

ARCHITECTURAL ORGANISATION OF SOCIAL CLUSTERS IN BURUNDI

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Abstract

The situation of poverty in the Republic of Burundi is one of the most extreme in the world, 93% of the population lives below the poverty line. Less than 10% of the population lives in urban areas and many peasants mostly live on subsistence level. Because of poverty, many families build their homes on their own invented materials: cardboard, plastic, or mats on illegal land obtained during the occupation. These settlements, as a rule, do not have adequate public services, a healthy environment or public safety. The social environment in the vicinity can be a breeding ground for all kinds of problems: many children often do not attend school, people do not have paid work, and some of them may even be involved in criminal activity. Therefore, the government faces enormous challenges in the areas of sheltering the urban poor. This study focuses on showing the need of durable housing for Internally Displaced Persons (IDPs). The objective of the study is highlight the needs of the low-income residents and to preserve the vernacular building cultures. A quantitative and qualitative methodology is applied with both social and physical analysis. The result of this research is a proposal of a typical cluster able to group a population of 5000. In this way permanent shelter will be gradually provided to the 80,000 Internally Displaced Peoples in different provinces of Burundi.

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Keywords: Burundi, Housing, Internally Displaced Persons

Introduction

In many developing countries, prime actors in the process of providing housing are households themselves. In the Republic of Burundi many settlements do not have adequate public services, a healthy environment nor public safety. Burundi was ranked 178 out of 187 countries in the 2013 Human development index. In addition, the UNHCR anticipated that by the beginning of 2014, the country will be hosting over 50,000 refugees and close to 80,000 IDPs. Unfortunately, there are no durable housing project for low-income people, especially for returnees who do not have land and are placed in temporary camps. Also, most of the camps are located in the capital city and lead to overpopulation and to the rapid growth of informal self-help settlements and environmental degradation (UNHCR, 2014-2015).

Thus, this study proposes an architectural solution to the housing problem by building an environment that will preserve the cultural values of daily activities while using new technologies and local building materials.

Each cluster would be able to contain a population of 5000 and will be affordable and sustainable for the shelter deprived. However, the research is not an in-depth study but carries a general perspective. The Study was motivated by the UNESCO / UIA Charter for Architectural Education general consideration "that there is, consequently, public interest to ensure that architects are able to understand and to give practical expression to the needs of individuals, social groups and communities, regarding spatial planning, design organization, construction of buildings as well as conservation and enhancement of the built heritage, the protection of the natural balance and rational utilization of available resources" and "that the educators must prepare architects to formulate new solutions for the present and the future as the new era will bring with it grave and complex challenges with respect to social and functional degradation of many human settlements" (UNESCO/UIA, 2011). Also, Kramer (2012), implies four main aspects of socially responsible architectural practice, namely: sustainability, responsibility to consider the needs of communities, ethics and civic engagement through public service.

In order to carry out this research, a qualitative and quantitative method was adapted. The research approach is descriptive and deductive in both social and physical analysis. A survey of earlier published literature, especially from the UN-Habitat and related organisations, will help collect the necessary data. The conclusion will be a project proposal in form of a master plan. The results of this study can be implemented by the Government of Burundi with the support of local investors, international investors or the World Bank.

About Burundi

Burundi is a small landlocked country located in the region of the Central African Great Lakes. The name "Burundi" (Bantu family) means "land of the people". Its neighbouring countries are Rwanda to the north, Tanzania to the south-east, and the Democratic Republic of the Congo to the west (HDR, 2009).

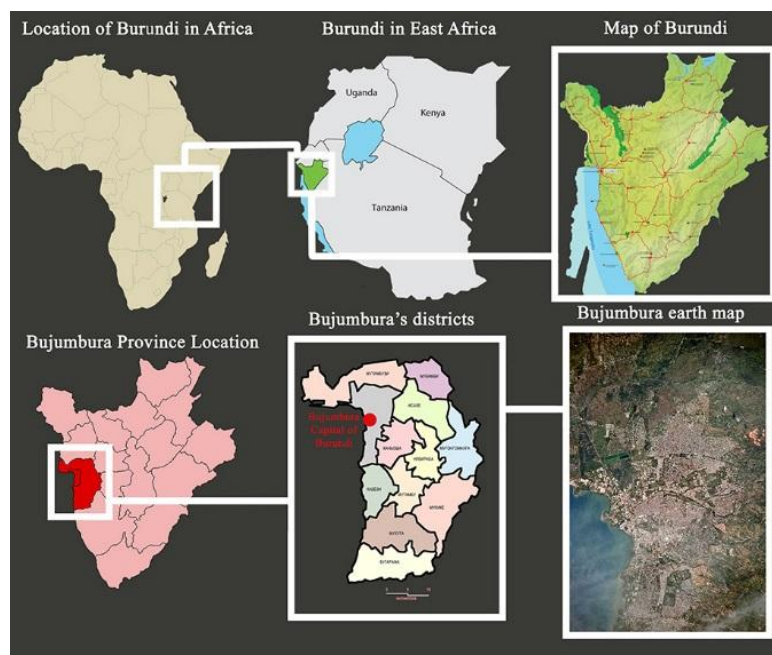


Fig.1. Location and map of Burundi

Together with Rwanda, Burundi was under German colonial rule between 1897 and 1914. This area was named Ruanda-Urundi and considered as a single territory. Belgians, who invaded the area during the First World War, formed the kingdom of Ruanda-Urundi in the period 1916 to 1962. In 1923, the area Ruanda-Urundi (except parts of the kingdom, located in the western region) was officially attached to the Belgian. Occupation of the territory lasted for 68 years (HDR, 2009).

The original inhabitants of Burundi are believed to be "*Twa*" people, descendants of the Pygmies. "*Hutu*" arrived from the west by gradual migration in small groups between the seventh and eleventh centuries. In accordance with this, the inhabitants of Burundi are descendants of "*Bantu*" ("the people"). Ancient Bantu group of people from West Africa, who crossed from Congo or the Niger Delta were the main inhabitants of eastern and southern Africa (URL1). During the occupation, the Germans and the Belgians used indirect power through the "*Tutsis*" who were political rule of the aristocratic hierarchy in the area. Colonizers instructed "*Tutsi*" to dominate the majority of "*Hutu*" in Rwanda and Burundi, providing them with better economic opportunities and social position in society. This polarization of ethnic groups has led, among other things, to the history of civil conflict and the critical economic situation of the country (Fransen & Ong'ayo, 2010). The country is characterized by savannah vegetation. Forests are cut down gradually due to population growth (URL2). Flora plays an important role in the printing property Burundi and vernacular architecture brings relationship between man and nature. Building materials were taken from the environment, and buildings stood as an emblem that sync with nature in order to make it better.

The climate is sub-equatorial. Monthly average temperature is around 15 to 20 C in the lowlands, + 23 to + 25 ° C on a plateau and below +25% in the valley of the River Ruzizi (URL3). Temperature stability of the country is an advantage for the architecture and design of buildings, as there is no need for a special heating. The main task of the builder is to protect the house from moisture and heat. When the water falls as rain, most of it flows into the river or is used for watering plants and crops. The rest of the water flows in the layers of rock that are underground and often becomes purer than water on the surface (McGrath, 2012).

This suggests that the geographical characteristics (location, vegetation, climate and ethnicity) play a key role in the formation of vernacular architecture in Burundi. Thus, the study will analyse what are vernacular architecture building traditions in order to consider them during the cluster design. Therefore, in the next section, Burundi typological feature of housing will be reviewed.

Typological features of housing in Burundi

The capital, Bujumbura, is the most densely populated and industrialized city in the country. It is located on the northern shore of Lake Tanganyika and has the largest port of the largest in the country. Cement, textiles, and soap are produced there, and it is home to one of the two units of coffee processing country. Bujumbura, once known as "*Usumbura*", was also a colonial capital, and many of its buildings to reveal colonial influence. The second largest city is Gitega, which is located to the east of Bujumbura on the river Ruvubu. Gitega was the old capital of the kingdom under the leadership of "*Tutsi*" and grew rapidly in the past few decades. Gitega is located in the fertile highlands, surrounded by coffee, banana and tea plantations. It has a coffee-processing plant and a brewery that produces beer from bananas. These are the only two urban centers in Burundi (URL4).

In these two regions, buildings are distinguished by their function; public, private and cooperative. The public sector is the families that do not have economic power, while the private sector contributes to housing for economic stability and social well-being. The following paragraphs will highlight the Burundian architectural building trends during key periods.

- Modern trends

Buildings are usually constructed with primary materials such as reinforced concrete for the structures, bricks or concrete blocks for walls, clay tile for roofs. Hotels and touristic building designs are considered modern trends since Burundi is now considered as a new tourist destination in the East African region. These trends are the use of natural building material such as straw, wood and bamboo. High roof facilitate ventilation.

- Colonial trends

In the history of the Belgian colonization "College du Saint Esprit" (in French and translated into the College of the Holy Spirit) in Bujumbura holds a peculiar position. Built between 1952 and 1961 the college was designed by Roger Bastin, a prominent figure in post-war Belgian architecture. It forms a fine example of 1950 "Tropical Architecture" and is considered one of the most impressive architectural complexes ever built by Belgian architects during the colonial period (Demissie, 1988).

- Vernacular trends

Originally, Bantu lived in two different types of houses: the "beehive house", a round structure with long poles that was covered with grass and the "cone house" that had a cylindrical wall built of upright posts plastered with soil and cow dung. The roof was made of poles tied together (New World Encyclopaedia, 2012).

In Burundi, the people build houses out of the grass and the soil in a shape similar to beehive and use woven leaves for the roof. The Tutsi enclosure, called a *Rugo*, was surrounded by a fencing and is the typical vernacular organization of interior and exterior space.

The "Rugo" is a unit of property (enclosure) where all members of one family lived and that is surrounded by a fence (*urugo*) of bamboo or branches. It includes:

- The main round house, a front yard (*urugo*) and a backyard (*ikigo*). A section in the yard (*ikirugu*) serves as a place for cattle. A fireplace (*igicaniro*) in the center helps protect the cattle from insects and a wooden post (*icishinzo*), is for the cow to rub themselves.
- The teen house; for the members of the immediate family and guests.
- The granaries (*ibigega*).
- The place for the worship of "Kiranga" (mediator between the Supreme Being and men).

The size of the house was determined by the size of a man with his right hand stretched out. A wooden picket was attached to the middle finger in order to trace the periphery. This type of measurement was in function of the social status and needs of the owner.

The house structure consists of a system of poles lined with cane and bamboo strings. The ceiling is straw woven in spiral (*igisenge*) at a chosen height (usually 3 to 5 meters) with columns (*Inkingi*) and decorated with patterns. External poles is then added and covered with straw cut by men in swamps.

The interior of the main house was divided with bamboo into sections, on the one hand was the sleeping room where small children and calves; on the other hand, a room which housed the parents. The fireplace (*Iziko*), made of clay and dung, had three stones to hold the cooking pots and was located in the middle of the house. A shelf (*urusenge*), for clay pots and firewood, was built on top of the fireplace. On the right side of the house was a built-in chest (*uruhimbi*) for milk jugs (*ivyakunze*), churns (*ibisabo*) and various baskets (*ibiseke*).

House decoration was done by women and girls. The walls were covered of red earth and kaolin clay after being levelled with a thick layer of *eragostris* (*ishinge*)(URL5).

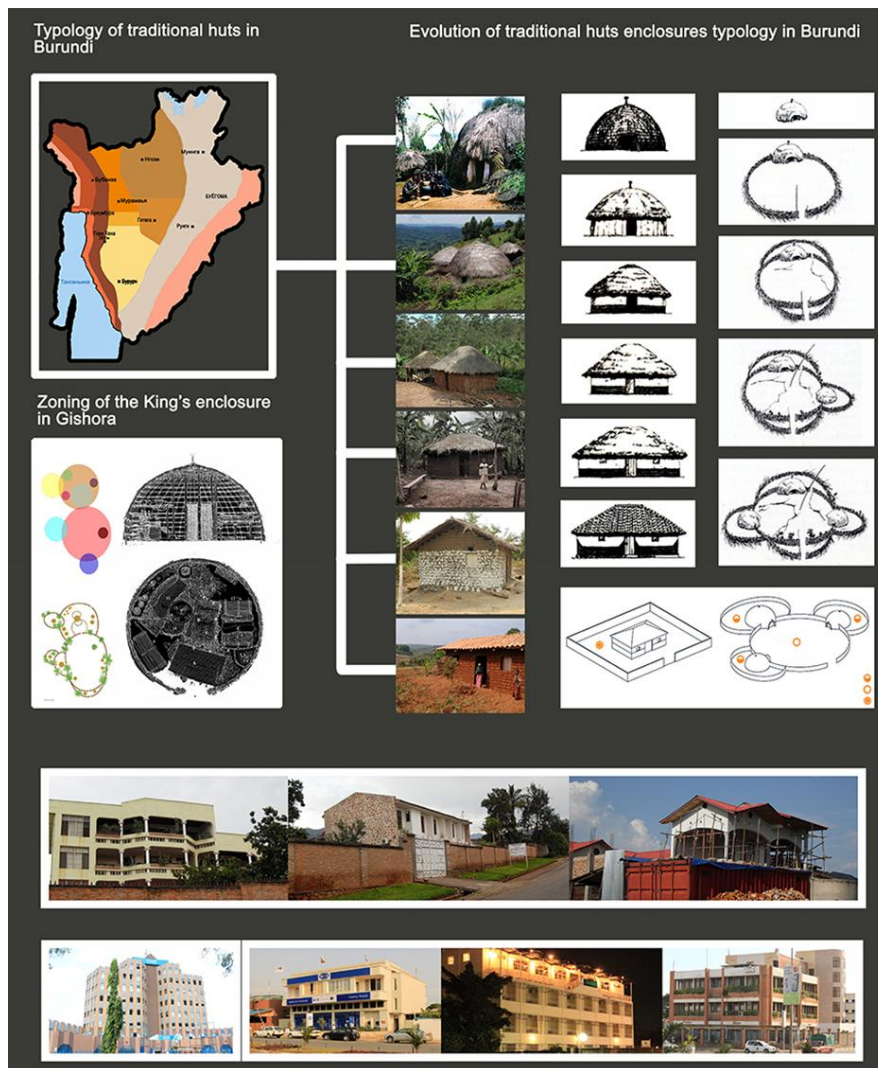


Fig.2. Typological features of housing in Burundi

Social and Typological Preconditions of Clustering

The living space of a villager has blurred boundaries and the life of the peasant obeys natural rhythms as he has no permanent "working" space. An individual who lives in the cluster is victim of the impact of the cluster system, including all the natural and climatic, socio-economic and urban conditions. Therefore, the cluster system needs to be well elaborated for the well-being of the people. Awareness of climatic conditions is one of the most important prerequisites for the creation of sustainable housing that meets the needs of an individual. A house must respond to natural and climatic conditions, to be able to create comfort for the individual. Therefore, the choice of material, the orientation of the house, the house of height and many other characteristics should be considered to meet the climatic conditions of the territory. Vernacular architecture shows that the houses were grouped in small units. The absence of the cold season allows the presence of large open and semi-open spaces for daily activities.

However, the layout of the cluster should not be so compact, but a nuclear plan shape would be more suitable in order to avoid long walking distances but allow easy interaction. Natural factors also influence the composition, but the visual composition must aesthetically blends in with the environment and landscape (URL6).

The image bellow shows the main attributes that were taken into consideration during the design process.



Fig.3. Placemaking Diagram. University of Cincinnati. 2013

In addition, the social analysis involved a collection of children drawing (mainly from areas that were severely affected by the war) in order to understand how much a house or home is important for the children (between 6 and 12 years old). Children in to different schools were asked to draw a house. The younger ones added livestock and people to their drawing and also illustrated the interior of the house. The interpretation is the children desire a social environment. On the other hand, the drawings of the elders, more detailed, colourful and decorated revealed a need of a better house or social standard.

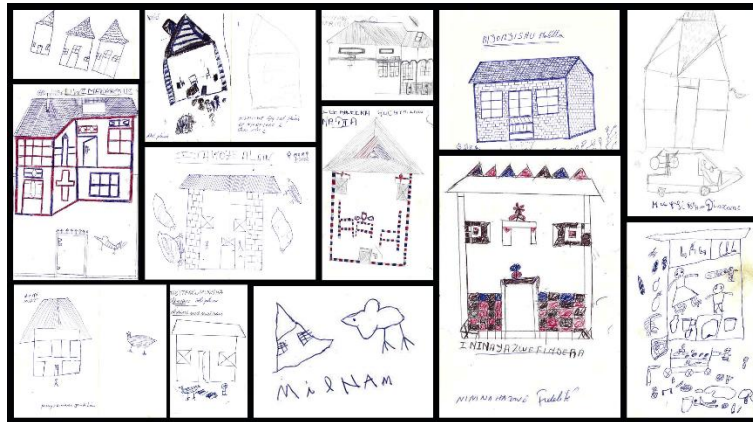


Fig.4. 6 year old pupil's house drawing. Collected by author. 2015



Fig.5. 12 year old pupil's house drawing
Examples of villages in Africa

In Uganda, an ecovillage was built near Lake Victoria. The village's main characteristic was the use earthbags technique. During a month, local people were trained basics of earthbag building technique. The aim was to alleviate poverty and demonstrate sustainable building with earthbags (URL7). The case of Rwanda (similar country to Burundi at many levels) is the "Imidugudu" program, which places rural and low-income settlement dwellers into planned housing elaborated by skilled and unskilled local labour. The first houses used low-impact building materials and building techniques new to the country. The design phase was November 2011 – June 2013 (URL8). Leeuwen states that after the "Imidugudu" creation, the government announced that the program should be extended to the entire rural population: all the scattered households in the country had to be rearranged in the villages. Many international organizations, including UNHCR and numerous NGOs, supported the implementation of the program. By the end of 1998, an estimated 85,000 homes were built in about 250 communities with the assistance of international organizations. However, earlier experiments with village in Mozambique, Ethiopia and Tanzania had failed (Leeuwen, 2001). In Burundi, Louise Braverman's designed a plan for medical campus that includes a 29,000-square-foot women's health center, staff residences, and other facilities.

The design maximizes naturally ventilated, and the complex would produce its own electricity with photovoltaics and other energy sources (URL9).



Fig.6. Images of self-help architecture and clusters in the East African region, URL7, URL8, URL9.

Architectural Solution

“Assisted self-help housing is the most affordable and intelligent way of providing sustainable shelter. It is cheap because it is based on minimum standards and incorporates a substantive amount of sweat equity. It is useful because individuals and communities engaged in it acquire precious skills. It is practical because it responds to people’s actual need and levels of affordability. It is flexible because dwelling units are often designed to be able to expand over time. But all construction, and particularly incremental upgrading, requires a suitable supply of building materials, components and fittings”. (UN-Habitat, 2005)

According to self-help proponents, the government has the duty of providing land with infrastructure that enable the shelter deprived to build their own houses. However, quality of self-help housing is often very poor because of lack of professional assistance and the government is not able to satisfy the massive demand for low-cost housing (Bredenoord & Lindert, 2010). In fact, about 46,000 is the number of registered land plots that have been titled; less than 1% of the country’s surface (Kohlhagen, 2012).

The major financial requirements for UNHCR’s operation in Burundi have been allocated to return and reintegration assistance for Burundian returnees. In 2015, there is no budget for reintegration projects in central Africa and the Great Lacs region. However, UNHCR promises to continue supporting the government of Burundi in a durable solution for the approximated 77.200 Burundian IDPs (UNHCR, 2014-2015).

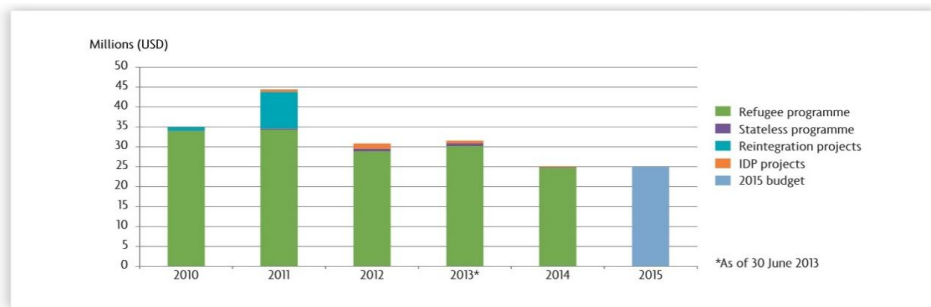


Fig.7. UNHCR Budget for Burundi|2010-2015, UNHCR 2014-2015.

The absence of budget for durable solution for the IDPs has not been clarified during this study. However, it is possible to consider that the reason may be the absence of a housing project proposal adequate to answer the IDPs shelter deprivation.

Conclusion

Based on all the analysis, a master plan model of a cluster was elaborated with the aim of answering to the needs of the shelter deprived and to help improve the quality of life of the IDPs through adequate and sustainable housing while preserving traditional building culture. Unfortunately, limitations such as distance, lack of access to analytical materials (up to date photography of camps, which difficult to snap because of the political tensions), rare publications and researches on related topics, the lack of an architectural faculty or related department in the country's private and public universities have been a serious barrier to this study. However, based on basic design principle and social responsibility, a master plan of a typical village with a capacity of 5000 habitants was designed.

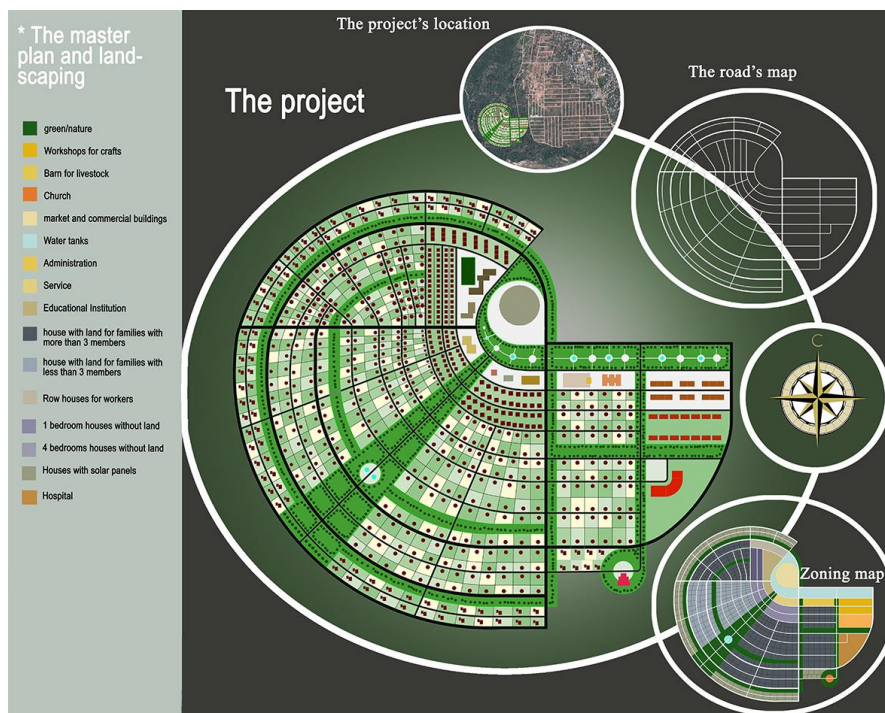


Fig.8. Master plan

Recommendation

Regarding the lack of a budget, a study of the cost of this project must be done in order to raise implementation fund. In addition, the Government, private investors (both local and international), the World Bank and NGOs must be stimulated to consider the need of durable solution for the 80,000 Burundian IDPs.

New technology such as rainwater collection, aquafer water pumping, solar energy use and other techniques may be implemented for a maximum sustainability for the autonomy and self-sufficiency of the cluster and the inhabitants. Also, the social life and daily activities in the Burundian tradition may be more deeply studied and considered for the well-being of the cluster population.

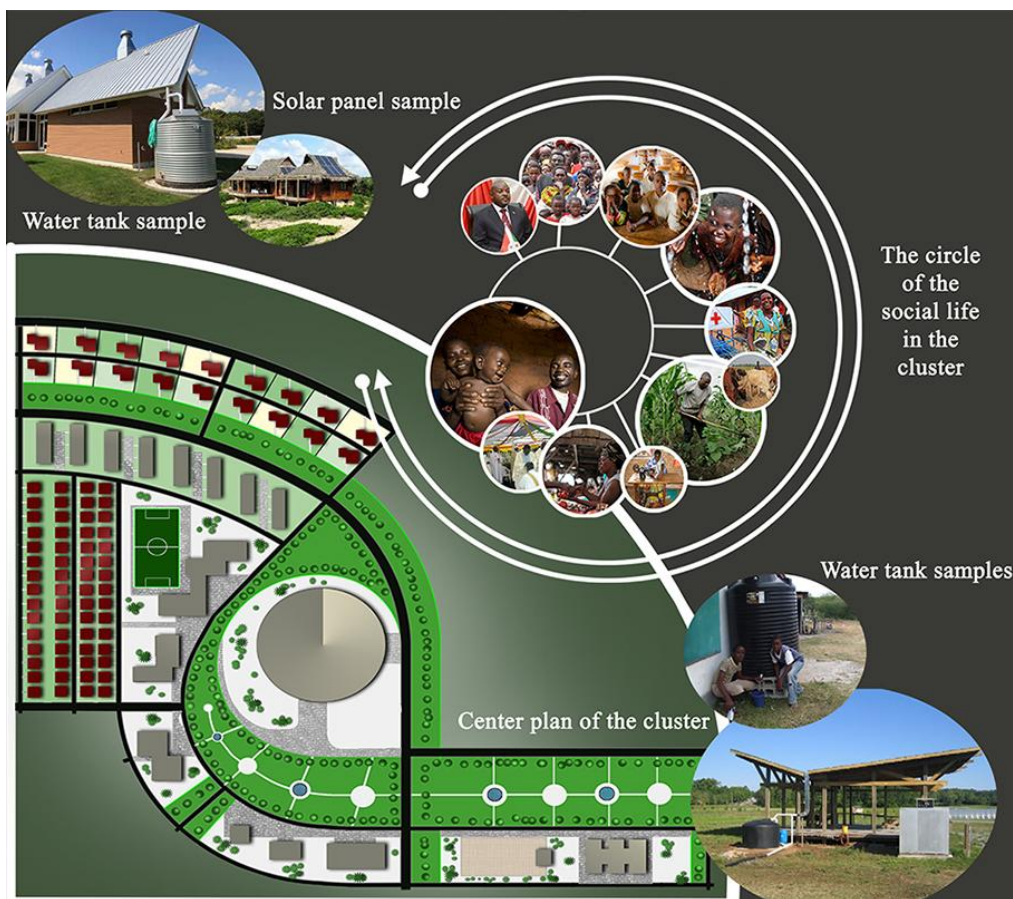


Fig.9. Center plan and recommendations

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