

# Principles for Designing New Types of Housing for a Strong and Resilient Local Economy in the Republic of Congo

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**How to cite this paper:** Ndongo, A.S., Etou, D.G. and Tathy, C. (2024) Principles for Designing New Types of Housing for a Strong and Resilient Local Economy in the Republic of Congo. *Open Journal of Civil Engineering*, **14**, 82-95.

<https://doi.org/10.4236/ojce.2024.141004>

**Received:** January 22, 2024

**Accepted:** March 10, 2024

**Published:** March 13, 2024

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## Abstract

The Congolese population is organised into households, which are thus headed by a chief who ensures the social well-being, development and integration into working life of the individuals in his charge. This study examines the functional principles of new housing design as an instrument for transforming the (current) failing economy into a strong and resilient one. Accordingly, a literature review of the practice of designing and building housing in human settlements in the Congo revealed the state of the art on this subject. An analysis of the existing housing stock from a demographic, social and economic point of view made it possible to identify the most common household sizes and numbers, as well as the lifestyle processes that determine the need for developed space. To this end, the experimental method was used to propose configuration plans for various new types of dwelling. To this end, the study highlighted the link between people's standard of living and the effectiveness of their involvement in the local economy. To achieve the aims of the National Development Plan (NDP), particular attention must be paid to solving the housing problem. The existing housing stock actively contributes to the problems associated with unemployment and insecurity. Functional principles for the design of new types of housing have been developed. Four model types are proposed in line with the demographic structure of the population, their socio-economic characteristics and their lifestyle.

## Keywords

Congolese Households, New Types of Lodging, Human Settlements, Resilient Local Economy, Households, Resilient Endogenous Economy, Logement, Conception

## 1. Introduction

Providing every citizen with a space in which to carry out the processes of daily life is a commitment for all governments, a prerequisite for the development of economic activities and an asset for attracting public and private capital to the various sectors of the national economy [1]. Citizens are grouped into different types of household, each headed by a head. The enumerator defines a household as “a group of people, whether related or not, living under the same roof or in the same plot of land, sharing the same meal, recognising the authority of the same head and whose resources and expenses are common” [2]. In Congo-Brazzaville, the household plays a vital role in the socialisation of citizens and the preservation of social and cultural identity. All forms of assistance, mutual aid and initiation into the various forms of active life take place in the household. It is in this context that the individual’s civic personality is forged, as well as his or her future as an intellectual or even an elitist [3] [4]. At present, Congolese households are for the most part devoid of heads and space. This social reality contributes to the fracturing of children’s education. It has to be said that this situation is one of the major causes of juvenile delinquency and/or banditry, commonly known as “kata-kata”, “bébés noirs” and “kuluna” [5]. It should be emphasised that European housing designed and built by and for the coloniser could not accommodate the large and complex households; to some extent, these were Congolese polygamous households. Self-built housing by nationals does not provide all the rooms needed for the members of the household to flourish and be comfortable [6] [7]. This situation makes them vulnerable and plunges them into deep insecurity. The average Congolese citizen does not participate actively in the national economy on a permanent basis [8] [9]. Determining the design principles for new types of housing for human settlements in Congo-Brazzaville is becoming a matter of urgency for both governments and citizens. This is reflected in the adoption in 2022 of the National Development Plan (NDP) entitled “a strong, diversified and resilient economy for inclusive growth and irreversible sustainable development” [1]. Those involved in building in the Congo are unable to design spaces that are fit out for citizens. Some are proposing models derived from colonisation, while others are proposing rural housing mechanically transported to urban areas [10] [11]. The aim of this study is to identify the functional principles for the design of new types of housing with a view to a strong and resilient local economy as a contribution to the implementation of the national development plan. Specifically, the aim is to take stock of the existing housing stock; to determine the main factors to be taken into account in the design and construction of housing for different types of human settlement, and to identify the lifestyle processes of Congolese households that influence housing design. To answer the research questions, a bibliographical review of the practice of designing and building housing in Congolese human settlements and around the world was first carried out [12] [13] [14] [15] [16]. This was followed by a relevant analysis of existing housing from a demographic

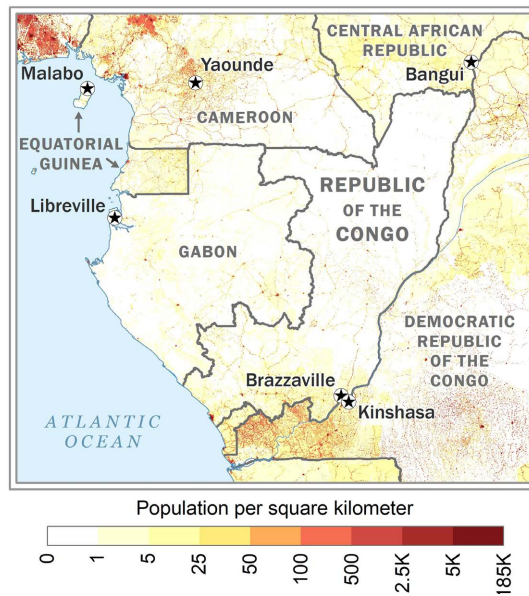
and functional point of view, in particular the number and size of households and their need for fitted-out spaces. In addition, the author used the experimental method, which made it possible to propose a series of standard housing layout plans for the most common households in human settlements in Congo-Brazzaville. The spatial and temporal scope of the study takes into account the major rural and urban areas of the Congo to be developed in terms of new housing. This housing will be built on the basis of the endogenous paradigm and current scientific and technological progress. The aim is therefore to propose a solution for the type of housing adapted to the socio-economic realities prevailing in the Republic of Congo.

## 2. State of the Art on Housing in Congo-Brazzaville

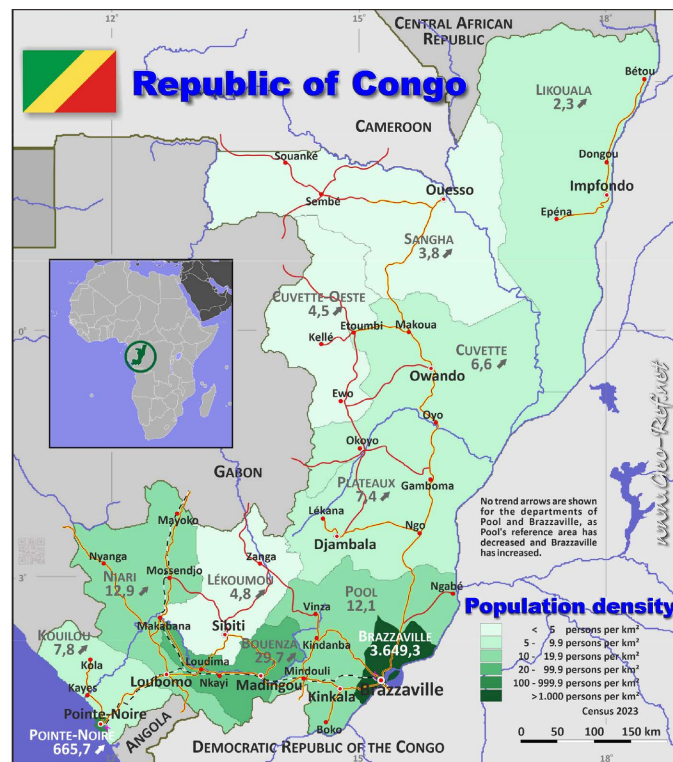
Most of the settlements in Congo-Brazzaville are fishing, farming or hunting villages. They were developed by the French colonialists, who installed the colonial administration, churches and concessionary companies [7]. The treaty signed between King Makoko and Pierre Savorgnan De Brazza in 1880 gave rise to human settlements made up of juxtaposed towns: the European town (currently known as the “city centre”) and the city of the natives (made up of working-class neighbourhoods). It has to be said that the European city was designed by renowned architects trained at the leading schools of architecture in industrialised countries. These included E. Spanner (government architect for French Equatorial Africa), Roger Erell, G. Crételle and Ch. Cazaban-Mazerolles, Jean Prouvé (architects for the Moyen Congo/Republic of Congo) and engineer William Barnett [8] [10]. It is also important to mention the construction companies and real estate firms that were involved in building and developing the European city: SIAEF (Real estate company of French Equatorial Africa), SICONGO (Congo Real Estate Company), SCAHUR (Congolese urban and rural housing development company), SONACO (National Construction Company), SOPROGI (Real estate promotion and management company), SOPRIM (Real estate development company) [6] [7]. As for the indigenous housing estates, there was a striking lack of planning and urbanisation policy. Is this marginalisation of colonial and post-colonial authority not the cause of the self-development and self-building that we see to this day? This thorny issue raises a fundamental problem of inequality and social injustice in terms of housing. It is imperative to stress that the European city and the city of the natives were conceived on the basis of colonial principles which advocated the separation of spaces in a segregationist perspective [17] [18]. Watercourses, ravines and railways, to name but a few, were used to separate these two spaces (the European town and the city of the natives) [6] [7]. From the outset, this involved “galloping” urbanisation in places where the French colonists settled. On the other hand, there was a grouping of villages forced together in the colonial interest. Two main types of housing were built: self-built housing by and for the natives, and “modern” European-style housing for representatives of the colonial administration and the

Catholic mission [6] [7].

**Figure 1** [19] and **Figure 2** [20] show the distribution of the Congolese population by zone within the national territory, as well as the space occupied per km<sup>2</sup> of land. This can provide information on the possibility of designing housing to accommodate the population.



**Figure 1.** Population distribution map.



**Figure 2.** Population density map.

## 2.1. European-Style Homes

If we look at the European-style dwellings built during the colonial and post-colonial periods, we see that they generally consist of a living room, bedrooms, kitchen and bathroom for a small household. This configuration of construction corresponds in advance to the Indo-European paradigm. As well as the above-mentioned factual reality, this is administrative housing, on-call housing and housing built with taxpayers' money and intended for hire-purchase. In the city of Brazzaville, this includes the housing stock managed by the Central Directorate of Administrative Housing (DCLBA), housing in the Chic district of Bacongo (district 2), housing in the "OCH" district of Moungali (district 3), and in the OCH district of La Glacière, Bacongo (district 2). In the coastal town of Pointe-Noire, there is housing in the OCH neighbourhood of Tié-tié (arrondissement 3) and in the chic Tchitchel neighbourhood of Lumumba (arrondissement 1). This European-style housing consists of villas with gardens and sometimes swimming pools, intended for settlers and advanced people. It has to be admitted that at present it is the ruling elite, expatriates and businessmen who are the recipients and/or entitled beneficiaries [7]. In addition to this type, the estate includes multi-storey buildings with F1 (studio), F2 (living room + bedroom) and F3 (living room + 2 bedrooms) flats. All three types have a kitchen, shower room and toilet. It is quite fortuitous to find F4s in this housing stock. The occupants of this type of dwelling have become culturally westernised, denying their traditions, habits and customs [21] [22]. Generally speaking, the dwellings are equipped with water supply systems, electricity and sanitation facilities (septic tanks, cesspools, a network for draining rainwater to a natural collector). This represents less than 5% of the total housing stock in each town [2] [3].

## 2.2. Self-Build Housing

Notwithstanding leucodermisation, *i.e.* the varied and diverse teachings emanating from the coloniser (and hegemonist cultures), the majority of Congolese remain attached to this day to endogenous traditions, habits and customs, particularly in the culinary arts (or in the consumption of national dishes), in family or clan attachment and in the rooting of the terroir. This mark of devotion to family ties and to the land is undoubtedly a precursor to the expression of living together rather than chauvinism [23] [24]. Thus, by building housing with little financial means and limited architectural and technical knowledge, Congolese human settlements are becoming inundated with dwellings used only for spending the night (or for sleeping) and for shelter in the event of rain. Almost all daily life is spent in the open air, *i.e.* in the plot or in the street [2] [3]. The shower, toilet, kitchen and laundry, to name but a few, take up a lot of space. De facto, children's play loses its meaning and depth because it is limited in time due to the considerable lack of space in urban housing. We feel that this is essential because play is the best way for children to integrate into working life. As a

result, in the Republic of Congo, self-built dwellings are built on plots of land measuring between 200 m<sup>2</sup> and 400 m<sup>2</sup>, hence the unhealthy and precarious nature of these types of housing. They account for 95% of current urban housing stock [2] [3]. Congolese human settlements need to develop functional principles for designing new types of housing for the most common households.

### 2.3. Rural Housing

The rural population of the Congo is housed in huts that are grouped together or dispersed according to agricultural needs. Each household is housed in two (2) huts: one used as a kitchen and the other as a bedroom, sometimes compartmentalised. The rest of daily life takes place between, behind and in front of the huts. The huts are well ventilated but dark and the furniture is precarious [7].

## 3. Human Settlements and Economic Activities in Congo-Brazzaville

### 3.1. Human Settlements

Human settlements in Congo-Brazzaville are organised as follows: Brazzaville is the political capital. Pointe-Noire is the economic capital. Ten departmental capitals; communes; urban communities; central villages and villages. They are equipped with basic infrastructure and public services such as: schools and health establishments; markets, registry office and others [25]. General population and housing censuses (RGPH) [26] and population estimates for 2030 show that more than 70% of the population lives in urban areas, *i.e.* in communes and urban communities. These data indicate that around 75% of the resident population is of working age [2] [3].

### 3.2. Economic Activities in Human Settlements in Congo-Brazzaville

#### 3.2.1. Economic Activities in Rural Areas

In the Congo, households live in a self-subsistence economy. When it comes to food or housing, each household tries to produce only what it needs. Some still live by gathering wild products, hunting and fishing, which exterminate biodiversity species [7]. Very few cooperatives and associations are able to produce food and build structures for marketing. The quantities produced are very negligible, which justifies the excessive consumption of frozen and deep-frozen products from outside. Generally speaking, Congolese citizens live very badly, especially in rural areas. Around 60% of villages and village centres have no proper means of communication. The lack of water and electricity means that the most able-bodied and enterprising continue to leave in search of a better life in town or abroad [6] [8]. The construction of basic infrastructure and decent housing in rural areas, taking into account the demographic structure, will encourage the retention of human capital. Settled households will create wealth by installing the levers needed to deal with rural problems [27]. The rural economy



should therefore be oriented towards a gradual replacement of subsistence farming by commercial agriculture; the gathering and collection of natural products by seasonal agricultural production; fishing by fish farming, especially in marshy areas; hunting should be replaced by livestock farming. Above all, processing industries should be created to facilitate conservation and marketing. The rural environment cannot therefore be attractive and progressive without the construction of new types of housing, ensuring the well-being of household members. This can be a sure way of combating the rural exodus, unemployment, poverty, food insecurity and the housing shortage.

### 3.2.2. Economic Activities in Urban Areas

In the communes and urban communities, the economy is based on industrial activities, trade and services [8]. These sectors benefit from major investment by the state, development partners and the private sector. In urban areas, means of communication and transport, water and electricity are more or less available. The Congo's economy is relatively undeveloped, and the minimum wage (Smic) is 90,000 CFA francs, the equivalent of \$150 per month [3]. However, it goes without saying that the employment situation in the Congo has not remained buoyant; **Table 1** [28] provides information on the elasticity of employment in relation to human development.

The largest employer is the State, which employs civil servants on a wage bill that does not meet the expectations of the population. The housing conditions of urban populations in general, and those of civil servants in particular, are one of the causes of the inefficiency of civil servants in carrying out their duties. In the 2007 general population and housing census (RGPH), the unemployment rate recorded in Brazzaville was 20.2% and 16.5% in Pointe Noire.

To consolidate this assertion, we felt it necessary to draw up a table highlighting the level of education achieved by young people according to their situation on the labour market. **Table 2** [28] shows the percentage of employed, unemployed and inactive people.

From this perspective, the entire working-age population should be involved in economic activity. To achieve this, appropriate housing is needed to encourage the regeneration of the forces needed to produce household members. At present, there is a huge housing deficit. With globalisation, we need an active

**Table 1.** Elasticity of employment in relation to human development.

	1980-2014	1980-1990	1990-2000	2000-2010	2010-2014
E (Emp_GI/IDH)	0.071	0.112	-0.114	0.672	-0.436
E (Emp_GA/IDH)	0.157	0.251	-0.327	3.115	-1.975
E (Emp_GNA/IDH)	0.048	0.069	-0.078	0.467	-0.331

E (Emp\_GI/HDI): Elasticity of overall employment in relation to the HDI; E (Emp\_Ag/HDI): Elasticity of agricultural employment in relation to the HDI; E (Emp\_Na/HDI): Elasticity of non-agricultural employment in relation to the HDI.

**Table 2.** Educational attainment of young people by labour market status.

<i>Level of education achieved</i>	Employee		Unemployed		Inactive (ve)	
	Workforce	%	Workforce	%	Workforce	%
Lower Primary	67,691	19.1	15,681	9.73	37,064	20.19
Primary	104,462	29.5	64,401	39.94	64,520	35.14
Technical Secondary	22,523	6.4	21,476	13.32	8923	4.86
General Secondary	119,666	33.8	34,677	21.51	60,875	33.16
Post-Secondary Vocational	15,769	4.5	7797	4.84	2519	1.37
University-Post-University	23,876	6.7	17,193	10.66	9683	5.27
Package	417,720	100	161,225	100	161,225	100

and competitive population capable of participating in the country's development, particularly in productive activities, in order to build a strong and resilient economy [1]. Substantial investment should be made in property development, building homes for all with contributions from the beneficiaries [29] [30]. Returns on these investments should be assessed each year in order to maximise returns.

#### 4. Congolese Households as a Basic Unit in the Economy of Human Settlements

From the outset, it is imperative to state that the Congolese economy is based on the exploitation of hydrocarbons. The report by the World Bank Group [30] corroborates this assertion, stating that the current economic model is based on the exploitation of oil revenues. From a microeconomic point of view, the Congolese economy is still substantial [1] [7]. The population's standard of living is still very low. A Congolese employee is responsible for between ten (10) and twenty (20) dependents [3]. The diagnosis and analysis of the social and economic situation reveals the following:

- 21.6% of young people aged between 15 and 24 are unemployed.

According to the World Bank, the poverty rate will be 52.5% in 2020. The infant mortality rate will be 34.9% in 2022.

The education system is characterised by 75% general education establishments, 20% technical education establishments and 5% vocational training and apprenticeship centres. In 2019, 48.3% of the population had access to electricity and 68% to drinking water. 75% of the population use precarious sanitation facilities. Housing is overcrowded in urban areas. A new approach is therefore essential for sustainable and irreversible development. Households and their members need housing in which their productive potential is up to scratch if they are to play their part in the national economy. Congolese households are



headed by a head of household, who may be an employer, a self-employed person or a salaried employee. An employer is a boss who employs one or more employees whom he pays. A self-employed head of household works for himself and uses unpaid family helpers, acquaintances or apprentices. However, they are the responsibility of the head of household, who provides them with food, accommodation and care in the event of illness. In all urban and rural areas of the Congo, salaried workers can be found in the public sector (civil servants), the private sector and international organisations. The hospitality of the Congolese is reflected in the fact that the working population takes care of the non-working population. According to the results of the RGPH-2007 [31], one hundred (100) working heads of household have more than 100 dependents. The lack of appropriate housing has given rise to juvenile delinquency phenomena such as “kata-kata”, “bébé noir” and “kuluna” in the communes and urban communities. Congolese households need new housing if they are to lead healthy and decent lives. Their involvement in economic activities will not only help to reduce poverty and insecurity, but also build a strong and resilient economy.

- Household participation in the financing, design and resolution of housing.

The joint involvement of the State and heads of households is crucial to improving the housing conditions of citizens. In this participatory approach, the beneficiaries bring their ideas and their contribution, which will facilitate the state services in the distribution and permanent production of housing. Householders will monitor the progress of the work and make any necessary changes. The architect in charge of the project will ensure the quality of the housing built.

Depending on the income of the head of household, the state will establish its contribution to ensure decent housing for each household regardless of its location. A social and territorial balance should therefore be established to encourage harmonious development throughout the country.

## 5. Results and Discussion

Analysis of the demographic, social and economic characteristics of the Congolese population has revealed that the Congolese population is grouped into households. Household size varies according to the status of its head. It was estimated at 5.2 persons in the RGPH-84 [32] and 4.2 persons in the General census of population and housing (RGPH-07) [26]. The heads of household are married men, most of them with one or more wives; single women, widows and/or divorcees. The heads of households and their members spend a great deal of money and energy trying to solve the housing problem. Unfortunately, these efforts contribute to the creation of precarious neighbourhoods with housing of no architectural or hygienic value. Having trained managers in the building and infrastructure sectors, the State now has a duty to play its role as regulator and coach in improving people’s living conditions. Collective housing in high-rise buildings without lifts should be encouraged.

### 5.1. New Types of Housing as Challenges for a Strong, Resilient Economy

The National Development Plan 2022-2026 [1] aims to build a strong, diversified and resilient economy. According to the NDP, it is based on growth-generating activities such as agriculture, industry, tourism, trade, the digital economy and real estate. Implementing this plan requires the involvement of the entire working population. Concrete measures must be taken to relocate the population in conditions that encourage their involvement in growth-generating economic activities. At present, a large part of the population wanders into the cities in search of work rather than settling where there are assets for the development of activities. The “new type” housing stock in Congolese human settlements should help householders to better prepare household members for harmonious integration into working life. Here, children receive a basic education and are introduced to and learn vocational trades. This accommodation is dedicated to protecting young people from idleness and, above all, criminal activity. These young people can be involved in the process of extending or acquiring a new home. The results of this study can be used by property developers in the public, private and public-private partnership sectors. Householders will have an influence and a responsibility towards the new generation. This will enable the police to maintain order and security in human settlements. In fact, young graduates will no longer have a complex, because, in this new type of housing, their dignity will be guaranteed and assured. The space, fitted out with essential amenities, will enable them to take their destiny into their own hands in a spirit of patriotism.

### 5.2. Characteristics of New Housing for the Most Common Households in Congo-Brazzaville

Based on Congolese households and their lifestyles, the study proposed including the following activity areas in the housing structure: family counselling (domestic chapel), communal meals, children’s play areas, food preparation and cooking, cleaning, storage and ironing of linen, intimate care, toilets and showers. These processes, which in the existing dwelling took place outside the building, *i.e.* in the open air or in unfinished spaces, will now be included in the structure of the dwelling. With this in mind, the study recommends four (04) new housing models for the most common households.

#### **Model 1: accommodation for single households (1 to 3 people)**

The accommodation comprises a covered terrace that opens onto the outside and serves as a lounge; a modern kitchen with space for meals; a full shower room and a bedroom. Additional options include a utility room and a storage room. The surface area of this model ranges from 32 m<sup>2</sup> to 40 m<sup>2</sup>. **Figure 3** shows the principle plan for a single-household dwelling.

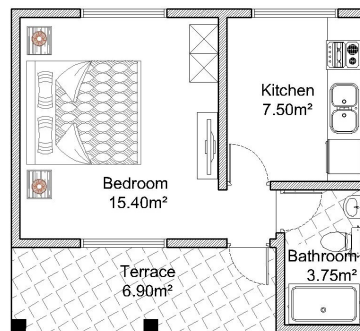
#### **Model 2: housing for medium-sized households (4 to 6 people)**

It comprises a living room for small family gatherings (6 to 12 people); a terrace;

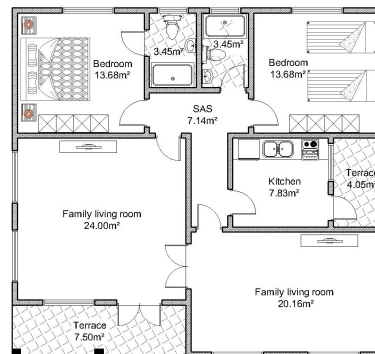
a children’s playroom (4 to 6 children); a kitchen with terrace; two full bathrooms; two bedrooms and corridor. A laundry room with drying and ironing facilities and a storage room are also available as optional extras. **Figure 4** illustrates the principle plan for the average household dwelling.

**Model 3: housing for large households (7 to 11 people)**

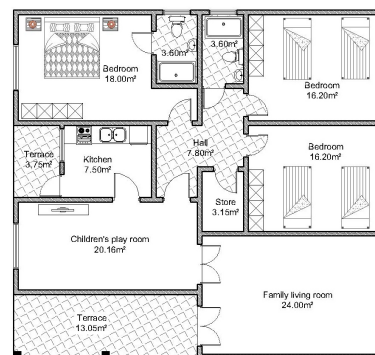
The accommodation comprises a living room for small family gatherings (6 to 12 people); a terrace; a children’s playroom (4 to 8 children); a kitchen with terrace; two full bathrooms; three bedrooms and corridors. A laundry room with drying and ironing facilities and a storage room are also available as optional extras. **Figure 5** illustrates the principle plan for the multi-household dwelling.



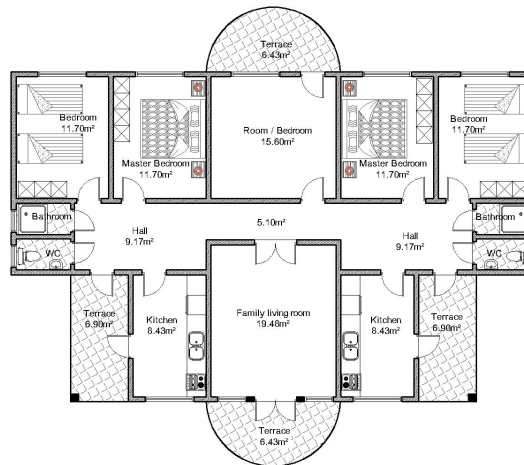
**Figure 3.** Accommodation for single households/Modern studio.



**Figure 4.** Housing for the average household.



**Figure 5.** Housing for large households.



**Figure 6.** Housing for complex households.

#### **Model 4: housing for complex households (8 to 16 people)**

It comprises a living room for small family gatherings (8 to 16 people); a terrace; two lounges used as play areas for children (4 to 8 children); two kitchens with terraces; two toilet blocks with two full bathrooms each; five bedrooms and corridors. A laundry room with drying and ironing facilities and a storage room can be added as an option. **Figure 6** illustrates the principle plan for a home with a complex household.

## **6. Conclusions**

Building a strong, resilient and prosperous economy cannot be achieved without improving the quality of human capital. Improving people's living conditions means taking into account the needs of heads of households and their members. The education of children, their social well-being and the care of the elderly require the provision of appropriate housing. At present, the shortage and quality of housing in both urban and rural areas is one of the factors that have a major impact on the performance of human capital, particularly in terms of diversifying the national economy to accelerate real economic growth and create jobs.

This study takes stock of current housing in human settlements in Congo-Brazzaville. According to the administrative and territorial organisation, the population is settled in communes, urban communities, villages and central villages. They live in three types of housing: European-style housing, self-built housing and rural housing. Research has shown that the current housing stock is not adapted to the needs of households. The principles for designing new types of housing have been devised on the basis of this finding.

New types of housing for human settlements in the Congo must take into account the social and demographic structure of the population, their economic activities and their habits. A public-private partnership should be encouraged in the financing of housing. Other main household types have been identified and developed, including simple households (1 to 3 people), medium-sized house-

holds (4 to 6 people), and complex households (8 to 16 people). However, for each type of household and according to the domestic processes of daily life, related architectural plans have been proposed.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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