multiprofessional Residency CTS was initiated to form a transdisciplinary epistemological base in Solidarity Technoscience, inserting the University Extension in graduation studies, integrating 15 master's and doctoral students to more than 50 people from social movements, collectives, professional entities, government technicians, researchers and professors from other institutions as well as undergraduate students. The students were organized into working groups in the online meetings by the Teams platform, through which the following themes were discussed: i) solidarity technology, sociotechnical adequacy, and solidarity economy; ii) Freirean education and work; iii) territorial connections, social struggles and networks of solidarity; iv) sociotechnical adequacy for habitat production: spatial patterns in the field and the city; v) sociotechnical adequacy for agroecology and urban agriculture; and vi) ecosystem

health, sanitation, and governance, which make up the contents of the chapters of this book.

In the introductory chapter, it is detailed how the methodological process of structuring the course took place, divided into two parts: 1) theoretical-methodological foundations based on Solidarity Technoscience, forms of Technical Assistance, and the University Extension; and 2) political-pedagogical proposal of the course, including the themes, the territories surrounding the Distrito Federal that will be worked on the course, the curriculum matrix and the general functioning. Then Finally, the expected results and the developments already in progress are discussed.

The essence of the Residency consists in uniting Graduation And Extension in a trans-multi-interdisciplinary character with the vision of university public policy (opposite that of private or official philanthropy) offering vacancies for 35 trans-multi-disciplinary technical agents (managers, urban architects, lawyers, economists, sociologists, social workers, technicians, and engineers, community health agents), of which 28 will receive scholarships, and 14 territorial agents (2 agents from each of the 7 territories of the Distrito Federal and surrounding areas) able to act as multipliers of community initiatives, to provide sociotechnical advice to local entities and to articulate resources, people, entities, tools, and territorial tactics in seven territories surrounding the Distrito Federal in favor of the protagonism of subjects and groups in their daily territories.

The Lato Ssensu Course and the Multiprofessional Residency Extension Program CTS – Habitat, Agroecology, Ecosystem Health, and Solidarity Health (linked to PPG-FAU/UnB and the Extension Decanery – DEX/UnB) are being sponsored by the 2021 ATHIS Notice of the Council of Architecture and Urbanism of Brazil (CAU/BR¹) and with the parliamentary amendment of Mrs. Erika Kokay, directed to the payment of scholarships.

It also has the support of research and extensionist practices carried out by the Research and Peripheral Extension Group, emerging works within the matter of the project “Habitat production in the territory of DF and surroundings: urban and rural ecosystems and sociotechnical advice”, coordinated by Professor Liza Andrade, with drone images produced by engineer Valmor Pazos Filho, as well as with project “Digital Platform Cooperativism (prototype for seven territories of the Distrito Federal), mapping of actors, agencies and sociotechnical adequacy in rural and urban territories of production of the popular circuits of the economy – a CTS approach”, coordinated by Professor Ricardo Neder. Both projects are funded by the Distrito Federal Research Support Fund (FAP-DF).

Support was received from research and experiences of the Agroecology Center of

UnB, coordinated by Professor Flaviane Canavesi, of the Ecoplanetary project, coordinated by Professor Aldira Dominguez, and the Life and Water project in ARIS, coordinated by Professor Perci Coelho.

The list of modules below has the respective module: professors-coordinators and doctoral tutors of ppg/FAU/UnB of the Fundamentals extension course in science, technology and society (CTS) – Habitat, Agroecology, Solidarity Economy and Ecosystem Health.

-Solidarity technology, sociotechnical adequacy and solidarity economy - Professor Dr. Ricardo Toledo Neder - FUP/UnB; Tutor - Lívia Cristina Barros da Silva Wiesinieski;

-Freirean education and work - Professor Dr. Raquel de Almeida Moraes - FE/UnB; Tutor - Ana Luiza Aureliano Silva;

-Territorial connections, social struggles and solidarity networks - Professor Dr. Perci Coelho de Souza - IH/UnB; Tutor - Letícia Miguel Teixeira;

-Sociotechnical adequacy for habitat production: spatial patterns in the countryside and in the city - Professor Dr. Liza Maria Souza de Andrade - FAU/UnB; Tutor - Juliette Anna Fanny Lenoir;

-Sociotechnical adequacy for agroecology and urban agriculture - Professor Dr. Flaviane Canavesi - FAV/UnB; Tutor - Natalia da Silva Lemos;

-Ecosystem health, sanitation and governance - Professor Dr. Aldira Guimarães Duarte Dominguez - FCE/UnB; Tutor - Diogo Isao Santos Sakai; and

-Technical Support - Valmor Cerqueira Pazos - FAU/UnB - master's account FE/UnB.

¹<https://www.caubr.gov.br/athis-edital/>

The course has the partnership of the Nucleation of Residency AU+E UFBA/UnB, the BrCidades Network, the Housing-Advisory Network, the MST, MTST, Fiocruz, Oca do Sol and the following associations in the territories:

- Association of Powerful Women of Santa Luzia - Estrutural City/DF;
- Association of Residents of Santa Luzia - Estrutural City/ DF;
- Association of Residents, Fighters and Supporters of Dorothy Stang Residential - ARIS Dorothy Stang - Sobradinho / DF;
- Nature House in the Sol Nacente- ARIS Sol Nascente - Ceilândia/DF;
- ASPRAFES - Association of Farmers and Farmers FA - Small Rural Settlement William - MST - Planaltina/DF;
- APRACOA - Association of Rural and Artisanal Producers of The Oziel III Settlement - Pipiripau - Planaltina/DF;
- COOPERCARAJÁS - Carajás Agroecological Production and Marketing Cooperative - Brasília/DF;
- Quilombo Mesquita Renovating Association - Quilombo Mesquita - Western City/GO;
- Preserves Serrinha - REDE Association of Preservation and Sustainable Development of Serrinha do Paranoá - Paranoá/ DF; and
- National Coordination of MTST (working in Nova Planaltina - DF) and Coletivo Negro Raiz

SUMMARY

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Ecosystem Health, Sanitation and Governance



Chapter 06

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ECOSYSTEM HEALTH, SANITATION AND GOVERNANCE

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SUMMARY: This chapter – Ecosystem Health, Sanitation and Governance – aims to present the cognitive bases to equate social problems and mediate socio-environmental conflicts in the struggle for the essential rights of populations excluded from the process of planning the territory, which through resistance practices configure new typologies of urban and rural occupations and solidarity networks. The theoretical and methodological studies presented contain the foundation for the development of the Residency in Science, Technology and Society, a proposal that aims to deepen the approximation between the academic community and the population. It is intended to address the following themes: ecosystem view of health; health and food; primary health – community health agents; healthy cities and neighborhoods – SDGs; community management and eco-sanitation; and integrative and holistic methodologies. The purpose of the chapter is to identify associative and cooperative practices (associated work) with self-management for the themes: ecosystem health, sanitation and governance. The work was prepared by students from various parts of Brazil in the first half of 2021, an opportunity that enabled the meeting of different experiences and contexts, as well as alternatives of participatory experiences. Five experiences were reported in the territories: Tororó Community Safety Council (CONSEG) and the Greater Tororó Region – DF; Women Movement of the Ginga Suburb, Salvador – BA; Environmental Multipliers – BA; Environmental Child Agent, Ceilândia – DF; Local Community Management of Sanitation for the Community of Santa Luzia – DF, with the participation of the FAU/UnB Peripheral Group. All experiences demonstrate the lack of public policies, the protagonism of communities to face the problems in their territories and the collective construction of solutions through the development of specific projects.

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INTRODUCTION

This chapter – Ecosystem Health, Sanitation and Governance – is part of a set of studies resulting from the collective construction proposed by the extension course Fundamentals in Science, Technology and Society – CTS – Habitat, Agroecology, Solidarity Economy and Ecosystem Health offered by the Graduation and Extension Program of the Faculty of Architecture and Urbanism of the University of Brasília (FAU-UnB).

The project is the result of a partnership between the Science, Technology and Society Policy Center (NPCTS/CEAM/UnB) and professors from the Faculty of Architecture and Urbanism (PPG-FAU), the Faculty of Planaltina (FUP), the Faculty of Agronomy and Veterinary Medicine (FAV) and the Center for Sustainable Development (CDS), the Faculty of Ceilândia (FS), the Faculty of Education (FE) and the Institute of Humanities (IH), and aims to create cognitive bases to equate social problems and mediate socio-environmental conflicts in the struggle for the essential rights of populations excluded from the process of spatial planning, which through resistance practices configure new typologies of urban and rural occupations and solidarity networks.

The construction of new cognitive bases refers to the understanding of the concept of solidarity technoscience as:

a cognitive consequence of the action of producers collectively on a work process that, due to a socioeconomic context (which engenders the collective ownership of the means of production) and a social agreement (which legitimizes associations), which encourage, in the productive environment, a control (self-managed) and cooperation (of voluntary and participatory type), causes a modification in the generated product which the material result may be appropriated according to the decision of the collective (solidarity enterprise) (DAGNINO, 2019, p. 18).

Well-being, health and sanitary conditions, as well as the quality of the environment, are issues in which conflicts persist, in the same way as the use of so-called “traditional” technological solutions (GOMES; MINAYO, 2006). The example of basic sanitation consists of a set of measures that include the use of techniques and services, such as water treatment, plumbing and sewage treatment, public cleaning, collection and treatment of organic waste and the regularization of sanitary landfills (ÁVILA et al., 2019).

Basic sanitation is also linked to social conditioning, as observed by Ávila, Dantas and Duarte (2019) when analyzing data from the National Commission on the Social Determinants of Health (CNDSS). The data indicate that the Social Determinants of Health (SDH) – social, economic, cultural, ethnic/racial, psychological and behavioral factors – influence the occurrence of health problems and their risk factors in the population (BUSS;

PELLEGRINI apud ÁVILA et al., 2019).

Studies conducted by Gomes and Minayo (2006) on the ecosystem and human health found that the insufficiency of unidisciplinary approaches to theorize and understand the dimensions generated by the environmental degradation of soil and water, as well as the degree of involvement of authorities, managers, companies and citizens for the success of strategic proposals, are fundamental points for the construction of new guidelines for action.

The social vulnerability of certain groups is related to exclusion and the lack of representation and opportunities that, added to the lack of specific public policies and precarious infrastructure in their territories, lead to low quality of life and reinforce the problem associated with such deficiencies. As a result, poverty is verified with all its ills: food insecurity, low education, inadequate housing, low sanitation services and, consequently, the occurrence of diseases associated with this precariousness. This is a picture that intensifies as socioeconomic conditions decrease, such that the poor, have a greater susceptibility to diseases (ÁVILA et al., 2019) and, generally, less access to health services.

Leading the search for solutions aimed at life quality has been an important challenge for these populations. This perspective led to a new theoretical and practical strategy called ecosystem health, which seeks to integrate, in a transdisciplinary and dialogical perspective, the analyses generated individually and to call on civil society and the government to participate in the discussions and to commit to solutions (GOMES; MINAYO, 2006).

In this sense, the proposal of the chapter is to identify associative and cooperative practices (associated work) with self-management for the themes: ecosystem health, sanitation, and governance. The work was prepared by students from various parts of Brazil in the first half of 2021, an opportunity that enabled the meeting of different experiences and contexts, as well as alternatives of participatory experiences.

FUNDAMENTALS IN SOCIO-TECHNICAL ADEQUACY AND SOLIDARITY ECONOMY

The concept of sociotechnical adequacy, in which the epistemological orientation incorporates a view on science and techniques/technologies, allows the demystifying of traditional conceptions about science for economic purposes or technoscience, being understood as the most advanced or effective form of knowledge production organization, conducted exclusively by companies (NEDER, 2017).

Sociotechnical adequacy refers to the process of adaptation (or redesign) of techno-scientific knowledge, incorporated in equipment and raw materials (hardware), forms of organization of production (orgware) or in the intangible and even tacit form of mental models (software), not only to the requirements and purposes of a technical-economic character, as has been usual in environments in which knowledge is conceived for the production of (and in) companies, but to aspects of a social and environmental nature until now considered in this process as externalities (DAGNINO, 2014).

[...] the proposal synthesized in the concept of Sociotechnical Adequacy supposes, ideally, the deconstruction and reconstruction (redesign) of capitalist technoscience; its decontamination of the values and interests deeply internalized in it by the logic of capital – hegemonic in the environments where it is developed – and its recontamination with those of the Solidarity Economy. The Sociotechnical Adequacy – in the seven modalities that are proposed – implies, then, adapting the conventional technology (and even to conceive alternatives) adopting supplementary criteria to the usual technical-economic and applying them to the processes of production of goods and services in solidarity enterprises aiming to optimize their social, economic and environmental effects (DAGNINO, 2014, p. 208-209).

Dagnino (2019) draws attention to those who develop public policies related to the production of goods and services so that they realize the role that the solidarity economy can play in the construction of a fairer and more environmentally responsible society of well-being. The solidarity economy consists of solidarity enterprises or organizations in which the ownership of the means of production is collective, where workers carry out economic activities in a self-managed way and the management and allocation of results is decided in a participatory and democratic way (DAGNINO, 2014).

The socioeconomic development of the most deprived populations has not received adequate public policies. Impact assessments and proposals for public policies on Science, Technology and Innovation (CTI) generally place among their goals the increase of competitiveness and productivity and the strengthening of high-tech segments, separating the socioeconomically disadvantaged groups regarding direct participation in generation

and appropriation (ZUCOLOTO; PEREIRA, 2017).

Meeting social demands appears marginal, especially when they specifically impact the lower income layers of the population, and also the analyses and propositions of social programs, for the most part, leave the ICU out (ZUCOLOTO; PEREIRA, 2017).

In this context, social technologies gain relevance, tools developed from popular knowledge about local issues and challenges treated with creativity, determination, and local resources, seeking to solve problems in unconventional ways and seeking to value talents, and human and material resources available (SEBRAE, 2017).

Work, occupation, and Income – TOR – and Solidary Economy

New realities of the world of work demand from the public power answers to labor relations distinct from salaried employment. In 2003, the Federal Government created the Solidarity Economy in Development Program, which mapped the solidarity economy initiatives in Brazil and constituted the National Information System in Solidarity Economy (SIES), composed of a national base and local information bases, which provided visibility to the solidarity economy and subsidized the formulation of public policies through inclusion in multiannual plans (SOUSA; NEVES, 2011).

However, the effort made by the left-wing governments did not prosper with the return of the neoliberal government that applied in the legal frameworks and, with the justification of generating more jobs, promoted a dismantling of labor legislation, without having the courage necessary to advance in the tax reform to balance the tax burden that until today does not tax the great fortunes. As a consequence, Brazil is experiencing the precariousness of labor relations, an increase in unemployment rates, an increase in crime and, since 2017/2018, the return to the world Hunger Map, as revealed by the Family Budget Survey (POF) 2017/2018, released by IBGE (BRASIL, 2018).

In contrast, the changes in the world of work and the strategies of capital in contemporary Brazilian society have brought light to the solidarity economy, which is presented as one of the strategies to combat unemployment, to generate employment and income and, above all, to take political actions to combat the so-called “social vulnerability” (SOUSA; NEVES, 2011).

The solidarity economy includes the participation of cooperatives, associations, self-managed companies, cooperation networks, and cooperation conjunction, among others, that carry out activities of production of goods, provision of services, finance, exchange, trade and consumption (SOUSA; NEVES, 2011).

Socio-technical adequacy and socio-technical assistance for ecosystem health, sanitation, and governance

The ecosystem approach to human health refers to the balance between human health and the ecosystem that go beyond traditional methods (restricted biomedical model and the reductionism of the social vision separated from ecological understanding) from new strategies, generated and applied in line with public and private managers, civil society and the affected population segments (GOMES; MINAYO, 2006).

Ecosystem health interacts with the sanitation service, which includes the treatment and supply of potable water, sewage, rainwater drainage, urban cleaning, and solid waste management, and is directly related to the health of the population and ecosystems, given that about 80% of all diseases and more than one-third of deaths in developing countries are caused by the consumption of contaminated water and, on average, up to one-tenth of each person's productive time is lost due to waterborne diseases (AGUSTINHO, 2012).

In Brazil, there has always been a prioritization of supply in relation to sanitary sewage and solid waste disposal. This resulted in the concern with the quantitative aspects of water, based on a technical model of extensive exploitation of water resources, not paying attention to the social perception of water as a vulnerable resource (VARGAS, 1999 apud AGUSTINHO, 2012), which, according to Neder (2008), is aligned with the interests of the real estate market, often separated from social demands.

Water and sewage treatment coverage are still very unequal. The capitals and major cities of the country partially collect their sewage and treat it at different levels of organic load removal for release into dilution water bodies. In the Distrito Federal, the rate of care of the urban population, according to data from the National Sanitation Information System (SNIS) and the Sanitation Services Concessionaire (CAESB), was 98.98% in 2015 (Distrito Federal, 2017), however a good portion of the most vulnerable population of the occupations of territory – rural area and Areas of Social Interest (ARIS) – still do not have access to these resources. Consequently, the precariousness of ecosystem health is explicitly shown, even in the capital of the country, a unit of the federation that has treatment effectiveness rates higher than the national average: of the 15 existing sewage treatment plants, 7 of them treat the sewages with an average efficiency above 90% of organic load removal, 4 with average efficiency greater than 80% and only 4 with average efficiency less than 80% of organic load removal (DF, 2017).

Topics that will be addressed in the modules of the CTS Residency

The theoretical and methodological studies presented in this chapter include the basis for the development of the Residency in Science, Technology, and Society, a proposal that aims to deepen the reconciliation between the academic community and the population. It is intended to address the following themes: ecosystem view of health; health and food; primary health – community health agents; healthy cities and neighborhoods – SDGs; community management and eco-sanitation; and integrative and holistic methodologies.

METHODOLOGICAL PATH

The methodological path was built from reports of experiences in the territory, presented during the meetings of the Extension Course – CTS. Five experiences were selected with adherence to the basis of solidarity technoscience, socio-technical adequacy and solidarity economy, and in the themes of ecosystem health, sanitation and governance. Among the reports, experiences of actions and projects with different arrangements of participation of the population and other agents were identified.

The cases were organized according to the following script: (i) description and contextualization in the territory – data collection and bibliographic research about the territory where the experience occurred; (ii) presentation of good practices – description of the group's actions in the territory and detailing of a specific experience; (iii) collaborations and potentialities – recommendations of the group as a contribution to the improvement of experiences based on the theory analyzed.

EXPERIENCES IN TERRITORIES

We selected 5 experiences with different levels of social participation as a proposition of socio-technical adequacy to solve conflicts related to health, sanitation and governance. Case 1 dealt with the experience of the Tororó Community Safety Council (CONSEG) as an alternative for community governance and environmental security in the Greater Tororó Region, in the Distrito Federal. Case 2 addressed the Women Movement of the Ginga Suburb, which promotes actions in health, sanitation and governance in the Railway Suburb, in Salvador. The Environmental Multipliers is an environmental education project analyzed in case 3, and promotes actions with the communities of the Lower South Region, in Bahia. Case 4 is the Child Environmental Agent Project, which involves the University of Ceilândia/UnB through the work of teachers and students in the development of ecosystem health education alternatives with students from the public sector. In a similar way, case 5 presents participatory alternatives between university and community, with the experience of the Local Community Management of Sanitation for the Community of Santa Luzia - Distrito Federal and with the participation of the FAU/UnB Peripheral Group.

Case 1 - Tororó Community Safety Council (CONSEG) and the Greater Tororó Region

The Tororó Community Safety Council (CONSEG-Tororó) is a civil group formed by residents of the greater Tororó region who have the opportunity to organize themselves in community security conflicts as a participatory governance alternative. Originally, CONSEGS emerged as entities to support the state police, with a focus on public safety, but CONSEG Tororó also focuses on environmental security.

By 2020, most of the council's attention was directed to policing issues - with PMDF's Rural Guardian program, developed to facilitate security in the countryside - and street lighting. From 2020, CONSEG Tororó was dedicated to community safety as a whole, so safety began to be seen in a broader and systemic way.

The preservation of the environment and sustainability have become new objectives for conventional security since conflicts over natural resources are increasingly frequent. To this end, the Permanent Environmental Volunteer Working Group was created in the first half of 2020. The main objectives of the group are to develop and encourage good environmental practices and to mitigate, inhibit or eliminate disturbances to the environment that could endanger community safety.

Description and contextualization of the territory

The Grande Região do Tororó (Greater Region of Tororó) (Figure 136) is located in the south/southeast region of the Distrito Federal, along the DF 140 highway, its main road axis. The size of the territory is 17,054.74 hectares, starting in the surroundings of DF-001 to the border with the state of Goiás, being neighbor of the districts of Jardim ABC and Mesquita, of the municipality Cidade Ocidental. It is a rural region that has two conservation units: the Tororó Ecological Park and the Salto do Tororó District Park. Until 2019, Tororó was part of two distinct administrative regions of the Distrito Federal. The right side of DF 140 belonged to the Administrative Region (RA) of São Sebastião, and the left side belonged to RA Santa Maria. In December 2019, with the Complementary Law No. 958/2019, Tororó became a housing sector of the AR of the Botanical Garden. For this reason, there is still little socioeconomic data specific to the region.



Figures 136: Clockwise: Cachoeira Salto do Tororó, DF 140, main road axis and cerrado area. Source: <https://consegdftororo.wordpress.com/>.

The Tororó is part of the Hydrographic Unit (UH) of Ribeirão Santana, which flows into the São Bartolomeu River (Paranaíba River Basin). In this UH are also the springs of the Pau de Caixeta Stream, the Dead Horse Stream and the Santa Barbara Stream. The Pau de Caixeta Stream forms one of the most well-known waterfalls in the Distrito Federal, the Salto do Tororó Waterfall. The region presents great diversity in relation to the physical-territorial

aspects and the environmental sensitivity to urban parceling (Figure 137). Near DF-001 and the Tororó Ecological Park, the area is of high flat landform and in its limits are the springs of the Santana, Cachoeirinha and Maria Pereira streams. The areas of lower altitude correspond to the valley shaped by drainage, formed by tributaries of the São Bartolomeu River. Between the valley and the high plane, there is a hill with steep slopes.

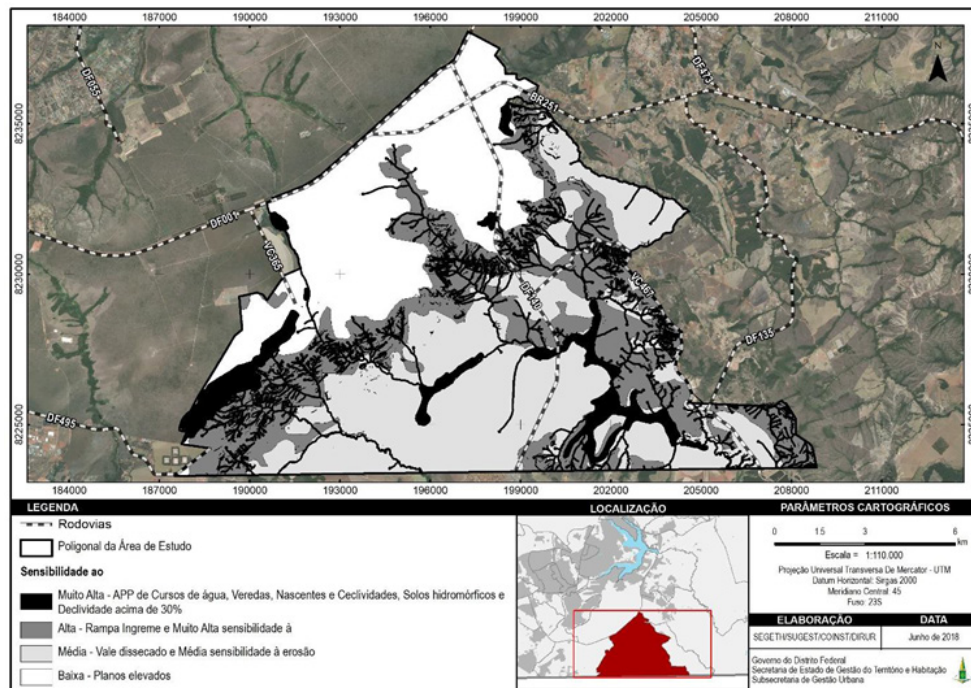


Figure 137: Map of environmental sensitivity to urban parceling in the Grande Região do Tororó and location in the Distrito Federal. Source: Urban Guidelines of the South/Southeast Region (DIUR, 2018)

The Tororó Ecological Park (PET) is the birthplace of the springs of the Pau de Caixeta Stream and has a visitation area with a walking track, lighting and guardhouses with security guards. Its inauguration, which occurred in 2020, took place without the necessary regulation to discipline visitation. This fact stimulated the first action of the voluntary environmental work group of CONSEG, which elaborated, together with the community, a proposal for internal regulations. The Salto do Tororó Waterfall, the main symbol of the neighborhood, is located in the Salto do Tororó District Park (PDST). This park was created in 2015 as a unit of conservation, of full protection according to the District Complementary Law No. 810/2010 of the District System of Conservation Units (SDUC). Although there is an open house, there is still no infrastructure or monitoring. The two conservation units do

not have a management plan. From the environmental point of view, the Tororó region is strategic for the connection between two conservation units that are within a radius of five kilometers away, the Ecological Station of the Botanical Garden, next to the Area of Relevant Ecological Interest Capetinga – Taquara, and the IBGE Ecological Reserve, being, then, an important region for the conservation of biodiversity.

According to the District Homes Sample Survey of the Distrito Federal (PDAD/2016) conducted by the Distrito Federal Planning Company (CODEPLAN) (DF, 2018), the population living in Tororó has socioeconomic characteristics similar to those of the RA Jardim Botânico, characterized as medium and high income. However, the research only considered as a parameter 3 condominiums of Tororó, totaling 5,951 inhabitants. It should be noticed that there are currently 15 new residential condominiums that were not considered, as well as the rural population that lives in country houses and farms, which was also not mentioned. It is expected that in the coming years, there will be more information about the local population.

According to the Government of the Distrito Federal and the Urban Guidelines of the South/Southeast Region (DIUR 07/2018), which refer precisely to the territory of the Greater Tororó Region, the area is destined for increasing urban expansion, with a predicted population of almost one million inhabitants by 2050. The project foresees the construction of a complete urban area, with housing supply, commerce, services, industry and leisure in a complete characterization change of the place, which is currently formed by few occupations of urban nature, prevailing rural uses, as well as farms and some urban parcels in part of the region, which correspond to the Tororó Housing Sector.

It is important to notice that, in the Urban Guidelines 07/2018, the Salto do Tororó Ecological Park was not considered, not appearing on the maps, as well as the Salto do Tororó Waterfall, was also not mentioned. In this panorama, important issues arise raised by the community and ignored until then by the official institutions. The community questions why the park and waterfall, which are the community's identity, have been ignored. Does the region have support capacity for the entire projected population? What solutions have been presented to the problem of basic sanitation, potable water and sewage? Does the region have the capacity to support water resources for exponential population growth in the region? And does it also have it for the dilution of sewage? Many environmental problems are already beginning to emerge in the region, especially the improper disposal of solid waste, deforestation and waterproofing with the occurrence of road flooding (Figure 138).



Figures 138: Clockwise: flooding of dirt road due to interventions in Córrego Pau de Caixeta, a deforested area with native tree trunks of the cerrado for condominium construction next to the springs of Córrego Pau de Caixeta, removal of topsoil in Tororó Ecological Park, cerrado area X condominium construction. Source: <https://consegdftororo.wordpress.com/>.

About 80% of the region's land is privately owned, and the real estate market of the Distrito Federal, in search of expansion, has turned to the Grande Tororó region. The neighborhood is being described in newspaper articles as a "real estate market bet in the DF". Several new condos are being built. The logic of standardized urban planning ignores the physical and social complexity of an urban fabric and does not consider the human interactions of the built environment and the use of natural resources. Understanding the local scale, through dialogue with the community, is essential for the construction of a sustainable community, with the presence of the solidarity economy, ecological urban infrastructures (green infrastructure), strengthening of ecological tourism, the construction of well-being and collective life of the neighborhood, among other factors that could make the Grande Tororó Region a sustainable model in the Distrito Federal.

Presentation of good practices

In one year of existence, the CONSEG Tororó environmental volunteer working group carried out some relevant actions, presented in Chart 7.

Nº	Name of Project	Year	Objective/ Target audience	Actions developed	Funder/ Partnerships
1	Proposal Internal Regulations of the Tororó Ecological Park (PET)	2020/1	Develop together with the community of Tororó a proposal for a regulation, to promote the conscious and sustainable use of PET	Proposal for internal regulations developed with the community, 75 online questionnaires were applied	No Partnerships
2	Save Tororó	12/05/2020	Request to the competent institution the construction of the basic infrastructure of the park and awareness of visitors and population	Cleaning with help from a lot of people in the District Park of Salto do Tororó and Open letter - Save the Tororó of 05/12/2020 construction of the basic infrastructure of the park	Administration of the Botanical Garden, Urban Cleaning Service of the Distrito Federal, Ecolimpo Cooperative, Police and Firefighters
3	Reports of various environmental crimes	2020/2021	Report invasions of preservation areas for improper use such as pasture breeding, announcement of land sale in PET, and removal of topsoil from the Cerrado in PET	Letters of complaint to IBRAM	No Partnerships
4	The paths of the waters of Tororó: Water Security in the Community of Tororó	03/22/2021	Start the debate with the community of Tororó on the preservation of water resources and the water capacity of the region - World Water Day	Live open to the public, with lectures on the waters of the region, the forecasts, the challenges, and how to act to maintain the preservation of water resources	Ricardo Minotti - President CBH Paranaíba Maurício Laxe - Manager of the APA of the Central Plateau ICBio

Table 7: Actions carried out by CONSEG Tororó, 2020-2021. Source: Prepared by Satyam Bömer Dienstmann (adapted)

Among the actions carried out (Chart 7), the experience of the elaboration project of a proposal for the Internal Regulations of the Tororó Ecological Park will be presented, a governance action for the regulation of the Tororó Ecological Park, which will be submitted to the Brasília Environmental Institute, the district agency responsible for the management of the conservation units. The research was conducted entirely by the Google platform, using Google Forms, and lasted ten calendar days, during this time 75 questionnaires were answered by the community. The questionnaire had 15 questions, distributed as follows: (i) user profile; (ii) general knowledge about the Tororó Ecological Park; (iii) importance of the Tororó Ecological Park; (iv) expectation of use of the Tororó Ecological Park; (v) a sense of security that the Tororó Ecological Park offers today; (vi) knowledge of the internal regulation draft ; (vii) opinions not included in the questionnaire. The answers to the questionnaire would serve to validate the content of the Park's Internal Regulations proposal.

The result obtained confirmed the majority of the scope that was proposed by the Draft Internal Regulations and allowed adjustments, especially regarding the hours of operation. Of the 75 people who answered the questionnaire, 52% were men and 48% were women. Young people between 30 and 40 years old represented 62.7% of the participants, which indicates the search of this public for a housing profile with quality of life and

proximity to nature. The age group between 50 and 59 years corresponded to 14.7% of the interviewees, and the age group above 60 years corresponded to 17.3%. More than half of respondents (56%) responded that they have visited the park, and 44% have not.

The vast majority answered that they knew that the park is a conservation unit, and only 4% said they did not know. This shows that the community is enlightened about the objectives of a conservation unit. Although 96% of the interviewees claim to know that the park is a conservation unit, when asked about the limitations that the SDUC imposes on this category, the number drops to 60%, and 40% say they are unaware of the limitations imposed by the legislation on the ecological park category.

The Tororó Ecological Park is divided into 3 sectors, the first sector being the area of public use, and the other two sectors are preservation areas – including the location of the Pau de Caixeta springs. Of the interviewees, 53.3% answered that they know about this sector divisions and understand that only sector 1 is available for public visitation. Of the rest of them 46.7% are unaware of this reality.

When asked about the importance of the park, 80% answered that it is to protect the ecosystems of our region, 77.3% answered about it being a leisure and integration option for the community and 68% answered about maintaining air quality. Only 2.7% answered that they do not consider the park important for the Grande Tororó Region. This question is more complex to evaluate, because it allows numerous simultaneous options, so there was no total of 100% for all answers, only the percentage ratio for each of the answers in relation to the whole.

When the question about which activities they would like to have out in the park, we found seven alternatives with significant community interest. The interpretive trails obtained 86.7% of the interest of the community, followed by 58% whose interest is to be able to practice sport in that area and 56% specified the interest in practicing cycling. Cultural presentations represented 54.7% of the interest of those who responded to the survey and 53.3% placed interest in the park being able to offer or promote courses. In smaller numbers appeared the gastronomic fair and handicraft fair, respectively with 36% and 37.3%. Regarding safety, 64% of respondents do not consider the park safe, against 36% who think it is safe.

The result obtained confirmed most of the content proposed by the Internal Regulations Draft and allowed adjustments, especially regarding the hours of operation. It was very positive to realize how the community values the Tororó Ecological Park and considers it as a point of integration, developing sports activities, cultural activities, educational activities and interest in the importance of the park to preserve the ecosystems of the region. The proposal for the Internal Regulations of the Tororó Ecological Park was

sent to IBRAM in the second half of 2020, but it did not take a position on the demand of the Tororoense community for its park.

Collaborations and potential

CONSEG Tororó proved to be an example of associative and cooperative practices and alternative self-management for community and environmental safety. In the course of its actions, CONSEG Tororó has been expanding its range of influence as it organizes itself and involves other actors, such as public, private and collective institutions. In this sense, partnerships with educational institutions can contribute to the development of studies and research in order to substantiate technically and, politically, the actions to be developed.

The pressure of urbanization on the Grande Tororó Region, due to its nature and landscape potential, demands more and more organization and action of CONSEG to monitor the evolution of indiscriminate occupation over the area. The experience of community involvement for participatory management and planning proved to be rich, allowing the assimilation of community knowledge for the definition of protected areas, as well as uses such as ecotourism that can articulate adventure tourism. Today the Salto do Tororó waterfall is already included in several tourist itineraries of the Distrito Federal, such as the Cerrado Route.

The threat of disrespect to areas of environmental sensitivity demands that the community have to be permanently mobilized to monitor the urbanization process, to seek that it will be done with less socio-environmental impact and with socio-technical adequacy for basic sanitation within the water capacity of the region. The two parks already have legal apparatus, but lack of adequate infrastructure. Ecological and participatory tourism could make the Grande Tororó Region a model of sustainable occupation in the Distrito Federal.

Case 2 - Women Movement of the Ginga Suburb of Salvador - BA

The Ginga Suburban Women Movement (MMSG) is a Civil Society Organization (CSO) created in 2010 with the objective of combating sexism and racism, in addition to confronting violence against black women in the region of the Railway Suburb of Salvador - BA (Figure 139). The challenges have been faced through the execution of projects aimed at female empowerment, professionalization and social organization. The actions aim to train for the development of activities that contribute to emotional, psychological, social and

financial autonomy, as well as to encourage the report of occurrences of domestic violence and racism.

The Group is formed by women, mostly black, fishwife, day laborers, maids, students, health agents, teachers, artisans, social workers and bachelors in Gender and Diversity. Women protagonists of their stories and the community in which they live, who seek to improve the quality of life, existence and resistance of others.



Figure 139: Logo of the Women Movement of Ginga Suburb. Source: www.mulheresginga.com.br

Description and contextualization of the territory

The Railway Suburb (Figure 140) is inserted in the Restructuring Macro-area of the Borda da Baía de Todos os Santos, according to the Master Plan for Urban Development of Salvador (PDDU) (BA, 2016). It is considered a strategic area for the urban development of Salvador due to its geographical position in relation to the Baía de Todos os Santos and the Baía de Aratu, which present favorable conditions for nautical and port activities, and other economic activities related to the sea.

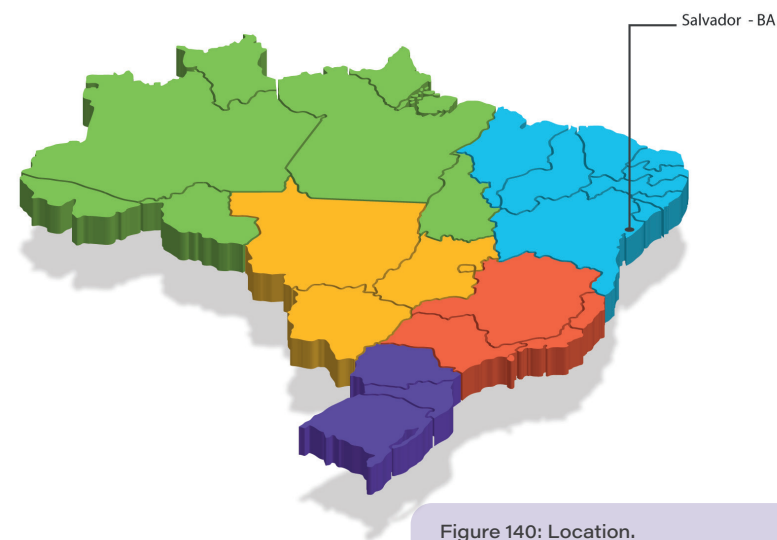


Figure 140: Location. Elaboration: João Lima Farias, 2022

The region is characterized by the need for urban, economic and social rescue of neighborhoods that form an extensive pocket of poverty with a deficiency of infrastructure networks and provision of public equipment and services, configuring a framework of great urban and social vulnerability (BA, 2016). The Macro-area encompasses the territory that extends from Lobato to São Tomé do Paripe and neighborhoods to the south, located in the upper part of the Geological Fault, in the region of São Caetano and Pirajá, configuring itself as a predominantly residential area of horizontal pattern, and still presents gaps and shelter the population of low and medium income.

The Railway Suburb encompasses 22 popular neighborhoods of Salvador that had their initial population linked to the railway line in 1860, and became a vector of growth towards the Baía de Todos os Santos (JESUS; ROCHA, 2018). The population of about 500 thousand inhabitants is characterized by Afro-descendant culture with a predominance of blacks, poor, low schooling and high levels of urban violence (SOARES, 2009; BAHIA, 2016).

The Railway Suburb and the Miolo have the Human Development Index (HDI) of 0.578, revealing the contrast with that of Salvador (HDI 0.759) and the differences between spaces of the same territory (JESUS; ROCHA, 2018). According to the aforementioned authors, the low HDI is due to constant violence, drug trafficking, prostitution, and lack of sanitation and food. In this context, women represent an important workforce contributing substantially to family income, in addition to accumulating household chores and being, many of them, victims of domestic violence.

This territory concentrates a large part of inhabitants who live with the lack of employment, urban violence, precarious housing occupying risk slopes, demands for basic sanitation, access to the health system, education and security (JESUS; ROCHA, 2018), although it has cultural diversity formed by groups of capoeira, music, samba de roda (circle samba), terreiro (kind of a temple), among others.

In this scenario, the Women Movement of Ginga Suburb has developed numerous projects and actions (Chart 8) for the training of women in various themes, especially those aimed at training around gender oppression, racism, racial identity, domestic violence, professionalization, strengthening of social control networks of public policies, among others.

Nº	Name of Project	Year	Objective/ Target audience	Actions developed	Funder/ Partnerships
1	Untying Knots	2010/2011	Professionalization (screen printing workshops; handicrafts); Training to confront oppressions of gender, racism, racial identity: Law 10.639 and Law 11.340/2006	Activities with Black Women who make animal raffles among waste pickers and residents of the Community of Santa Luzia do Subúrbio Ferroviário de Salvador, BA	Females Fund; Brazil Fund for Hunamos Rights; Universal Service Coordination (CESE)
2	Network for the Strengthening of Social Control of Public Policies	2011/2012	Installation of a network to strengthen the social control of public policies with 5 organizations	Creation of the Renascer Mulher Association; Itinerant consultations in the communities of the suburb and some peripheries of Salvador on the themes: daycare centers as a right of children, duty of the municipality: autonomy of black women	
3	Blitz Social of the Suburb	2013	Encourage the compulsory notification of violence against women (Law 10.778/2003) with the UBS (Health Basic Unit) of the Health District of the Railway Suburb	A total of 17 UBSs (Health Basic Unit) were worked through the participatory planning methodology covering public health and education professionals	Social Control Network; CESE
4	Domestic Violence and Compulsory Notification in the Sights of the Women's Network	2014/2015	Mapping and training women's autonomy and how to overcome violence, especially domestic violence	Mapped 10 of the 22 communities in the Railway Suburb of Salvador and the island of Maré; trained health, education and safety professionals to notify cases of violence against women seeking care.	They are the Social Investment Fund of Rio de Janeiro; Renascer Mulher Association; Social Control Network
5	Comugerê Project of Rights	2016/2017	Encourage and strengthen women's autonomy and confront violence, especially domestic violence	It promoted actions aimed at emotional, psychological, social, financial autonomy, especially domestic autonomy. Enabled the participation in the event "July of Black/2017"	AIDS Support and Prevention Group - GAPA/BA
6	Obirim Olodê Project - Black Women, Street Ladies	2018	Lecture	It promoted a lecture and debate with the title: From the Winning Slaves to the National March of Black Women	

7	Cutting and Sewing Course	2018	Empowering women in cutting and sewing	Empowering women in cutting and sewing	Qualifica Bahia Program of the State Government
8	Cultural exchange with French Guiana	2018	2 months internship for student	Trained student Jean Pierre Maille Love	University of French Guiana
9	Prevent yourself! No Skin to Skin	2019	Prevention of Sexually Transmitted Infections (STIs) and HIV/AIDS for adolescents at the Dantas Júnior State School - Santa Luzia, with emphasis on human rights, sexual and reproductive rights	IST/STD Program for High School Youth	CESE
10	Black Women: Developing Strategies, Strengthening Knowledge	2020/2021	Training in raising financial resources and managing them	Training aimed at members of black women's organizations that work with civil society organizations, in order to raise financial resources, expanding networks and promoting the fight against racism and sexism	Baobá Fund - Fund for Racial Equity, through the Program for the Acceleration of the Leadership Development of Black Females Marielle Franco Black Women; Network of Black Women and UFBA (Bachelor of Gender and Diversity Studies)

Table 8: Projects and Activities of the Women Movement of Ginga Suburb. Source: Compiled from <https://www.mulheresginga.com.br/parcerias> (adapted).

Presentation of good practices

In order to deepen some actions, the experience of the project Prevent yourself! No skin to skin!. The project Prevent yourself! No skin to skin! aimed to carry out an integrated campaign to prevent sexually transmitted infections among adolescents and young people from the community of Santa Luzia do Lobato - Subúrbio Ferroviário de Salvador, also highlighting the need to awaken in the target public the need to fight and defend their rights, especially universal and equal access to the public health service. The title of the project sought to register a cultural aspect existing among the young people of the Railway Suburb of Salvador, who use the term "bareback" or "skin to skin" to refer to unprotected sexual intercourse.

The project contemplated three specific objectives: (i) to involve adolescents and young people in the acquisition of knowledge on the themes of prevention and sexual and reproductive rights; (ii) to produce a situational participatory diagnosis with the perceptions and speeches of adolescents and young people about prevention and sexual and reproductive rights; (iii) give visibility to the theme and the places of tests and treatments during the campaign.

In the first specific objective, 100 young people from the community were invited to four workshops on the prevention of Sexually Transmitted Diseases (STDs) and rights of access to health, each workshop for 25 young people. For the second objective, two conversation circles “Speak what you think” were held for 40 young people/adolescents, divided into two groups of 20 youngers/adolescents. In the third specific objective, the challenge was to reach 500 people in the community with information on the prevention of sexually transmitted infections, as well as to inform the places where to find specific treatments and distribution of information leaflets and condoms to 200 people.

The team that worked in the execution of the activities was composed of the members of the Women Movement of the Ginga Suburb, the Network of Healthy Communities and nurses of the Ribeiro Santos Family Health Program (PSF). The workshops were held at the Dantas Junior State College, located on the steep road of the Fiais, Santa Luzia, in Salvador, using playful dynamics that associated music and a ball of paper passed between the participants until, when the music stopped, whoever had the ball took out a paper and asked a question to all the people present, that they could respond if they knew or passed it on to someone else. The answer was complemented by the facilitator, a nurse from the PSF who continued the dynamic. At the beginning of the workshops, questionnaires were applied to perceive the opinions of adolescents/young people on issues related to sexual practices, ethnic-racial identities and economic and social conditions.

The workshops also promoted training for the correct use of male and female condoms, registering in all 4 workshops the participation of volunteer girls for the practice of condom placement, unlike boys who did not volunteer (Figure 141).

The project reached 650 people, of whom 50% were women and up to 60% were young people. In the initial group, with the support of the PSF, rapid tests were performed on 80 adolescents over 16 years of age to detect Hepatitis B, Hepatitis C, Syphilis, and HIV, and in this sample, one case of syphilis in a 16-year-old adolescent was found. She and her boyfriend were instructed to attend the PSF to receive treatment and guidance.

Along with health content, the workshops offered information on sexual and reproductive rights, human rights, gender, and race, with a time for teenagers to question and ask questions.

The analysis of the data collected through the questionnaires revealed that 42.7% of the families are single-parent and cared by women. The data also revealed that girls have a greater presence (54.8%) in relation to boys, although a good part abandons studies early, data corroborated by the National Household Sample Survey (PNAD, 2015), which highlights that among young people who dropped out of school without doing high school,

boys/men employed in paid activity outnumber by more than twice the girls/women in the same situation: they are 43% (boys/men), and they (girls/women) are 18.3% of the total, possibly with girls devoting themselves to household chores or the burden of an unplanned pregnancy.

Another piece of information brought by the questionnaire data was that the ethnic-racial self-declaration among young schoolchildren was 42%, considered as a consequence of the movements of recognition and rescue of black history in Bahia.

The project also worked on an information campaign and the offer of condoms in the Space of the Ginga Women Movement and in the train stations (Figure 142).

The project participated in the Municipal Health Conference disseminating and emphasizing the prevention of sexually transmitted infections and sexual, reproductive and human rights.



Figure 141: Practice of placing condoms in prostheses. Source: Ginga Women, Diagnostic Report on the Plate, 2019



Figure 142: Information campaign and distribution of condoms in train stations. Source: Ginga Women, Diagnostic Report on the Plate, 2019

Collaborations and potential

The collective Movimento Mulheres do Subúrbio Ginga (MMSG) (Women of Ginga Suburb Movement) promotes associative and cooperative practices for alternatives in ecosystem health services, sanitation and governance, such as the Prevent Yourself! No skin to skin! project, in which the collective's educational health services stand out with the basic health units. Both stand out for the performance of health agents and nurses in making them socially adequate and accessible for young people, especially for black women. This project has the potential to become a model to be replicated, and its reach can be greatly amplified if there is a partnership with educational institutions.

Given the needs presented in the 15 neighborhoods of Subúrbio Ferroviário (railway suburb), the collective has already been demonstrating engagement and empowerment of the local population, as shown in Table 2. The potential can also be expanded with the participation of institutions that carry out studies and research, making it possible to further strengthen and organize communities in the territory.

Urgent possibilities regarding the vulnerability of food security are glimpsed, with themes that still need to be explored for the development of social technologies in agroecology, use of existing local productive surplus, etc. Another important theme refers to studies on ecologically sustainable occupation through urban design and socially adequate housing that can generate collective, public, productive, healthy urban spaces that guarantee leisure.

As an example of a housing project of the government program Minha Casa, Minha

Vida existing in the region, it is possible to see the possibility of space for the implementation of socio-technical adequacy for design sensitive to social and environmental constraints, which can adapt technologies such as organic / community agroecological garden; gardens of medicinal and aromatic herbs; local collection service; solid waste sorting point for composting and recycling as an alternative income; and encouragement of artisanal potential. All these actions structure a solidarity economy for the Railway Suburb of Salvador.

Case 3 - Environmental Multipliers - BA

Environmental Multipliers is an environmental education program organized by the Environmental Action group in conjunction with Michelin Plantations of Bahia (PMB) in the Baixo Sul region, in the interior of the state of Bahia. PMB owns 13,000 hectares of land – purchased from Companhia Brasileira de Borracha (CBB) in the 1980s (LIMA, 2011) – in the municipalities of Igrapiúna and Ituberá, where 3,000 hectares belong to the area of the industry's Atlantic Forest reserve. The remaining 10,000 hectares constitute areas of rubber (*Hevea brasiliensis*) crops – active for the production of latex, which is made at the processing plant located in the city of Igrapiúna – and abandoned areas that are part of the project of the native forest recovery industry. The program, taught by professors Mônica Pereira and Tarcísio Botelho (Environmental Action), both with training and long experience in the areas of environmental education and socio-environmentalism, reaches approximately 30 young residents of the surroundings of the Private Reserve of Natural Heritage Ouro Verde (RPPN-PMB). Since 2012, the young members of the program have been learning and multiplying knowledge in environmental education.

Description and contextualization of the territory

The Baixo Sul is a region located near the South Coast of Bahia, south of the Recôncavo Baiano and the Baía de Todos os Santos (Figure 143). The practice of dividing the state into micro-regions was a strategy of the defunct Ministry of Agrarian Development (MDA) for rural planning and development (JUNIOR; ALVES, 2020), and defines this territory, composed of 15 municipalities, as Territory of Identity.

Among other factors used for this definition, the main one was the notion of local belonging. The region has remnants of the Atlantic Forest biome in varied geographical configurations, ranging from coastal plains to inland seas, and result in a great diversification of existing environments: mangroves, sandbanks, ombrophilous forests and open forests

found on islands, peninsulas, bars (river morphology), valleys and hills. In the same logic of variations that guarantee such plurality to the landscapes of this region are the settlements throughout the territory, one by one, singular and plural as their landscapes (JUNIOR; ALVES, 2020).

The environmental and social characteristics are a tourist attraction for the whole world, both for the landscape potential and for the ways of life of these communities, which are, as Alves and Junior (2020) affirm, farm hands and river marshes of fishermen, farmers, shellfish gatherers and artisans.



Figure 143: Location. Elaboration: João Lima Farias, 2022. Polygonal location of the Lower South - BA. Source: Prepared by Santos Júnior, 2019, from Google Earth.

Biannually, the municipality of Ituberá hosts the Universo Paralelo (parallel universe) Festival, on Pratiği beach, an electronic music event that has gathered about 15,000 people¹¹. This contingent is equivalent to more than half of the population of the municipalities of Ituberá which, according to estimates by the Brazilian Institute of Geography and Statistics (IBGE), reaches 28,740 people (BRASIL, 2020), and more: it exceeds the population of the neighbor municipality to the south, Igrapiúna, with 13,347 inhabitants (BRASIL, 2020).

¹¹psicodelia.org.

In this context, the Environmental Multipliers in the Lower South program has been working with the objective of promoting educational alternatives for the preservation of the planet, society and the environment, developing workshops and educational trails with the communities (Figure 144). It is composed of young children of small agricultural producers, residents of villages and rural gardens in the vicinity of the RPPN-PMB.



Figure 144: Environmental Multipliers on an educational trail with visitors at the Cachoeira da Pancada Grande Ecological Park. Source: Environmental Multipliers.

Presentation of good practices

The Environmental Multipliers project (PMA) presents alternative experiences for sanitation and local environmental management through training workshops. For the preservation of the Atlantic Forest, activities are developed aimed at apprehending the functioning of the biome from reflections on its natural dynamics. On the other hand, it develops recycling workshops and awareness about materials harmful to nature, such as processed cooking oil, alkaline batteries, electronic materials, among others. Its main objective is the training and multiplication of knowledge and techniques from the young people of the communities, who become possible agents capable of replicating them in free spaces in the cities mentioned above and in the RPPN in order to build a strong base of defense of the environment in the region. They can become multiplying agents capable of guiding local populations on the necessary care to protect fauna and flora, and alert to the danger of imminent extinction of species.

The PMA envisions that the communities have been sensitized by the educational service of young people and, according to data from the program, it is possible to say that it has already managed to reach more than 300 people directly. Adding this amount to the reach of social networks – around 600 people, in addition to the dozens of students and tourists who have already witnessed the work of these new environmentalists – the reach of the Multipliers actions has reached much more than a thousand people since 2012.

The project also seeks partnerships with research in development in the interior and in the vicinity of the Private Reserve of Natural Heritage (RPPN), at the Center for Biodiversity Studies (CEB) – an initiative of Michelin Ouro Verde – which encourages scientific production and projects for the restoration, preservation and conservation of the Atlantic Forest and which is located inside the reserve. The studies focused on conservation, restoration and preservation of the Atlantic Forest have supported the actions developed by PMA while allowing the exchange of knowledge developed with students and the community.

The workshops are organized based on the demands, such as the campaign in defense of the jaracuçu-carpet snake (*Bothrops pirajai*), in 2015, a species with a serious risk of extinction in the region. The activity aimed to reduce the impact of communities on the reduction of the species. To this end, we sought to demonstrate the behavior of snakes to demystify popular fear, the main reason for the reduction of the specie. Workshops and guidance on management were held to avoid accidents or care in case of an accident.

The campaign achieved results with good community involvement, and the jaracuçu-mat became a symbol of the activity (Figure 145), with an indication for a model in similar campaigns with mammals and birds.



Figure 145: Environmental Multipliers with the My Unknown Neighbors project.
Source: Environmental Multipliers

The PMA also enabled exchanges with international researchers to exchange experiences, such as cataloguing new species – such as the suçuarana, rediscovered in the region. For almost ten years, the project has been enabling experiments, especially of alternatives for environmental management with social participation (Chart 9).

Nº	Name of Project	Year	Objective/ Target audience	Actions developed	Funder/ Partnerships
1	Planting of Native Species in Abandoned Rubber Tree Areas	2014	To densify the diversity of Atlantic Forest species in monoculture areas of abandoned rubber trees (<i>Hevea brasiliensis</i>)	Planting dozens of seedlings of native trees in the rows and sangria; report of the action; Photographs	Environmental Action; Michelin Plantations of Bahia LTDA (PMB); Center for Biodiversity Studies (CEB); Young multipliers
2	Interpretive trails: mangroves	2014	Present the possibilities and riches arising from the landscapes of the region; awoke curiosity about the potential of this ecosystem and why it is the source of income for several families in the region	Presentation of the Restinga ecosystem; walks that happens in the paths of the middle of the mangroves; general presentation of the mangrove.	Environmental Action; Michelin Plantations of Bahia LTDA; young multipliers; volunteers
3	Soap Workshop with processed cooking oil	2014	Ensure more sustainable purposes for processed cooking oil, preventing it from reaching rivers and seas allowing the use at home of soap made at home, reducing the need to buy this product.	Presentation of the chemical properties of soap, water and oil; hydrophilic and hydrophobic characteristics; collection of processed oil in the communities.	Environmental Action; Residents of villages and rural communities; Young multipliers; Early childhood schools
4	Herpetofauna of Atlantic Forest	2014	Presentation and contact with reptile and amphibian species present in the Atlantic Forest biome	Lectures and species management	Executive Committee of the Cocoa Crops Plan (CEPLAC); Environmental Action; Michelin Plantations of Bahia LTDA (PMB); Environmental Multipliers
5	Monitoring of research for survey of felines in the reserve	2015	Contact with the activities performed by the biologist and researcher at the head of the research	Arrangement of motion-sensitive cameras scattered throughout the reserve; trails in search of feline remains; image analysis and final reports	Environmental Action; Bioeducar Institute; CEB; PMB
6	My Unknown Neighbors	2019	Promote knowledge about species at risk of extinction in the region	Lectures and presentations; Votes; reporting	Environmental Action; Bioeducar Institute; CEB; PMB

Table 9: Projects developed by environmental multipliers between 2014 and 2019. Source: Prepared by Erivan de Jesus Santos Junior (adapted)

In the matter of this work, we sought to deepen the project My Unknown Neighbors, a model very characteristic of the other projects executed by the PMA. The project arises from the need to bring the local population closer to the species of the region at risk of extinction. To this end, a week of lectures was organized in municipal schools in the cities of Igrapiúna and Ituberá, in the morning and afternoon shifts. The program's student volunteers received training and then passed it on to the schools visited. From the content of the lectures, the students of the schools produced exhibition material for the event Jornada Pedagógica in Ituberá, in the same year.

During the event, volunteers encouraged visitors and lecture participants to choose among the endangered species in order to elect the “flag species”, that is, the symbol for conservation in the region.

After the presentation of each of the chosen species – suçuarana (*Puma concolor*), capuchin monkey (*Sapajus*), jupará (*Potos flavus*) and jaracuçu-matte (*Bothrops pirajai*) – a vote was held.

1348 votes were counted and, surprisingly, the suçuarana was elected the flag species of the region, with the jaracuçu-matte being the second most voted species, an interesting fact that goes against the popularity of snakes that, considered less charismatic, are less accepted by the population. In this sense, the matter of the work of environmental education agents in the territory and in the communities represents an alternative of participatory environmental management of endangered species, in which educational services were assimilated with community involvement. The reach can be further increased when there is the involvement of agents such as radio and local media. According to the organizers of the My Unknown Neighbors project, it is estimated that it was possible to reach more than 1500 people, not including data from local media.

Collaborations and potential

The Environmental Multipliers project presents itself as an associative practice capable of generating alternatives for environmental governance and discussions related to sanitation aimed at recycling waste, such as the My Unknown Neighbors project, in which the training of young people from the community by academic volunteers and PMA teachers enabled the adequacy of services through information and techniques on the endangered species of the region.

The participatory arrangement brought together the community through school students, student academics and volunteer teachers and researchers around the environmental issue, but it can reach, involve and relate to other agents, such as teaching, research and extension institutions and the public power, as well as it can incorporate themes that are still outside the matter of the project, from the adoption of an ecosystemic and solidary perspective of the Lower South.

Given the shortcomings presented in the Baixo Sul – BA and the conflicts reported, the PMA is able to improve the involvement of the community, enabling participation in all

the processes of the workshops, from the choice about the socio-environmental conflict to be worked on to its contributions and knowledge acquired in local experiences. By action research methodology, they can, at the same time, gain autonomy to plan and manage, supported and grounded by the other actors. In this sense, issues such as ecosystem health, basic sanitation, governance, habitat and solidarity economy could also be addressed.

Case 4 –Child Environmental Agent Project, in the Distrito Federal

The Child Environmental Agent Project (PAAM) is part of the Extension Program “Stop, Think, Discard”, conceived in 2010 by the students of the Collective Health Course of the Faculty of Ceilândia of the University of Brasília in order to implement selective collection on campus and empower collectors of recyclable materials through health promotion actions, in addition to social inclusion and workers’ rights.

PAAM proposes associative experiences for alternative health and sanitation services with socio-technical adequacy. The project conducts workshops for elementary school students of the Distrito Federal Education Network and in institutions that have a social program, such as the DF Fire Department, through the Firefighter Mirim (for kids) and Adasa na Escola programs, in order to help in the process of education and awareness on topics related to the care and preservation of the environment.

Community participation in PAAM occurs through the application of workshops aimed at elementary school children in the Distrito Federal, but also through the participation of extension students, teachers and researchers coordinating the program and eventual participation of public and private institutions in the construction of educational workshops, and seeks to involve the active participation of children in natural resources, with an ecosystem focus on health.

The project has a main focus on children, by raising awareness at an early age, and seeks to raise awareness and empower them as replicators of socio-environmental behaviors in their homes and at school. The contribution of investment in the education of children may result in better results, given that children are in training, because it is not feasible to try to change habits already developed and opinions already formed in adults. It is important that they take care and preserve the natural resources that exist today, so that they can continue to enjoy them in the following decades. Thus, it is hoped, with the project, to train children sensitive to the challenges of conservation and environmental preservation and to assume healthier lifestyle habits.

The proposal was anchored in the conceptual framework of reference of ecopedagogy, which works with the theoretical foundation of “planetary citizenship”, in which the idea is to give meaning to the action of men as living beings who share with other lives the experience of planet Earth. It is a true political and educational movement whose project is to change the current human, social and environmental relations. The promotion of sustainable societies and the preservation of the environment depend, according to ecopedagogy, on ecological consciousness, and the formation of this consciousness depends on education (GUTIÉRREZ, 1999).

Description and contextualization of the territory

The Child Environmental Agent Project operates in territories and regions of the Distrito Federal classified as areas of environmental and social vulnerability. The project prioritizes the development of its activities in regions and communities that live in a situation of socio-environmental and sanitary vulnerability, such as Ceilândia, Sol Nascente, p. Norte, Samambaia and Cidade Estrutural. In this chapter, the project activities that have already been carried out in vulnerable areas such as Ceilândia, in 2016, and the Structural City, in 2018, will be taken as an example.

The City of Ceilândia, Administrative Region IX of the Distrito Federal, was created to receive inhabitants of irregular occupations and without basic infrastructure, originating from the favelas Vila do IAPI, Vila Tenório, Vila Esperança, Vila Bernardo Sayão and Morro do Querosene, within the matter of a government action called the Campaign for the Eradication of Invasions (CEI), of 1971.

In 2013, the population of Ceilândia was 451,872 inhabitants, representing 16.22% of the entire population of the Distrito Federal, therefore, it is the most populous in the DF. It is recognized as the RA of the Distrito Federal that has the largest contingent of Northeasterners and their culture (BRASIL, 2015). In relation to its current social and economic characterization, the city has a high percentage rate of workers without a formal contract (40.4%) and non-taxpayers with the INSS (26.6%) (BRASIL, 2019).

Regarding the rates of remuneration and household income, the AR has an average value of R\$ 1,931.25. Household income was estimated at R\$ 3,171.70, resulting in an average value of R\$ 1,125.10 per person. In terms of basic sanitation, Ceilândia has water supply by Caesb for 98.86% of households, and sanitary sewage for 64.08% (DF, 2017).

The Estrutural City, administrative region XXV of the Distrito Federal (SCIA-Estrutural) is part of the administrative region SCIA/Estrutural and is characterized by

inequalities in relation to other regions of the Distrito Federal, such as the Plano Piloto, Lago Sul, Sudoeste, Noroeste and Águas Claras. The Structural City encompassed the “Estrutural Dump”, considered for many years as the largest in South America (DF, 2017).

The occupation of the Estrutural Dump area originated in the 1960s, with waste pickers attracted to the landfill in search of means of survival and housing. The construction of the DF-095 highway – called Ceilândia Park Road (EPCL), known as Estrutural – in the mid-1970s, to interconnect the Industry and Supply Road (EPIA) to Taguatinga, Ceilândia and BR-070, boosted the occupation of the area by waste pickers.

The territory encompasses the Petrobras gas pipeline and is located in the vicinity of the National Park of Brasilia, in addition to housing the dump. It presents socioeconomic indices that differ from the other administrative regions. The household income of the locality is concentrated between one and five monthly minimum wages, being the lowest per capita income in the Distrito Federal, with an average of R\$ 507.30 (BRASIL, 2020).

The HDI of 0.616, together with Recanto das Emas, Samambaia, São Sebastião and Sobradinho 2, contrasts with the average of the Distrito Federal, which in 2010 was 0.824. The region also has the highest illiteracy rate (5.77%) among the administrative regions of the Distrito Federal (BRASIL, 2020).

Most of the population of the SCIA/Cidade Estrutural Administrative Region (93%) is supplied with water by the general network of Caesb, although there is still a small portion that uses water from cisterns. In terms of sewage, 89.8% of the households are already interconnected to the general network of Caesb, although there are still 6.8% that use septic tanks and 3.4% pits. In terms of electricity supply, 91.4% of households consume energy supplied by Companhia Energética do DF (CEB) (BRASIL, 2015).

In this context, PAAM has been developing its activities in schools in regions of socioeconomic and environmental deprivation of the Distrito Federal, involving, since 2016 – when it began its pilot project at the Class 66 School, of the Rising Sun – the children of the communities, students, teachers, researchers and partners of institutions and collectives.

Presentation of good practices

The associative and community experiences made possible by the Child Environmental Agent Project are developed from the extension, with the involvement of academics encouraged to develop participatory workshops on learning technologies and awareness about health and environment for elementary school students.

The workshops developed include topics such as rational use of water, pollution, proper disposal of solid waste, deforestation, global warming, dengue prevention, among others. All themes are addressed in a participatory and experiential way, in order to sensitize and change the attitudes of students, creating the possibility that the acquired knowledge is multiplied in other social spaces frequented by them (Chart 10).

N°	Area	Workshop Theme	Dynamics
1		Recycling	Workshops and Gymkhanas
2	Solid Waste	Separation	Office
3		Natural resources	Theatres and Lectures
4	Water	Rational Use of Water	Educational Documentaries
5		Water in everyday life	Dynamic
6	Environment	Deforestation	Sensory sensitivity and perception activity
7		Use of Pesticides and Insecticides	Lectures
8		Tropical Diseases (e.g. Dengue)	Mosquito Net Workshop
9	Alternative Theme	Clean Energy	Lectures and Documentaries
10		Cleaning of the Lakes	Sensory sensitivity and perception activities

Note: In addition to the workshops is held a chat with students about what was taken from fruit, the importance and relevance of the theme in society in order to make the student reflect and respond with his own words what happened

Table 10: Workshops offered by the Child Environmental Agent Project (PAAM). Source: Prepared by Vinícius Araújo Gonçalves (adapted).

For deepening, the process of construction of the workshops by PAAM will be described from the experiences that relate to public health, basic sanitation and the environment: Workshop on Dengue: Confection of Mosquito Trap, Workshop Rational Use of Water and Workshop Deforestation and Solid Waste.

PAAM develops participation in different stages and moments in the process of organization and execution of workshops. Initially, there is a lecture of extension students, who are encouraged to develop workshops with content focused on their research. Among

the contents of the workshops, environmental awareness and sanitation issues were developed, such as the workshop Rational Use of Water (Figure 146) and the workshop Deforestation and Solid Waste (Figure 147), applied in the class 28 school of Ceilândia Norte, in 2018.



Figure 146: Workshop on the Rational Use of Water applied at the Class 28 school of Ceilândia Norte, in 2018. Source: PAAM (2017)



Figure 147: Workshop Deforestation and Solid Waste applied in the school Class 28 of Ceilândia Norte, in 2018. Source: PAAM (2017)

Similarly, other extension workers developed workshops to build alternative technologies for health-related issues, such as the Workshop on Dengue: Confection of Mosquito Traps, an experience developed at the Estância Pipiripau Community School, in Planaltina, in 2017 (Figure 148).

The project seeks to respect the knowledge and social technologies already existing in the community. Commonly, in the workshops children are encouraged to present their understanding of the environmental theme. Knowledge and techniques are shared with the population through students who have the possibility to replicate and multiply them. These experiences have demonstrated alternatives of practical training in ecosystem

health, both through the democratization of technical knowledge and the academic training of future professionals.



Figure 148: Workshop on Dengue: Confection of Mosquito Traps, an experience developed at the Estância Pipiripau Community School, in Planaltina, in 2017. Source: PAAM, 2017

Collaborations and potential

The Child Environmental Agent Project, as an associative and participatory strategy, has demonstrated important advances in the involvement of children in educational and technological issues, as well as in the professionalization of academics sensitive to participatory strategies. Its effects can have an immediate impact on serious endemic issues of mosquito-borne diseases, as it encourages the use of the mosquito traps, or in the long term by raising awareness of educational workshops about waste disposal and the importance of water.

The project also contributes to the production of scientific knowledge through the production of bibliographic references in ecosystem health, the orientation of course completion papers and scientific research, and the publication of scientific articles and books.

This impact can be further amplified if the activities are also developed together with other collectives or organized civil agents, including young people and adults in the process. Public agents with effective experience, reach and field knowledge can also be included, such as health and social service agents.

On the other hand, considering the transdisciplinary matter, the project can substantiate and contribute to related areas, such as architecture and urbanism, social work, civil engineering, and education, among others organized collectively or by partnerships in

research and extension projects, such as the Extension Program “Stop, Think, Discard”, of the Collective Health Course of the Faculty of Ceilândia of the University of Brasília.

Case 5 – Local community management for sanitation in the community of Santa Luzia, in the Distrito Federal, with the participation of the FAU/UnB Peripheral Group

The experience of local community management of sanitation is the result of the involvement between civil society, the Santa Luzia community, in the Distrito Federal, and the university through the Peripheral Research and Extension Group of the School of Architecture and Urbanism of the University of Brasília (UnB). Santa Luzia is an occupation with more than 15 thousand families, standing out as an example of urban occupation among the 464 informal occupations in the Distrito Federal that do not have systematized data (ANDRADE et al., 2021).

The participation in Santa Luzia was organized by the community in general, by the Coletivo Mulheres Poderosas – a group of welcoming, female entrepreneurs and strengthening of families in the region –, by the Sonho de Liberdade Cooperative, linked to the selective garbage collection of Estrutural, and by undergraduate and graduate students linked to the group.

Since 2018, experiences in the “action research” format have been developed through active methodologies and social mobilization, with a transdisciplinary and trans-scalar vision (ANDRADE, 2014) in order to encourage participatory community management and build participatory teaching alternatives.

The group coordinated by Professor Liza Maria de Souza Andrade and registered with the National Council for Scientific and Technological Development (CNPq), has been incorporating the experience of social participation in the group's activities, inserting it into the design process with the development of active methodologies and in the group's production (articles and participation in events), in addition to the requirement inherent to the Architecture and Urbanism course of the final work of completion of the course and a product technical in the form of an illustrated notebook. These have been shown to be a powerful mechanism to assist in verifying the viability of maintaining the population, such as Santa Luzia.

Description and contextualization of the territory

The community of Santa Luzia is located in Cidade Estrutural, in the Distrito Federal,

in a peri-urban region located next to the old landfill Lixão da Estrutural (Figure 149), in the vicinity of the National Park of Brasília. Its formation process began in the late 1990s, in the north of the region, in a place known as the sector of Chácaras de Santa Luzia, a semi-rural locality near the National Park of Brasília.

According to Miranda (2016), the area is a fast-growing informal settlement that arose from the housing needs of families who had previously been evicted from where they lived. The low availability of sanitary and health infrastructure (Figure 150) and the growing proximity to the park and the Córrego do Acampamento, part of the Bananal Micro-basin, characterize the main socio-environmental conflict of the community (ANDRADE; NERY, 2020).



Figure 149: Location. Elaboration: João Lima Farias, 2022. Map Santa Luzia and surroundings: Structural Dump, Structural City, Urban Park, Automobile Sector and National Park of Brasília. Source: Portugal, 2019; Andrade; Nery, 2020.



On the other hand, the Environmental Sanitation Company of the Distrito Federal (CAESB) does not meet the legal health conditions and also hinders any physical improvement in the living conditions of the population due to existing legislation, an act justified by the land conflicts of the place. In this scenario, many inadequate strategies that involve were identified, which involve the reuse of materials by residents in the search for immediate solutions to their problems, but that can generate harmful effects both for the internal community and for common life within the city (ANDRADE; NERY, 2020).



Figure 150: Images from the Santa Luzia photographic survey. Andrade; Nery, 2020

In this scenario, the Peripheral Research and Extension Group has been working in the Distrito Federal and its surroundings, as in Santa Luzia, from the development of research on peripheral and marginalized themes within the academic system related to the production of space in the countryside and in the city (Urban Reform and Agrarian Reform).

Presentation of good practices

The actions developed in the Santa Luzia community by the Peripheral Research and Extension Group are the result of the application of active methodologies and social inclusion in the teaching processes participated in the development of social technologies with communities in the matter of Urbanism and Architecture projects, through “an interdisciplinary and transdisciplinary approach in the areas of health promotion, solidarity economy and human rights” (ANDRADE et al., 2019, p. 198).

The group enables experiences lived as a social construction to promote a double exchange of knowledge – between students and the community, and between this and the university – in order to meet the problems and identify the local potentialities, without subordination of knowledge and respecting the potentialities of all participants. In this sense, the experiences propose to rescue the contributions of organic and participatory traditions of urbanism, based on the self-organization from the bottom up, the policies of popular housing, the new policies based on public transport, the public buildings designed for learning, socializing, communication and expression of people, draining ecological spaces,

the axis, pedestrian spaces and bike paths that promoted diversity and intersubjective relationships (ANDRADE et al., 2019).

The Peripheral design process is divided into 5 interrelated stages: (i) analysis of the physical and social context, with the involvement of the local population according to the dimensions of sustainability; (ii) elaboration and systematization of spatial patterns and events based on the information collected; (iii) participation workshops, mind maps, affective maps and game of patterns (iv) construction of scenarios, alternative proposals of the preliminary study for decision making; (v) delivery of the illustrated chapter.

Nº	Academic	Year	Product Academic Requirement	Product with Effective Social Power
1	Attila Fialho	2019	Final Paper of Course Conclusion "Santa Luzia neighborhood plan"	Workshops and Neighborhood Plan Proposal
2	Sofia Portugal	2019	Final Paper of Course Conclusion "The inhabitation of powerful women - Sustainable and supportive community"	Contest "Territories lived and imagined"
3	Gabriel Perucchi	2020	PIBIC "Santa Luzia Sensitive to Water: Spatial patterns of ecological infrastructure for the more sustainable fixation of the informal settlement of the Estrutural City"	Article IV ENANPARQ: "Santa Luzia Sensitive to Water: Leapfrogging approach with spatial patterns of ecological infrastructure for informal occupations in the Distrito Federal"
4	Guilherme Neri	2020	Final Course Conclusion Work "Micro Local Community Management Plan: Analysis and Urban Proposition of the Sanitary Context"	Technical Notebooks 01, 02 and 03 Cyclical Territories: Ecological Sanitation, environmental education, solidarity economy and territorial governance from eco-affectivity of the Santa Luzia community - DF

Table 11: – Production Academic Requirement and Production with Effective Social Power of the social participation of the Community of Santa Luzia and the Peripheral Research and Extension Group. Source: Compiled by Andrade and Lacerda, 2020

Among the management actions in participatory sanitation, we highlight the experiences of chapters 01, 02 and 03 – Cyclical Territories: Ecological Sanitation, environmental education, solidarity economy and territorial governance from the eco-affectivity of the Santa Luzia community. Chapter 01: Coming from Clay; 02: Denunciation, pain against love; 03: This is my place (NERY, 2019) and the article "Santa Luzia Sensitive to Water: Spatial patterns of ecological infrastructure for the more sustainable fixation of the informal settlement of the Structural City" (PERUCCHI, 2020).

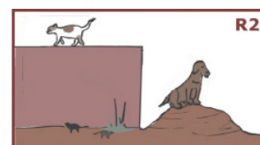
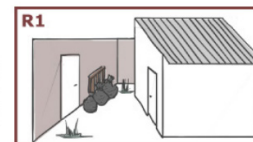
In the research of Neri (2019), the application of active methodologies for the characterization of the sanitary context of Santa Luzia was developed. The research was described in the form of an illustrated notebook, with accessible language identifying "Patterns of Local Problems" and "Patterns of Local Alternatives" for the socio-environmental conflicts of depletion, solid waste, drainage, water reception and thermal comfort (Figures 151 and 152).

RESÍDUOS SÓLIDOS

PADRÕES DE PROBLEMAS LOCAIS

Acúmulo de lixo nas casas e espaços públicos

Devido a ausência de coleta de lixo dentro da comunidade e as grandes distâncias até os papa lixos, ocorre em algumas residências e em trechos de espaços públicos o acúmulo de resíduos que podem gerar mal cheiro e atrair animais diversos



Animais pelas ruas

Existe animais pelas ruas da comunidade que devido seu estado de abandono podem transmitir doenças pelos seus dejetos ou a partir do contato direto. A falta de zoonose, limpeza urbana, e de infraestrutura de esgotamento potencializam os riscos que esses animais podem representar a saúde pública.

Uso de materiais inapropriados nas paredes dos banheiros

Muitas residências da comunidade são construídas a partir de materiais de reuso. A utilização de madeiras processadas nas construções das paredes das áreas molhadas como cozinha e banheiro dificulta a limpeza dos ambientes devido sua porosidade que também influencia na absorção e retenção de água. Estes materiais quando molhados constantemente podem começar a se decompor e a transferir umidade para os outros ambientes, interferindo na salubridade de toda a casa.



PADRÕES DE ALTERNATIVAS LOCAIS

Local para armazenamento de materiais recicláveis

Existe uma grande necessidade de área para separação e armazenamento de materiais recicláveis por catadores. Para isso são construídos ou dentro dos lotes ou nos espaços comuns coberturas para uma melhor relação de trabalho e de manutenção destes objetos. Porém em diversos momentos essas relações são desfavorecidas devido a inexistência de infraestrutura e espaço adequados.



Papa lixo

A única coleta de lixo ofertada para Santa Luzia é feita por meio de containers semi-enterrados (papa lixos), que se localizam no perímetro externo da comunidade. Sua disposição pelo território não garante acesso a toda população por demandar grandes deslocamentos as famílias que residem mais para o interior da comunidade.

Figure 151: Patterns of Local Problems and Patterns of Local Alternatives for Solid Waste. Source: Andrade and Lacerda, 2020

In Perucchi's (2020) research, the result of community participation resulted in the scientific text "SANTA LUZIA SENSITIVE TO WATER: Spatial patterns of ecological infrastructure for the more sustainable settlement of the informal settlement of the Structural City".

PADRÕES ESPACIAIS DE INFRAESTRUTURA ECOLÓGICA DE DRENAGEM E REAPROVEITAMENTO DE ÁGUA PARA SANTA LUZIA

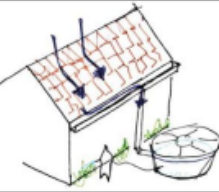
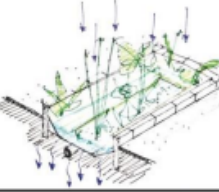

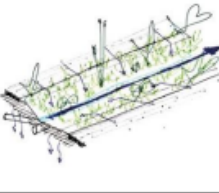
Padrão	Problema/Contexto	Recomendação	Ilustração
Reservatório de Águas das Chuvas	Armazenamento de água das chuvas para fins devidos pode ser útil em situações de crise hídrica e no caso de o abastecimento clandestino que existe em parte das residências de Santa Luzia seja cortado, assim como para redução de eventuais contas de água das famílias.	Tais reservatórios podem ser uma solução para reaproveitamento de água dos telhados, aplicados no nível do lote, especialmente para lavagem doméstica e irrigação de jardins sem hortaliças.	
Jardins de Chuva	Na época de chuvas, foram percebidos diversos pontos de acúmulo de água e potencial alagamento em vias paralelas às curvas de nível. O solo já está compactado e infere-se que sua absorção seja baixa.	Recomendados para o acúmulo e reabsorção de água em vias paralelas às curvas de nível, passíveis de alagamento, e em jardins internos a lotes.	
Bacias de Sedimentos	Pontos específicos de maior área do terreno possuem um grande potencial de alagamento, o que pode trazer problemas para os moradores que ali se assentarem.	Como reservam e absorvem grandes quantidades de água, são recomendadas para os pontos mais críticos de acúmulo no terreno. Bacias de Sedimentos possuem grande potencial paisagístico e podem concentrar a sua volta espaços públicos.	
Valas Hídricas	Ruas perpendiculares às curvas de nível recebem água de alta energia de transporte, de maior potencial destrutivo. Permitir a desaceleração e absorção destas águas ao longo de seu percurso é essencial. As valas hídricas são relativamente fáceis e pouco custosas de serem construídas.	Recomendadas para desaceleração da água em vias passíveis de enxurradas e formação de buracos. A linearidade permite seguir o percurso da água. A via dorsal de Santa Luzia é um importante exemplo de espaço para a criação de valas hídricas.	
Wetlands Construídas	Não aplicáveis ao contexto da ocupação	N/A	N/A

Tabela 2 - Padrões espaciais de infraestrutura ecológica para Santa Luzia. Fonte: elaborada por Gabriel Perucchi (2018).

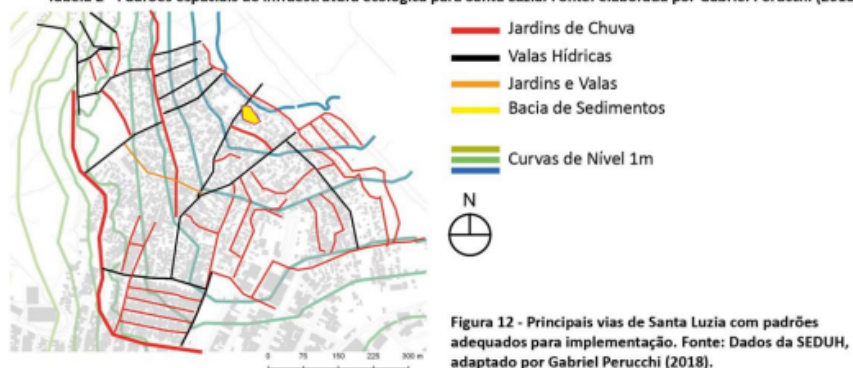


Figure 152: Mapping of contamination risk of the micro-basin of the region of Santa Luzia, DF. Source: Andrade and Perucchi, 2020

Collaborations and potential

The local community management for sanitation in Santa Luzia is the result of a participative, associative and community experience existing in the region, represented by the collectives Mulheres Poderosas and Sonho de Liberdade Cooperative, with the Peripheral Research and Extension Group of the Faculty of Architecture and Urbanism of the University of Brasília (UnB).

The organization of civil society produces a relevant impact with the realization of actions in the community and in the research developed by the Peripheral Group. On the other hand, the methodological model “action research” enables the collective construction that encourages the autonomy of the community through the technical work generated, meetings, events and possibilities of political claims by the community in public hearings.

The project has promoted the participation of other agents, such as the Public Prosecutor’s Office of the Distrito Federal, and can increase the participation of public agents in various scales of action, as well as research projects and extension of related areas.

FINAL CONSIDERATIONS

In the absence of the arm of the State to propose and execute public policies that reach the portion of society in a situation of vulnerability, communities are organizing, seeking self-management, to face problems and difficulties.

The five experiences presented are a source of inspiration for replication in other communities. The experience of the Ginga Women’s Movement of Salvador brings this reality. Citizens who live with violence against women, sexism, racism and with the lack of basic sanitation, causing a situation of extreme social vulnerability, organized themselves and left to manage their problems through projects that aim to educate, promote self-esteem and empower women to be protagonists of their lives, doing the coping and seeking the solution of common problems. There are a set of possibilities for expanding actions on behalf of the community, especially those that may include food security and income generation.

The experience of the Environmental Multipliers project is the resilience of local agents concerned with the absence of public power in the maintenance of the region’s natural resources. Placing people in the vicinity of forest remnants of native biome in the management plan of these areas, bringing knowledge to them their importance as the main

coordinators of the conservation, preservation and restoration of the environment, has proven efficient in the last ten years, such as the growing appreciation for the snake that was once inserted in derogatory myths. However, it is still possible to expand the actions carried out by young people and begin to address other issues also ignored by the government in the region, such as habitat, sanitation and solidarity economy.

The experience of the Child Environmental Agent Project can cover academic teaching, lived experiences and the realities of vulnerabilities of the regions. It reconciles the knowledge of a community and its reality with the need of actions to change habits, implemented in future generations (children) and that will directly influence environmental reeducation. It forms sensitive children from the challenges of environmental and socioeconomic preservation of the region in which they live. It is believed that small changes in daily habits are extremely important, and the school is the instrument and best means of this process of reeducation.

The experience in Local Community Management for Sanitation in the Community of Santa Luzia presents possibilities of agency between the university, organized community and the public sector. It is perceived that the construction in which there is an exchange of knowledge, without hierarchizing or valuing a specific agent, generates possibilities of management and planning of the territory where there is a possibility of continuity in the actions, once the involvement of the territorial agents is established.

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