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Studio Explore Lab 15
Suriname: Affordable housing for the lower income group
Higher quality of life for a lower price

Design location:
Suriname, Richelieu plantation in district Commewijne

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Theme and method of studio

Explore Lab is a studio where students are free to choose a topic according to their fascination. The graduation project focuses on affordable housing for the lower income group in Suriname. The affordability should not negatively influence the comfort. It should preserve or even better improve the qualities of housing in Suriname.

The topic of this research arose due to a strong fascination of residential housing, but even more because of development work and improving the quality of life in developing countries.

Problem

The residential area of Suriname is mainly located in the capital city Paramaribo. During the colonization a major thrift from rural regions to the cities took place. Even when Suriname became independent the city remains popular. It causes that existing social housing projects got overcrowded, looked dilapidated and lacks in facilities (infrastructure, electricity etc.). Although the housing projects of the government are improving (in terms of provision of electricity, water drainage, roads etc.) it still is lacking in an integration of people’s needs (in terms of comfort) with the design. Also the lack of suitable and adequate land keep them from solving the housing need.

Approach

For the design of these affordable houses it is important to understand how the Surinamese people use their house and how they live. Learning from existing social housing plans is part of the research, to get a grip on the scale and measurements of the house and urban plan. Also insight in the way they construct their houses and the use of materials will give a clear understanding on how the Surinamese deal with the tropical weather.

Although literature is available about the architecture in Suriname and architectural measurements in tropical countries, the practical framework is even more important to come to actual design plans.  Therefor I went to Suriname for a month to explore, observe and analyse different kinds of housing projects and to interview the dwellers about the use of the house and to what kind of qualities of the house they are deeply attached to.

All the do’s and don’ts learned from the literature studies and the trip to Suriname forms a list of conditions of the housing design and urban plan.

Location

A major problem in Suriname is the housing shortage. Social housing is accessible for the middle income group, but the lower income group are mostly not eligible for this type of housing. A huge group has difficulties with finding a proper house. The government struggles with this issue due to lack of development plans and lack of adequate and suitable land.

In the capital city (Paramaribo) land is scarce and expensive. Social housing projects are therefore built in the outskirt of the city. One of the newest projects of the government is the affordable housing project on the plantation Richelieu in district Commewijne, see figure 1 and 2. A part of the plan is already designed and built. The hatched rectangle represents the location for the graduation project.

The project Richelieu is part of the plan of the government to create satellite cities around Paramaribo. Due to the distance of 14km from the city, it is important that the location will grow into a (in a way) self-sufficient city (a satellite city).

Fig. 1 Project location Richelieu compared to the capital city Paramaribo

Fig. 2 Existing plan of the government Commewijne district

Fig. 3 Project location, part of Subplan 1
The relationship between research and design

Fig. 3 Package/set of conditions for designing affordable and a comfortable housing and neighbourhood

Conclusions were drawn from the theoretical and practical research. The conclusions are a package/set of conditions which are important for design a comfortable and affordable house and neighbourhood, see figure 3. The conditions are explained in the same order as the diagrams.

Density
Land is scarce and expensive, even at the outskirt of the city. Existing parcels in Suriname are spaciously divided. During visits of social housing projects in Suriname is became clear that, according to the use of the parcels, the parcels are unnecessarily big. (400m² or big). Land costs can be decreased by densifying the parcels. (to 160-200m²) Less infrastructure is needed for the same amount of housing.

Tropical architecture
In Suriname it is very humid and hot throughout the year and heavy rainfalls occur on regularly. To make housing comfortable it is important to protect houses from heating up from the sun (by using a double roof construction) and to ventilate to cool the building. The constantly present North-easterly trade wind will be used to cool the building naturally. The way the house is divided, situated and shaped is important for the airstreams.

Public space
A high density is needed to make housing better affordable, but at the same time people lose a quality because their enormous parcel has become much less. In order to convince people to live smaller there should be something to compensate this. Of course the compensation is that land costs will be cheaper, but those are indirect consequences. Studies of the use of the parcels in Suriname have shown that there is an overlap of functions which can be moved to a public space. In other words, what they lose in private outdoor space they will gain in public outdoor space. Important is that the public outdoor space should be designed to prevent it to become a landfill.

Easy assembly, prefabrication and mass production
In order to make housing better affordable for also the lower income group, it is important that the model can be built from prefabricated panels/frames (preferably all the same size). Due to lack of knowledge in Suriname houses should be easy to assemble. Easy assembly is also important when the dweller wants to extend the house. Prefabricated panels/frames (preferably all the same size) will decrease the construction time and thus save money. A repetition of four models will be used for a plan of around 450 dwellings. This allows to build in mass production, which will decrease the building costs.

Sustainable materials
Maintenance on houses doesn’t have a high priority in Suriname. Old housing projects made from wood are dilapidated due to the combination of extreme weather and the lack of maintenance. After a not only the living conditions gets worse, but also the appearance of the neighbourhood. Sustainable materials such as weather resistant fiber-cement plates for the walls, aluminium (window) frames etc. will ask for less maintenance and a longer lifespan.

Social control
There are a lot of burglaries in Suriname. Housing projects such as Sekrepatu have shown that small street profiles and a clear view (no trees blocking the view in the street) in the street prevent theft. Due to the openness and the small measurements there is a lot of social control. An undesirable person will be immediately noticed.

Privacy
Surinamese are deeply attached to private outdoor space. Now the density is increased, the privacy will become less spacious. Because of the reason that in Suriname people live mostly outside the house, the quality should thus lay there. Having smaller parcels the outdoor private space has become less, except when the living area will be designed as an outdoor roofed space.

Playground
An average family in Suriname consist of four people. Most of these family members are young children. Analysis of housing projects in Suriname have shown that there is a lack of playgrounds and the walking distances from house to playground are enormous for the youngest children. Most children therefor are forced to play at their own parcel, so that the parents can keep an eye on them. These conclusions form a general framework of my project. More important than the literature research was my visit to Suriname. I went back to the Netherlands with a lot of new insights and information about architecture in the tropics and the way of life in Suriname.
During the research phase I calculated that if the parcel can be brought back to an average of 200m², it is possible to build 467 dwellings on a 139598m² area with a public space of 33%. The average household consists of four people, so functions should be accommodated for 467*4=1868 people.

The plan is divided into 9 squares to get neighbourhoods of reasonable sizes around 52 dwellings per square/block). After the research phase I started to fill in the package of conditions (conclusion of thesis) for affordable and comfortable housing and neighbourhood see figure 4.

The important aspects of the urban plan:
- High density but a great openness in each block
- Playgrounds are on walking distance
- Green squares in the middle of each block does not only create a huge public space, but also serves for recovering airstreams for ventilation in the dwellings.
- Social control, due to openness and small streetprofiles
- Affordability due to density
- Separated: pedestrian-only areas and roads for cars, bicycles and buses.

The important aspects of the dwellings:
- Double roof, protect the building from heating up too much. The roof has a double function because it also serves to create airstreams within the building itself.
- Ventilation
- Comfortable living by openness. An open house to enjoy the breeze while the roof protects the dweller from the sun.
- Light weighted construction/materials (typical tropical architecture)
- Choice in four different models, depending on location. There is choice between semi-detached houses and detached houses, between different sizes with expandability options and between 1, 2 or 3 bedroom houses etc.
- Easy to assemble the building and extensions

Fig. 4 Urban plan

Fig. 5 Making use of wind and a double roof are important aspects for the design

Fig. 6 The housing plans are characterized by a closed area (for private activities) and an open area (living room, kitchen) to create a roofed outdoor space
Reflection on method

After the p2 I went to Suriname for a month. This trip, together with the literature study helped me to create a package of conditions for my design. Especially the trip to Suriname was very usefull, because the way of life and the do’s and don’ts for designing affordable housing projects (in a Third World country with a hot and humid climate) can’t be found in books. Analyses of social housing projects in Suriname, interviews with dwellers, contractors, architects, the government and professors were very clarifying.

I used the period between p2 and p3 on my research and forming the package of conditions for my designs. During the research I developed some conceptual designs according to these conditions. Writing the thesis was a bit of a struggle for me, because I had a lot of information to work through after my visit in Suriname. It is recommended to do the project visits before the p2, but due to several reasons it was hard to arrange a flight before the p2. Despite the struggle in writing the thesis, I learned a lot about the do’s and don’ts and it resulted a package of conditions.

After my p3 and after finishing my thesis I started to implement the conditions into the urban plan and housing designs. Every time I’ve been working through all the scales (from detailing to urban plan) Due to this method I could make an integral approach of affordable and comfortable living.

Designing with the package of conditions went well and fast. The urban plan was first set up according to these conditions and it resulted in measurements for parcels and in possible housing typologies. When coming to the urban scale I needed to do a bit more research in constructing in aluminium and the properties of aluminium. During the design process I was very involved in creating comfortable and affordable housing by keeping constantly in mind the conditions and for which target group I am designing.

The period between p3 and p4 is a bit short, but it was very helpful to have a package of conditions to make my designs. A lot of design steps were already been taken.

The wider social context

The urban design and the housing designs gives an answer to affordable living while preserving and even improving the comfort of the house and neighbourhood. The urban plan and housing designs are not only applicable on this location, but can also be applied as a tool to create comfortable and affordable housing and neighbourhoods elsewhere in Suriname (provided that a comparable landscape is present). Also in areas with the same tropical weather and same issues such as high land costs, scarcity of land and colonial influences, this model can be applied. The Caribbean area has a lot of those similarities.

The density of the plan and at the same time the openness can play an important role in newly built affordable housing projects. The density also improves the social control and interaction. The openness of the public space is an extra quality in the plan which ensures more living comfort and pleasure, while the openness of the dwellings create a nice private roofed outdoor space.

Many housing projects are focused too much on the affordability of the houses, while forgetting that housing is also about comfort and not just a roof above peoples head. This graduation project took both aspects into account.