

---

## **Inventory of Landscape Development Projects in the District of Ouedo (Town of Abomey-Calavi in Benin): Constraints and Sustainable Management**

TCHAOU Brice Sèvègni<sup>1</sup>, TCHANGONIYI Akibo Leopold<sup>2</sup>, DJAGORO Comlan D. Sylvain<sup>3</sup>

<sup>1</sup>Territorial Planning, Environmental Expertise and Development Laboratory (LATEED),  
University of Abomey-Calavi, Benin.

<sup>2</sup>Cartography Laboratory, University of Abomey-Calavi, Benin.

doi: 10.51505/ijaemr.2022.8101

URL: <http://dx.doi.org/10.51505/ijaemr.2022.8101>

### **Abstract**

Integral development is a collective and sustainable action, for which the Beninese government subscribes. The protection of nature is not considered as a danger to development, but becomes an indispensable condition for spatial planning, a guarantee of sustainable development. This research aims to understand the inventory of landscaping in the district of Ouèdo.

The information collected is the layout of the space, the types of green space, the perceptions of buyers, the different types of housing built, the role of green spaces in the city. This information is collected from resource persons (head of the Ouèdo district, head of the district), buyers of social housing. A total of 150 people are interviewed. The data processing and the analysis of the results are done with the software, Word, the Excel spreadsheet, and the PEIR model.

At the end of this research, it was found that 1,949 social housing units are built in Ouèdo . And not all accommodations have standings. Green space is dominated by accompanying green space (65%) and the least important green space (65%) is parks, road line trees and stadium green space. In addition, 85% of buyers believe that the number of green spaces in social housing is sufficient compared to 15%. Similarly, home buyers see green spaces as a way to reconnect with nature (78%), a way to fight against nature (60%) and green spaces very often to have fun (75%), get some fresh air (65%), and recharge your batteries. It is urgent to set up a sustainable management mode for social housing in the city of Ouèdo.

**Keywords:** Ouèdo District , Landscaping, urban space, social housing, sustainable development

### **Introduction**

The demographic projections of the Beninese population by December 2022 is 12.9 million inhabitants, 55% of which would be the urban population (INSAE, 2013). However, since independence, the housing needs of the population have been 320,000 in 10 years, but the State has only been able to provide 2,000 housing units. Thus, by adopting the Declaration of the Millennium Summit of 2000, the Beninese State made a commitment to improve, by 2020, the living conditions of people living in precarious housing, to reduce by half the proportion of the

population without permanent and adequate access to drinking water and basic sanitation systems (H. Atake , 2014, p. 12).

In Benin, efforts are being made to honor the commitments made at the Habitat II Conference. Efforts are being made by all actors (Central State, Local Authorities, Technical and Financial Partners, Private Sector, CSOs and NGOs, Grassroots Community Organizations, beneficiary populations, etc.) to considerably improve the living environment as well as the living conditions of populations living in rural and urban areas (MEHU/DUA, 2006, p. 33 ).

For the implementation of this major program, the Beninese State is part of an urban development plan likely to meet the needs of the populations. Thus, 1,949 social and economic housing units are built in the municipality of Abomey-Calavi, specifically in the district of Ouèdo .

This option was piloted the day after the national conference of living forces in February 1990, in a dynamic of social change for the well-being of the populations. To achieve this, Benin has adopted strategic and operational planning documents. These include the prospective vision "Benin 2025 Alafia" which aims to achieve strong and inclusive growth, likely to induce a significant improvement in the living conditions of the populations with Strategic Development Orientations (OSD). To ensure the implementation of the orientations contained in these documents, several generations of Growth Strategies for the Reduction of Poverty (SCRIP) and various sectoral strategies have been developed and implemented. The increase in the world population and the increasing pace of technical progress mean that we are currently witnessing the development of spatial urbanization processes ( H. Daniel; I. Bernez, 2020, p. 7 ). However, we go through a nature (a natural environment) to urbanize an urban environment, in other words we superimpose, we transplant an urban environment onto a natural environment, which causes an environmental conflict when it is poorly managed (A. Amontcha , T. , Lougbegnon , B. Tente, J. Djego and BA Sinsin , 2015, p. 8).

## **2. Materials and methods**

The methodological approach adopted revolves around the collection and processing of data and the analysis of the results. The documentary research was carried out in the documentation centers of the Faculty of Letters, Arts and Human Sciences (FLASH); at the Communal Center for Agricultural Production (CeCPA ); at the National Institute of Statistics and Development ( INStAD ). The information collected relates to the layout of the space, the types of green space, the perceptions of buyers, the different types of housing built, the role of green spaces in the city. The surveys were carried out with purchasers and users and those responsible for building social housing. The choice of people surveyed was made in a reasoned way and meets the following criteria: Resident in the Ouèdo area ; Home buyers; Presumed domain owner; be at least twenty-five (25) years old; be a resource person (village chief of Ouèdo ; district chief, Mayor of Abomey Calavi ). The sample size was determined by the formula of Schwartz (1995). :

$$X = \frac{(Z\alpha)^2 \times p(1-p)}{e^2}$$
 A total of 150 were interviewed as part of this research. Questionnaires, interview guides and observation grids were analyzed manually. The information collected is processed with the Excel spreadsheet, for the production of tables and figures, the analysis of the results was carried out by the PEIR model.

### 3. Results

This research is carried out on the construction project of 1,949 socio-economic housing units on 60 ha, in the Sakomè district in the district of Ouèdo, commune of Abomey-calavi. The district of Ouèdo is limited to the North by the district Ouèdo, to the South by the district of Godomey, to the East by the district of Togba to the West by the district of Hèvié (figure 1).

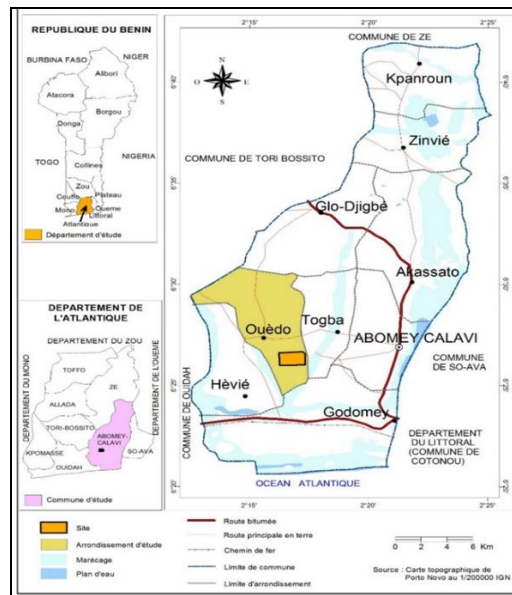


Figure 1: Geographical location of the project host site

#### 3.1. Social facilities made

The existence of space that can house socio-community infrastructure and the availability of a reference master plan for the Abomey Calavi plateau are assets that can provide the municipality with a minimum of socio-community equipment. However, there is poor coverage of the town by the electricity and water supply networks. Only 17 villages/districts out of 70 are electrified and there are 86 manual pump boreholes, 66 modern wells and 4 village water supply systems (AEV); 14 villages/districts out of 70 are served by the SONEB water supply network and the majority are concentrated in the districts of Godomey and Abomey-Calavi.

Similarly, there is poor coverage of the municipality by the conventional telephone network. To these constraints are added others such as the lack of leisure centers and playgrounds. But some prospects exist, namely the extension projects of the conventional and GSM telephone networks, and the electricity and water supply networks by SBEE / SONEB which constitute opportunities to be seized. The district of Ouèdo has two social housing units to its credit, one of which is public and the other private (photo 1).



**Photo 1:** Public social housing  
**Shooting** , Djagoro , November 2022

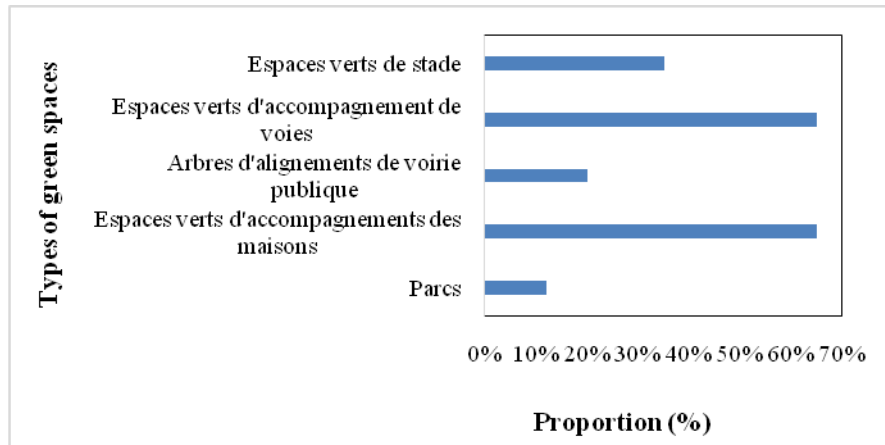
This photo presents the various social housing units built as part of landscaping in Ouèdo . These buildings comply with environmental standards and what is planned in the model of the feasibility study (picture 2).



**Photo 2:** social housing in Ouèdo  
**Shooting**, Djagoro, November 2022

### 3.1.2. Typology of green spaces in the city of Ouèdo

The green spaces of social housing in Ouèdo provided for in the context of social housing belong to five types of spaces according to the typology of the AIVF Verts, namely: Parks and Squares (PS); Green Spaces Accompanying Buildings (EVAB); Green Spaces Accompaniment of Ways (EVAV); the Public Roads Alignment Trees (AAVP); Green Spaces in Stadiums and Sports Centers (EVSCS) (figure 2).



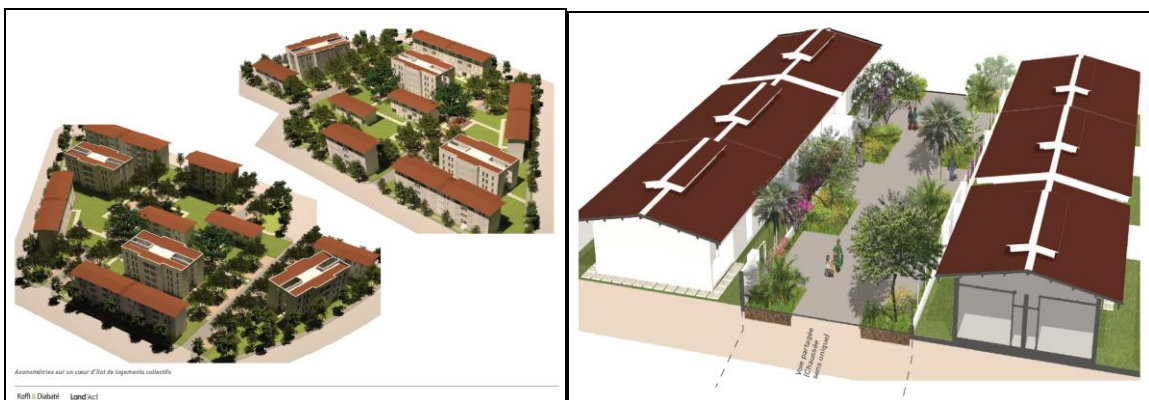
**Figure 2:** Typology of green spaces  
**Source:** Field survey, november 2022

The different types of green space that would be the most dominant in the city of social housing of Abomey -Calavi is the accompanying green space (65%) and the least important green spaces (65%) are parks, road alignment trees and stadium green spaces.

*3.1. 2. 1. Green spaces accompanying buildings*

Building Accompaniment Green Spaces are spaces that are well laid out or planted with ornamental plants, most often installed around buildings in order to enhance them.

All the social housing buildings of Ouèdo have a space for greenery at their approach arranged to enhance the building. This greenery can be limited either to a small space of ornamental plants installed around the buildings or can extend to a vast expanse with a covered bed and a fairly large number of flowers and ornamental plants well adapted to the use you want. make it benefit from appropriate maintenance (Plate 1).



**Plate 1:** Around the buildings of theOuèdo social housing project model  
**Shooting,** Djagoro, november 2022

This plate shows the surroundings of buildings with green spaces. All buildings (110%) have green spaces.



3.1.2.2. Green Spaces Accompanying Routes (EVAV)

Green Spaces Accompanying Lanes will be green spaces developed along the lanes and/or central reservation and which allow users of these lanes to feel more in nature and also to minimize atmospheric pollution (plate 2) .



**Plate 2:** Green spaces alongside the routes inside **Shooting, Djagoro, November 2022**

3.1.2.3. Stadium Green Spaces (EVS)

Ouèdo social housing has a single green space to accommodate the various stadiums that will be built at the end of the works. This space will bring together all the playgrounds such as: Football, Tennis, Handball, Volleyball and Skating courts. It should be mentioned that this stadium has not yet entered its construction phase.

3.1.2.4. Public road alignment trees

Green spaces of the public road alignment tree type are green spaces found along all the streets of social housing in Ouèdo. They are on one side only, ie both sides of the street making them comply with environmental standards.



**Plate 3:** Road alignment trees **Shooting, Djagoro, November 2022**

3.1.3. Role of green spaces in the city of social housing in Ouèdo

The role assigned to a green space is very important. It must contribute to improving the living environment of users and purchasers of social housing. Based on our investigations, the role of green spaces takes into account several aspects:

- On the recreational level, it allows the city to find an ideal setting for rest; moreover it is the perfect place to distract the population after a day's work;
- In terms of health, the green space offers the population of social housing in Ouèdo a healthy setting and a healthy environment like that of the countryside where we often speak of "clean air";
- On the educational level, the green space contributes to the awakening of the conscience of the users for a better taking into account of the management and the protection of the environment;
- On the social level, the green space promotes rapprochement and contact between residents and users, in the sense that it is a meeting place for people from different backgrounds;
- On the cultural level, the green space is a place for organizing various events (music meetings, dances, etc.);
- On the economic level, the green space favors the development of small commercial activities;
- Medicinally, the various constituents of green spaces including the stem, husk, root, leaves and many others are used to treat several pathologies.

3.1.3.1. Expectations of buyers of green spaces in social housing in Ouèdo

Speaking of the quantity of planned green spaces, this offer should be related to the real demand of users and purchasers. Figure 3 presents the expectations of users of green spaces in social housing in Ouèdo .

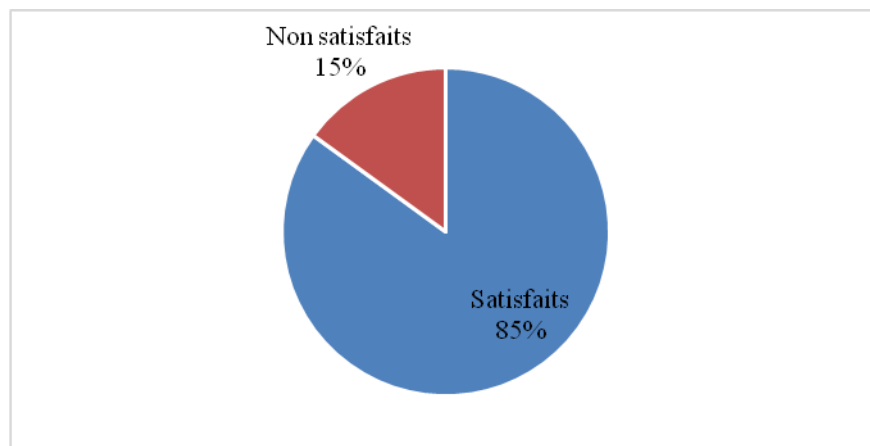


Figure 3: Expectations of buyers of green spaces in social housing in Ouèdo

Source: Field survey, November 2022

It is true that the housing is not yet finished, but the state of progress of the work has enabled users to comment on their satisfaction with the space planned and in progress. It can be noted that 85% of buyers are satisfied with the number of green spaces in social housing compared to 15% who are apparently unsatisfied.

3.1.4. Perception of green spaces by users

The green spaces of social housing in Ouèdo under construction arouse several perceptions from home buyers. Perceptions of green spaces vary from one buyer to another depending on whether or not the latter is a user of the green spaces of social housing in Ouèdo (figure 4).

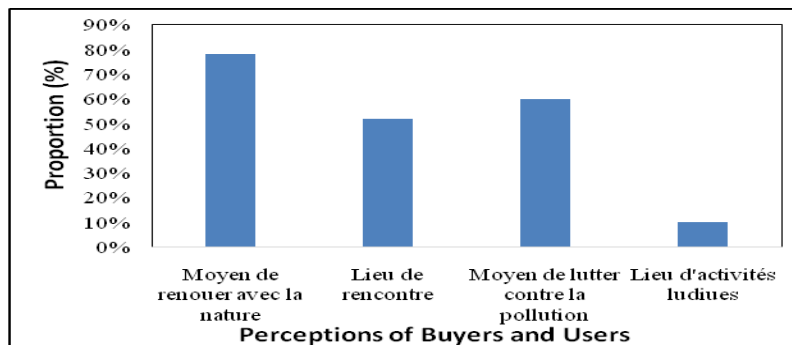


Figure 4: Perceptions of green spaces by buyers and users

Source: Field survey, November 2022

Figure 4 shows that the number of home buyers see green spaces as a way to reconnect with nature (78%), a way to fight against nature (60%) and a meeting place (52%) . The other characteristics of green spaces are less perceived by them.

3.1.5.Reasons for coming to a green space

Buyers and users of housing frequent green spaces for many reasons. Figure 5 presents the reasons for coming to a green space.

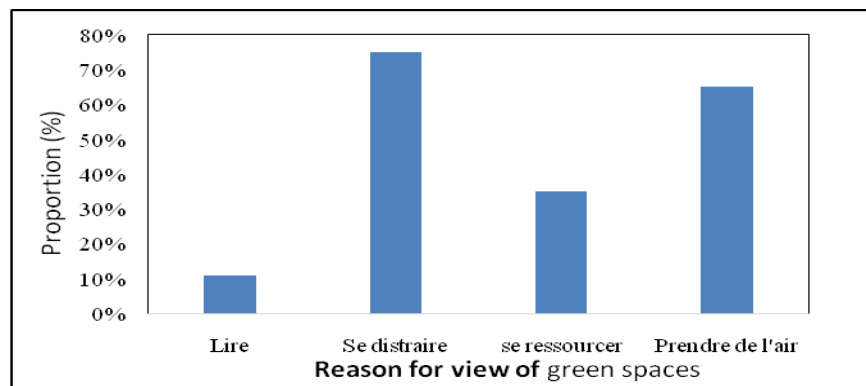


Figure 5: Reasons for coming to a green space

Source: Field survey, November 2022



Our surveys show that users and purchasers of social housing regularly frequent green spaces very often to have fun (75%), get some fresh air (65%), and recharge their batteries.

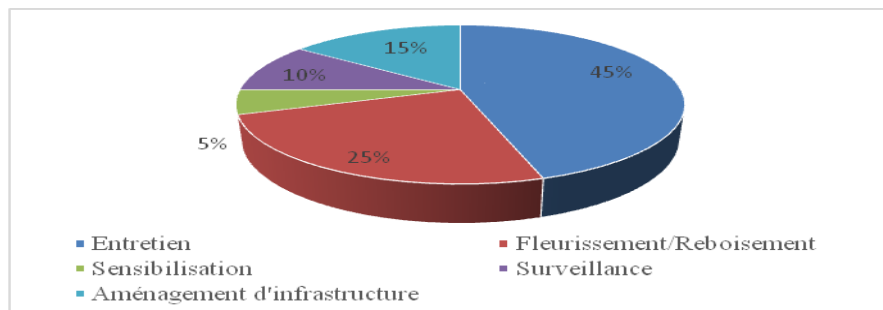
3.1.6. Mode of management of green spaces in the city of Ouèdo

3.1.6.1. Policy for the management of green spaces

The green space, whether developed or not, is a public good subject to degradation, the causes of which are multiple. Therefore, it must be protected and maintained on a permanent basis, which moreover requires a good management policy.

❖ **Actions by green space managers**

Actions are planned for the management of green spaces, and to preserve the biodiversity present, the infrastructures in good condition and allow users to take full advantage of them. Figure 7 presents the activities carried out by the managers of green spaces.



**Figure 7:** Activities carried out by managers of green spaces in Ouèdo  
**Source:** Field survey, November 2022

Figure 7 shows that five (5) activities are envisaged by the managers of the green spaces of social housing in Ouèdo. Two of its activities are currently no longer carried out, namely maintenance and flowering/reforestation (Photo 3).

Infrastructure development and the monitoring of green spaces are activities that are boycotted by most managers.



**Photo 3:** Ouèdo green space maintenance worker  
**Shooting ,** Djagoro , November 2022

❖ **Infrastructure maintenance**

Infrastructure maintenance (housing and green space) is one of the most important aspects of managing the land development project. Indeed, developing a green space is a very good thing, but it is still necessary to ensure the maintenance of the infrastructures.

❖ **Plants and flowers**

Plants and flowers are the first characteristics of a green space. In all the green spaces of social housing in Ouèdo , there is considerable vegetation.

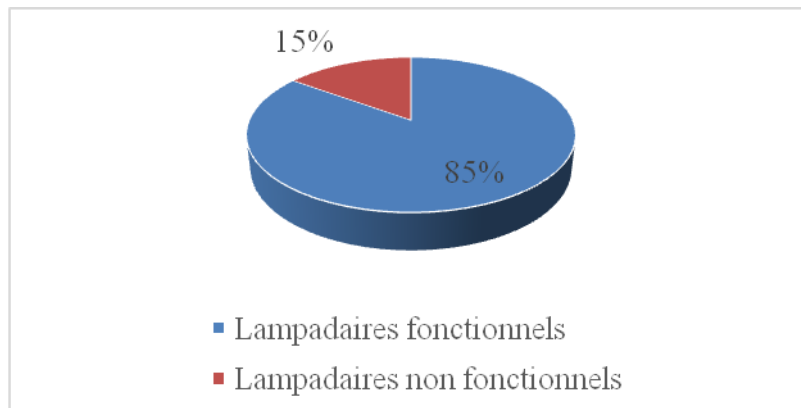
In the green spaces of the EVAB and EVAVP type in the Ouèdo social housing , there is vegetation made up of a varied range of ornamental plants and flowers and a few trees to serve as shade over the gardens.

However, the situation is not the same in the green spaces of the PS and EVH type of social housing in Ouèdo , which have vegetation made up much more of large trees than of plants and flowers.

❖ **Lighting**

All the green spaces of the social housing of Ouèdo , in particular the green spaces of types PS and EVAB and AAVP are equipped with streetlights. These solar or electric streetlights come on in the evening around 6:30 p.m.

But not all the lampposts present in the green spaces are functional and this state of affairs plunges most of the area concerned into total darkness as soon as night sets in (figure xx).



**Figure 6:** State of EV lighting infrastructure

**Source:** Field survey, January 2021

In fact, 85% of streetlights in green spaces are functional, only 15% of these streetlights are not functional (Plate 4).



**Plank4: Streetlights on site lanes**  
**Shooting , Djagoro , November 2022**

### *3.2 Constraints to the implementation of the landscaping plan*

#### *3.2.1 Biophysical constraints*

It should be noted that the forms and types of housing respect environmental factors, on the one hand, the climate, the relief, the nature of the soil and the materials available, and the degree of technical development, on the other. In fact, the comparative study of dwellings existing in identical climates and for populations with a similar way of life shows the limits and weaknesses of deterministic explanations. The coexistence on the Ouèdo social housing site obeys more to natural elements and climatic or technical constraints.

As announced, social housing is a means of improving the living conditions of populations who suffer from a lack of economic prospects and stable income. The production problem can be summed up in terms of the gradual decline in production caused by the difficulties of capturing the water table which are themselves linked to the phenomenon of runoff. Thus, irregular and insufficient rainfall can have a negative impact on the quantities produced, due to the lowering of the water table.

#### *3.2.2 Land constraints*

Access to land resources is a major constraint to the development and fulfillment of land purchasers. In Ouèdo , the populations (purchasers of plots) are faced with strong demographic pressure. The mode of transmission of land by inheritance led to the fragmentation of estates. Thus, very often the small heirs from families with limited land endowment are led to sell their land. This contributes to the hoarding of land by the rich, and accentuates social differentiation. Most of the constraints have the following names:

- sales ownership disputes on the boundaries of a plot;
- the sale of undivided land (that is to say that the seller is not recognized as having the capacity to sell the collective property on his own);
- the relations between the lessor of land and the sharecropper are much more conflictual. On the one hand, there is the desire of the lessor to maximize his share of the harvest and, on the other hand, the desire of the sharecropper to reduce his cost of production per unit area;
- the crumbling of the land; which hinders initiatives on large areas;

- the increase in population has led to strong land pressure.

The different modes of access to land being known, as well as the land problems, it is then necessary to analyze the constraints encountered by the production techniques.

### 3.2.3. Human and material constraints

We must also question the notion of universal basic needs, such as the minimum space measured in cubic meters, the optimal temperature, the need for privacy. This notion of need can only be defined from a given culture, in a given context. In the Beninese context, the house is the position of the individual turned or not towards the outside which creates or abolishes the private space. Far from being decisive, the climate, materials and techniques are, in relation to the types of housing, limiting factors.

Extreme relativism should not, however, make us forget that the history of habitation is not independent of that of human societies. Without falling into a linear evolutionism where one would see appearing, after the first shelters absolutely dependent on the accessible material, more and more complex structures and more and more freed from physical constraints, it is necessary to consider the dwelling in relation to the development of the productive forces of a given society and with the increasing complexity of its organization. Note the tendency towards the specialization of buildings, which may be due to particular cultural or socio-economic configurations rather than to stages of evolution.

### **Discussion**

The Beninese government has put a lot of resources into landscaping in the district of Ouèdo . This major project was a success according to respondents and buyers of social housing. This type of development gave more visibility to the research area. The buyers (85%) of the housing are very satisfied with the layout of the roads and the green spaces created in the social housing. For these social facilities made in Ouèdo , there are five (5) types of green spaces. These results reveal that the space types of social housing in Ouèdo are in line with L Mehdi's research. and F. Pietro, 2009, p. 9. Similarly, home buyers and users are very satisfied (85%) with the developments made in Oudo. These results corroborate those of (B. A Chen et al., 2009, p. 5; A. Amontcha et al. 2015, p. 6).

### **Conclusion**

The site of the Ouèdo development has undergone a major change due to the techniques implemented. This development creates an ideal framework which forces the administration and this makes the city of Ouèdo more vital, the buyers of social housing and the users benefit massively from it. But one thing to arrange a space and the other thing is to ensure the interviews, it is urgent that the necessary arrangements be made so that this can last over time. The different types of green space created make the city of Ouèdo more pleasant .

**Bibliographic references**

- LONG N., TONINI B. (2012).** Urban green spaces: exploratory study of user practices and feelings, *VertigO* - the electronic journal in environmental sciences, 12. Malard V., 2002,
- MARION B.(2012).** Creation of a decision support tool for the sustainable development of green spaces in municipalities, Essay with a view to obtaining the degree of master in environment (M. Env.), university center for environmental training, University of Sherbrooke, Quebec, 3 p
- ATAKE H. (2014).** Urban planning and problems of public green spaces in the urban agglomeration of Lomé (Togo): spatial analysis and management. Research master's dissertation, Urban Studies Laboratory, University of Lomé, 127 p.
- DANIEL H., BERNEZ I.(2020).** Ecology of restoration in urban or rural areas: constraint or opposition, hppt\_www.ecolosave.com, consulted on 14-08-2020
- MEHDI L., DI PIETRO F. (2009).** "Public green space, a place of interaction between society and biodiversity", *Environnement urbain*, vol. 11, p. 10-17p.
- POLORIGNI B. (2012).** Green spaces in African cities, diagnosis and perspectives: case of the city of Lomé. Master's thesis, environmental management, University of Lomé, Togo, 104 p.
- Strasbourg Agglomeration Development and Urban Planning Agency (ADEUS), (2013).** How to design a development project so that it takes biodiversity into account? Paris, 4p.
- AMONTCHA A., LOUGBEGNON T., TENTE B., DJEGO J. AND SINSIN B. A. 2015.** Urban development and degradation of phytodiversity in the Commune of AbomeyCalavi (South-Benin), Benin, 10 p.
- AMONTCHA H. A. S, LOUGBEGNON T., DJEGO J. AND SINSIN B. A.(2017).** Typology and Distribution of Public Green Spaces in Greater Nokué (Southern Benin), Benin, 79p.
- ALVERGNE C. AND TAUTELLE F. (2002).** From the local to Europe: New regional planning policies. PUF, Paris, France, 303 p.
- BELLIN I. (2008).** Biodiversity, a city problem. *Rev. Research*, n° 422, p.17-22
- CHEN, B. A.; OCHIENG, A. BAO, Z. (2009).** Assessment of aesthetic quality and multiple functions of urban green space from the users' perspective : The case of Hangzhou Flower Garden, China ; *Landscape and Urban Planning*, Volume 93, Issue 1, 30 October Pages 76-82 12-
- GNELE J. E.(2010).**Urban planning dynamics and sustainable development prospects in Cotonou (Republic of Benin). Doctoral thesis, Abomey-Calavi University, Benin, 339p.
- INSAE(2013).** Number of people in villages and city districts in Benin, General Population and Housing Census, Cotonou, 85p.
- JOLE M. (2006).**Parisians and their public gardens: urbanity to reinvent, Paris.



**MEHU/ABE (1999).** Framework Law on the Environment in the Republic of Benin. Cotonou, Benin, 30 p.

**MEHU/DUA (2006).** Review of the urban sector in Benin. Preparatory studies, Socio-economy components - Infrastructures and equipment and Summary reports. Cotonou, Benin, 269 p.

**MILI M. (2018).** Green spaces, Management of urban techniques. Urban engineering, 3rd year License, University Mohamed Boudiaf of M'sila Institute of Management of Urban Techniques, 52p.