

# 12. How do I plan a WELL-DESIGNED HOME?



Do you want to make sure you are designing a long lasting and protected home?  
Do you want to build a house where all spaces and functions fit well with each other?

**This toolkit shares easy -to-follow tips to design and plan your house**

# Designing a home, what are some important elements to consider ?

## A. DESIGNING YOUR HOUSE - POINTS TO REMEMBER

### Keeping your house Cool with Cross ventilation

1. Give openings in the outer walls and internal partitions.
2. Verandas or galleries around rooms allow air to flow in the house
3. Add windows in the direction of wind on both side of the rooms
4. When openings are not possible in walls, you can add rotating fans industrial in your roof to keep air flowing

### Protecting from Rain

1. Provide sloping roofs where possible so water flows easily
2. Add chajjas over all doors and windows
3. Give gutters at end of all slopes to ensure water flows safely without leakage

### Strong and Stable

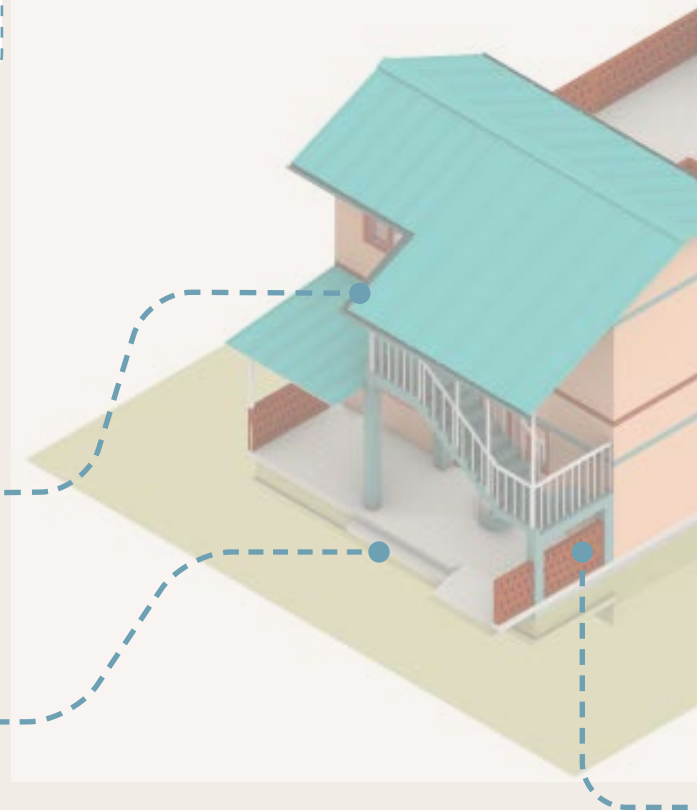
1. Ensure a high plinth from the surrounding ground level to provide a stable and strong base of the building and protect from flooding, dust and animals!

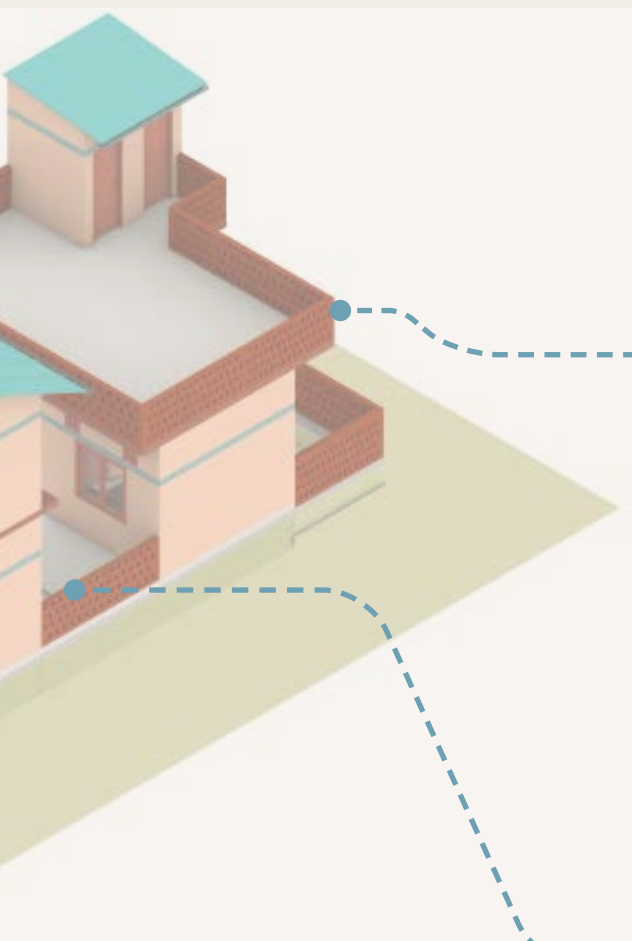
### Placing Rooms

1. The main rooms which are in use most times of the day, such as living rooms, should not be located on the east or west side.
2. Kitchen should be placed at the edge or detached from living area as it can heat up the house and cause suffocation.

### Orientation

1. To minimize sun exposure in summer, place long face of the building on North or South direction.
2. On East and West side, provide larger overhang and shade so direct sun does not enter the rooms to heat them up.





### Multipurpose Terraces

1. Rainwater collected can be directed to tank and used in the future, or directed to a harvesting pit.
2. Provide solar panels for heating water, creating electricity and can keep solar cookers facing south sun.

### Protecting the Walls

1. Overhangs, where the slab juts out beyond the wall help provide Shade, for maximum sun protection in summer.
2. They also increase life of un-plastered walls by providing safety from rain.

### Increasing Natural Light

1. An East facing door or window in the Kitchen lets in morning light when the day begins.
2. A light color of walls and roofs keeps the house cool and well lit.

### Provide Courtyards

1. They minimize the solar heat impact on the outside walls and provides a cool area within the building.
2. A courtyard brings in wind and lets out hot air, so it can keep the house cool even when the even when the summer sun is almost directly overhead.
3. It is an private open space which is safe and the family can use in many ways.
4. It allows for natural light and ventilation in every room even in narrow plots and dense neighborhoods.

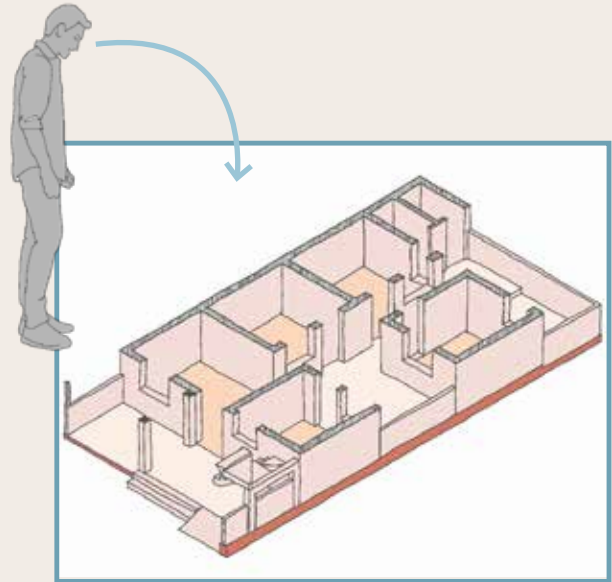
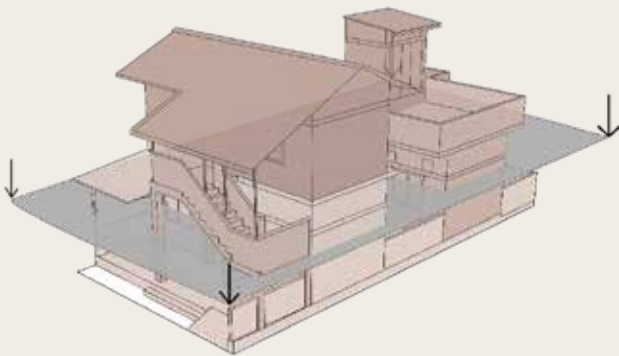
### Utilize nooks and crannies for Smart storage

1. Toilets, two-wheeler parking, refrigerator, water tanks etc. can be placed under the slope of staircases.
2. Storage between sloping roof and room can help keep the room cool.

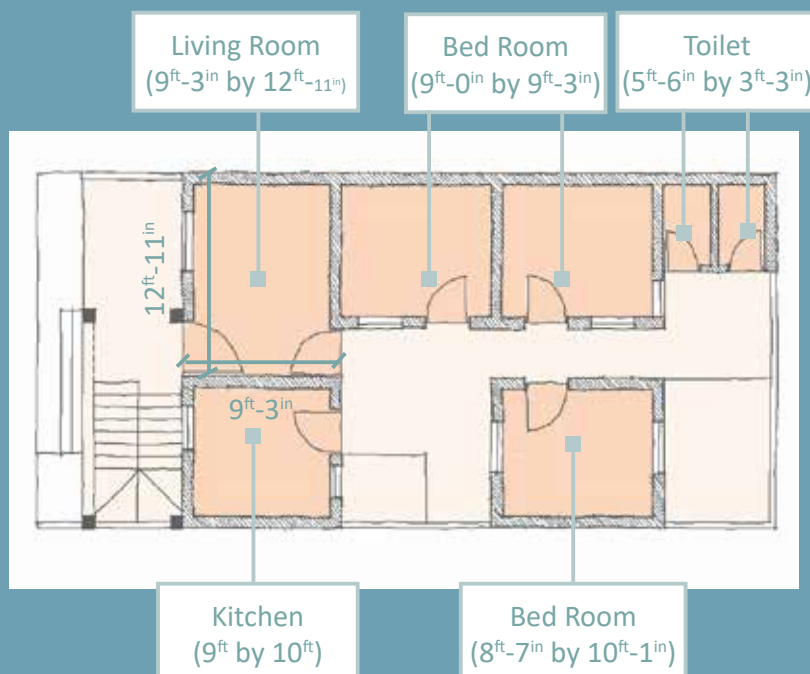
# What is a plan drawing used by contractors and designers?

## B. PLAN

- Imagine a plane cutting horizontally through a house at the sill-level, where the windows are.



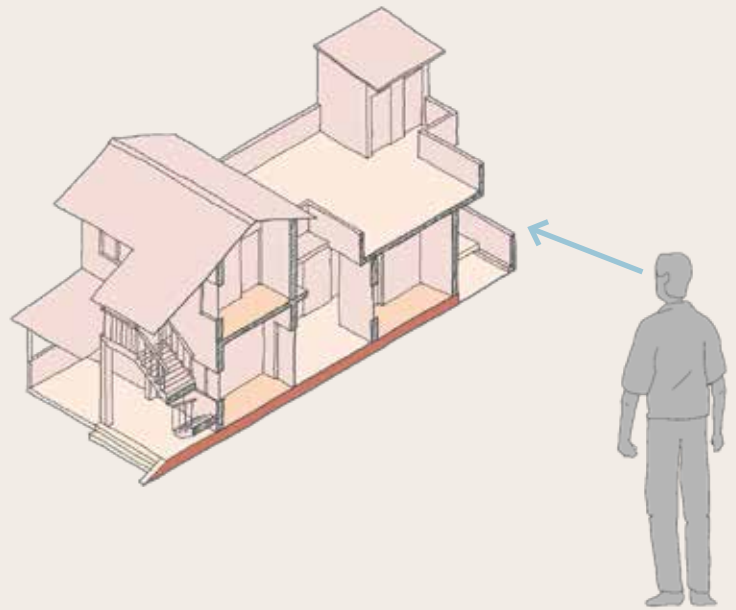
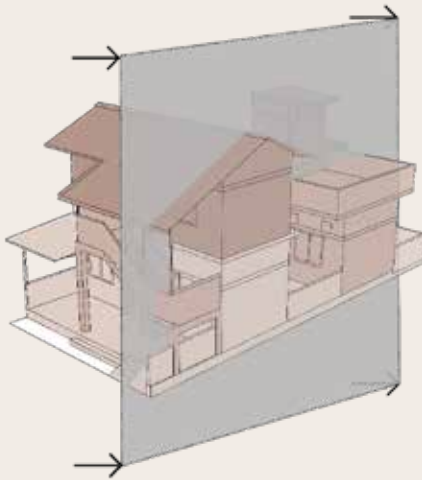
- Imagine that everything above this plane is removed and then you look down the house from up above.
- You can see all the rooms, how they are placed next to each other, how they are connected, where the doors are and which direction they open in, and where all the solid walls and windows are.
- A drawing of this view is called the PLAN of a building. This is one below. The sizes of each room, (Length by breadth) are mentioned with the names of the rooms.



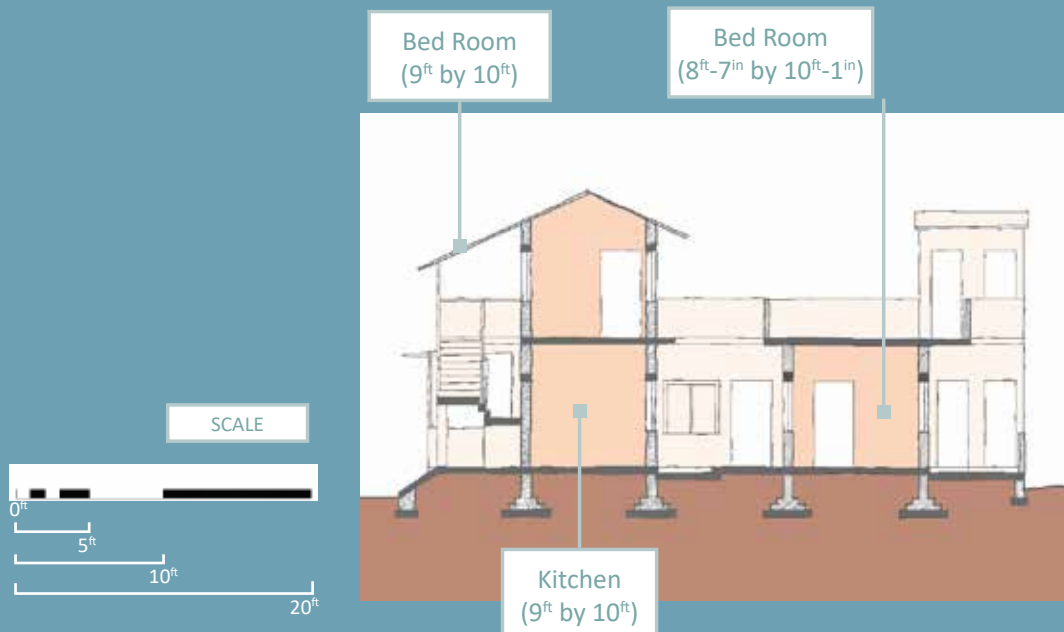
# What is a section drawing used by contractors and designers?

## C. SECTION

- Imagine a plane cutting vertically through a house, going through walls and rooms.
- Imagine that everything on one side of this plane is removed and then you look into the house from this side.



- You can see all the rooms, how they are placed next to each other, and on top of each other.
- A drawing of this view is called the SECTION of a building. This is one below. The sizes of each room, (Length by Breadth) are mentioned with the names of the rooms.





# How do you start planning the site where the house will be located?

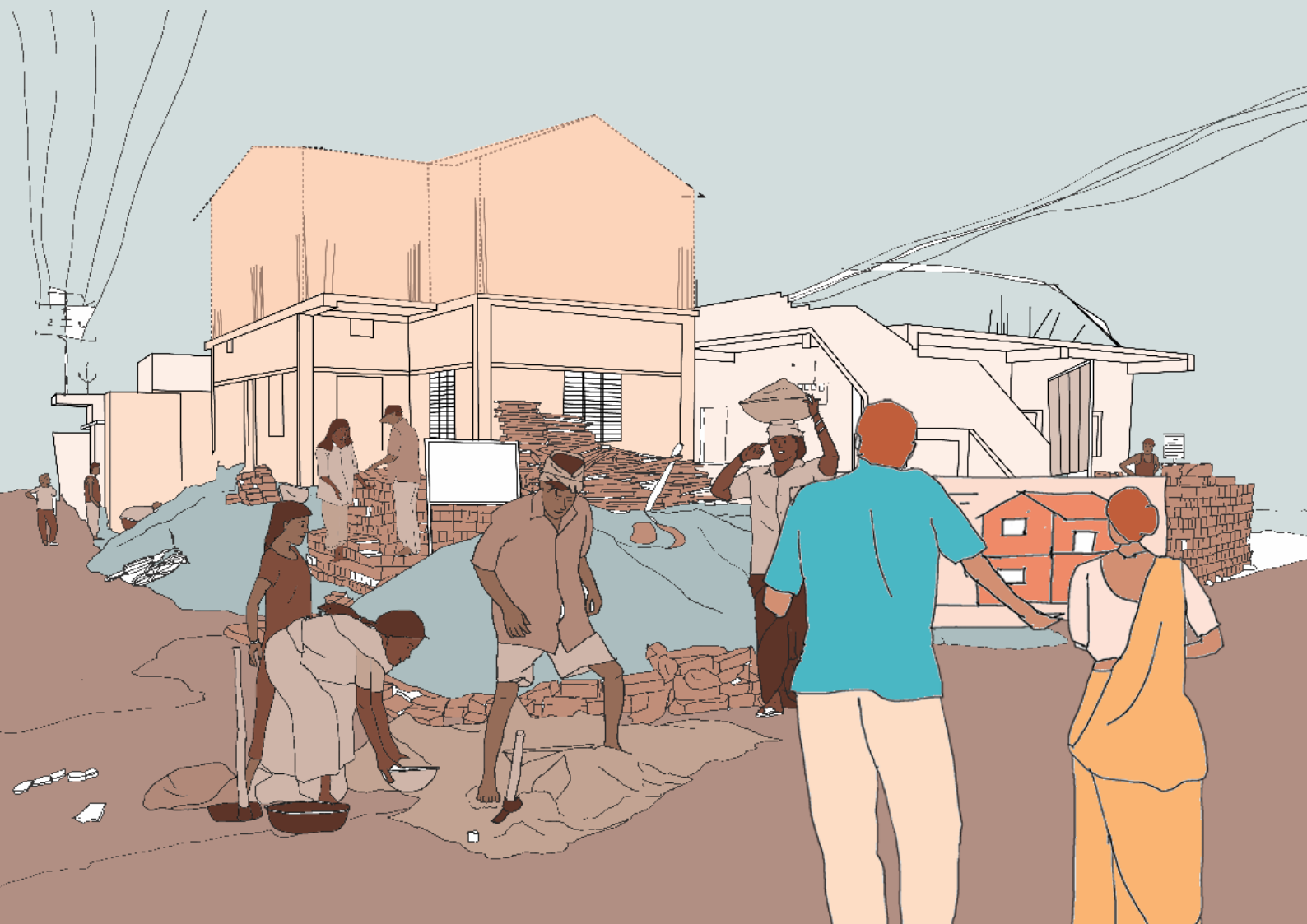
## D. SITE DESIGN

✓ Flatten portions of site where you will be building. Ensure good compaction. Do not flatten the entire site.

✓ Provide a gentle slope to the site that does not allow the water to collect.

✓ Rainwater can be stored in an underground tank, or allowed to percolate and recharge ground water.

✓ To protect the house from excessive winds, plant natural features such as trees and/or mounds on site edges as they act as natural wind breakers and reduce runoff and erosion water to collect.



# How to ensure there is flexibility in the design of the house?

## E. FLEXIBILITY OF DESIGN

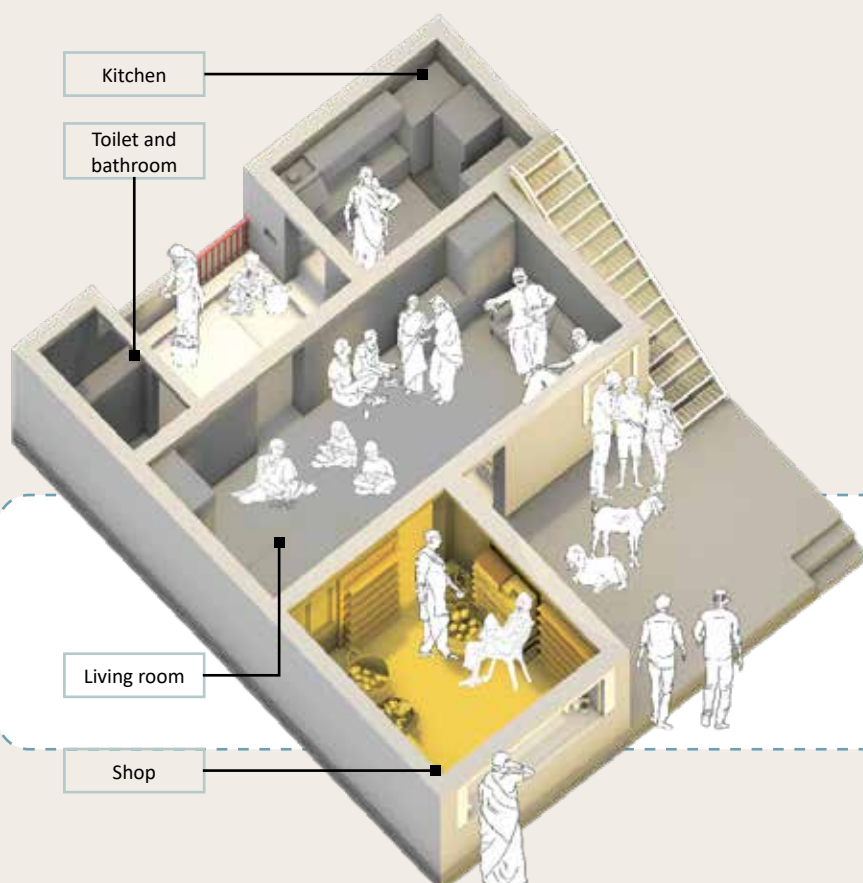
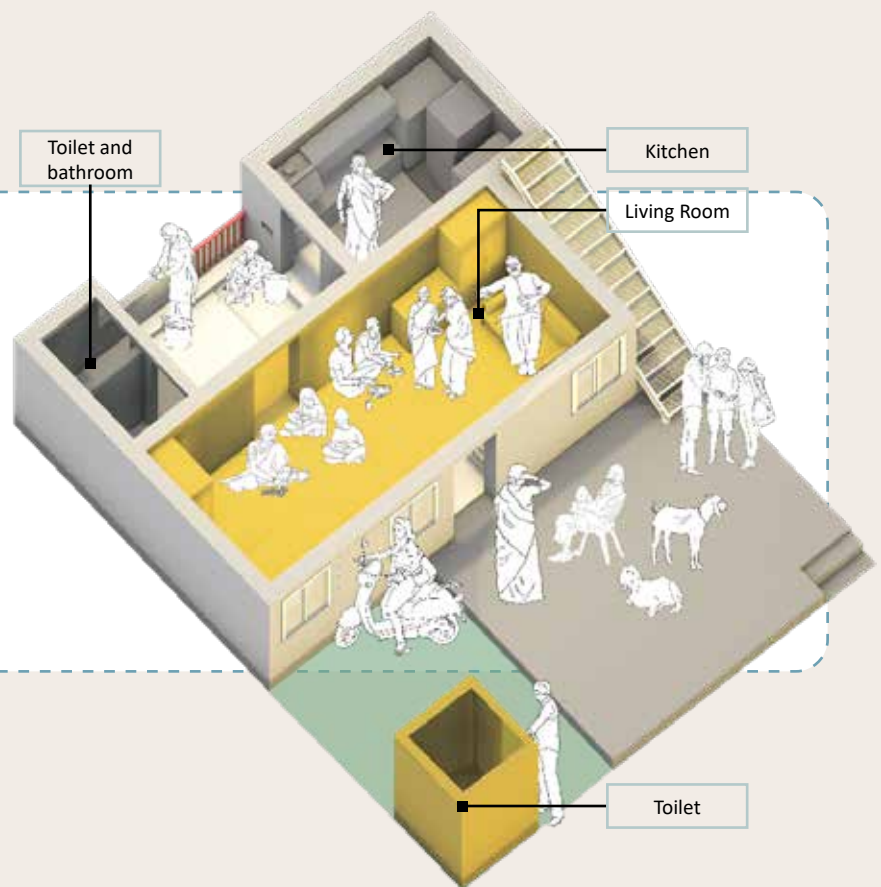
### Plan ahead!

Planning of the initial development allows for the house to grow incrementally without decreasing the quality of open spaces and the house

### Flexibility in the spaces

In this design, you can remove the wall between the living and bed room, to get a bigger space inside the house. It can be used for chopping vegetables, watching television, or having an afternoon nap depending on the time of the day.

A toilet can be provided in front of the house for guests.



### A grocery store can be created attached to the house

On one side, it faces the street so customers can come to shop. On the back, it is directly connected to a living room giving easy access for the owners.

# How to make sure your home is safe and dry?

## F. IMPORTANCE OF A PLINTH



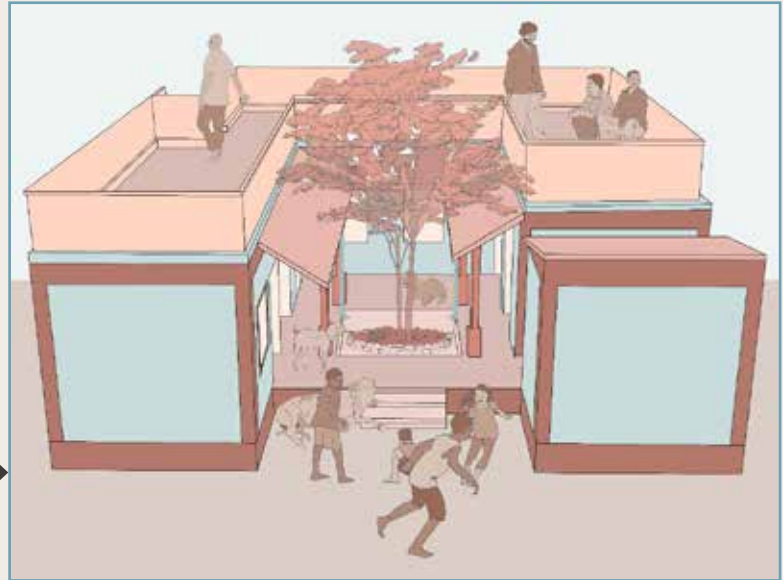
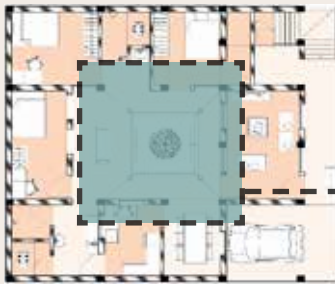
### **The street and its risks are unpredictable**

The authorities might build a higher road, the drains may choke or rain may cause water-logging. You can save your home from all these troubles by ensuring that the plinth is at least 2 feet above the ground.



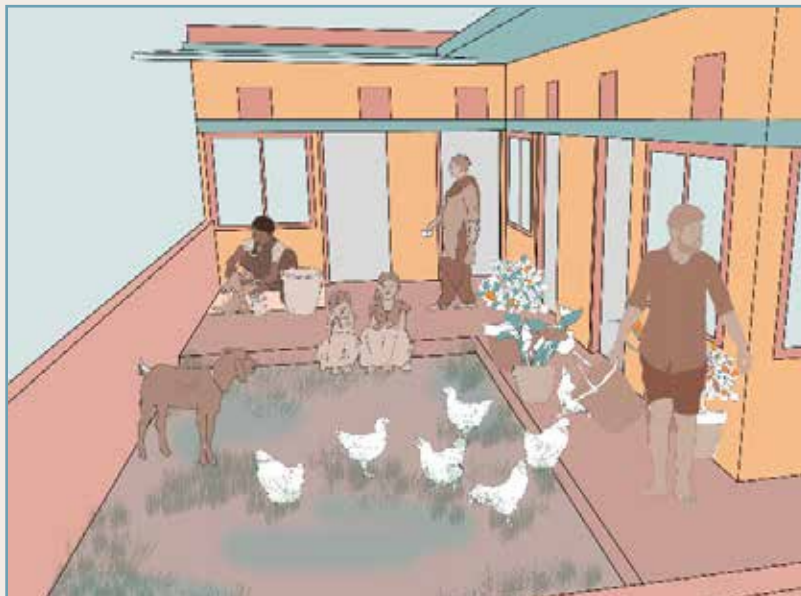
# How to make sure there is sunlight and nature in your home?

## G. BENEFITS OF A COURTYARD



### The generosity of Mother Nature in your home

Your own secure outdoor space, the courtyard has health benefits as it provides natural sunlight, a natural cooling breeze, and well-being and happiness by bringing greenery in the home.



### Create dry and wet parts of the yard

You can create a garden where plants grow, and your animals stay on soil, but all the walls and doors that open into rooms should be on a high plinth, away from the wet earth.

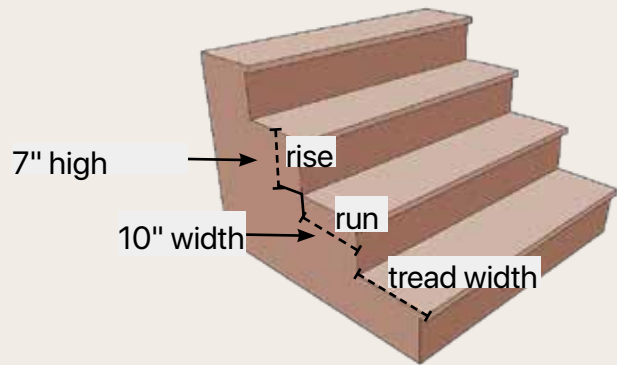
# How to make sure there are well designed stairs to move around the house?

## H. DESIGNING A STAIRCASE

A Staircase is a series of steps.

Each step should have:

- **RISER**, the vertical part = 7 inches high
- **TREAD**, the horizontal part where the foot will rest = 10 inches wide

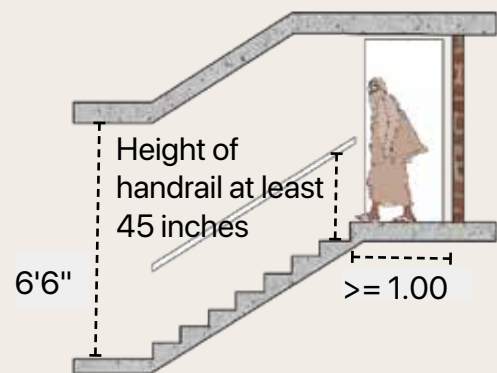


Each Staircase should have one or more **LANDINGS**.

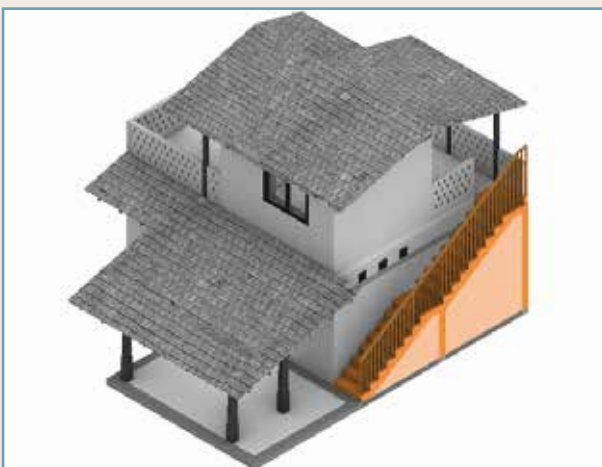
A landing is a break in a series of steps. It is important to keep the staircase stable and safe in case someone falls. Landing should be given after every 10 steps at least.

A **RAILING** should be provided at the height of 42 inches from ground.

The height from the staircase should be at least 6 feet and 6 inches.

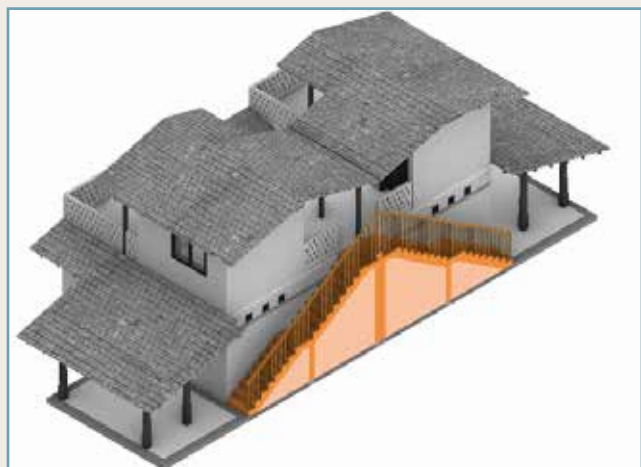


To match length of stride 2 risers + 1 going = about 62.5cm



### A straight staircase

Easiest to design and construct. It can rest on the wall on one side.



### 2 straight staircases

Two adjacent houses and build together and share a landing with two straight staircases.



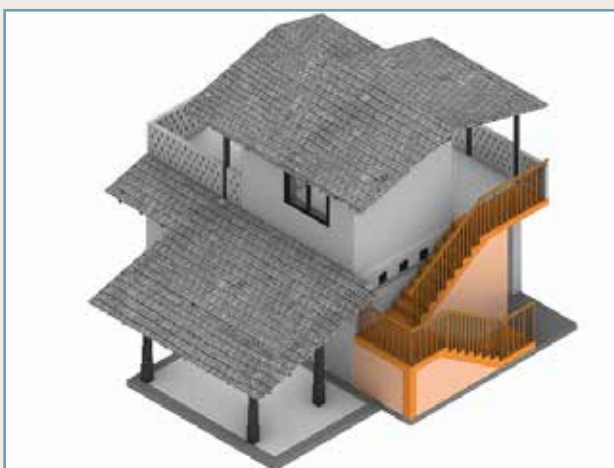
### L-shape staircase

Steps begin in one direction, there is a landing and then they turn to the left in another direction.



### J-shape staircase

When space is less, the steps can turn one by one and create a curved staircase. This is more complicated to design.



### U-shape staircase

Steps begin in one direction, there is a landing and then they turn around and go parallel. This is a strongest and safe design.



### C-shape staircase

Steps begin in one direction, and turn left at two landings. This allows for a bigger room inside the house.

# Designing a kitchen? Make sure to consider these important concepts!

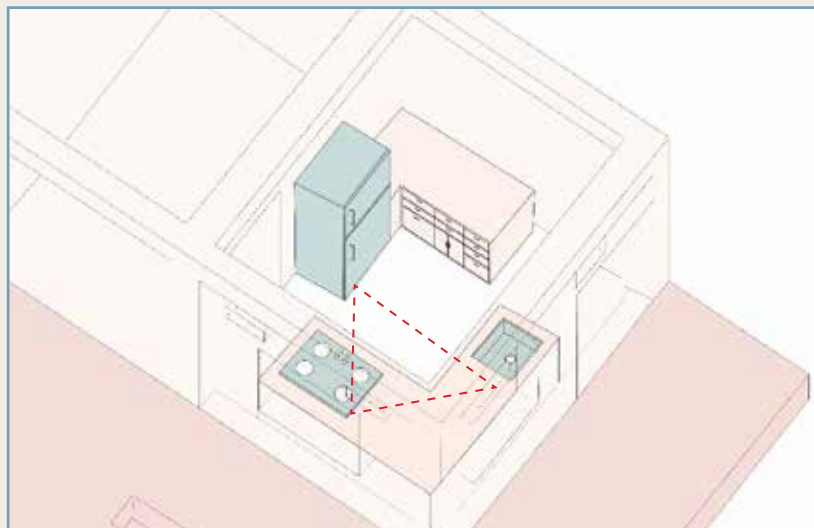
## I. DESIGNING AN EFFECTIVE KITCHEN

A kitchen gets hot very quickly, and should be detached from the main building, where living spaces are, or placed in the corner of your home with good windows and ventilation. This will ensure that the house stays cool and it is not suffocating for the cook.



### The Kitchen Triangle Rule

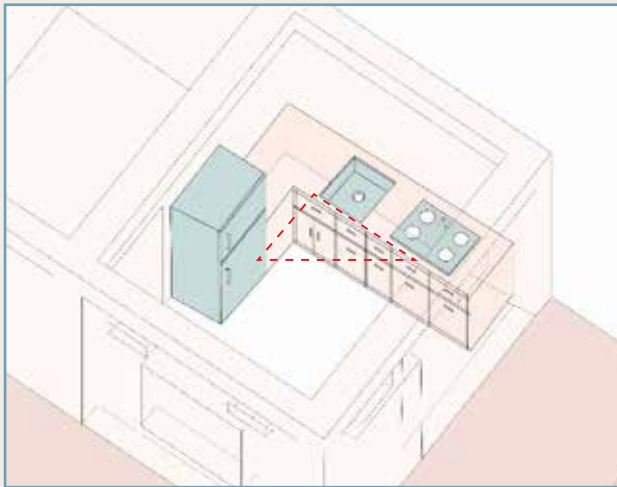
The kitchen work triangle is based on the three main work areas: the sink, the refrigerator, and the stove. These should be laid out to loosely form a triangle, enabling you to perform day to day tasks with relative ease and without obstruction. Each side of the triangle should measure no less than four feet and no more than nine feet.





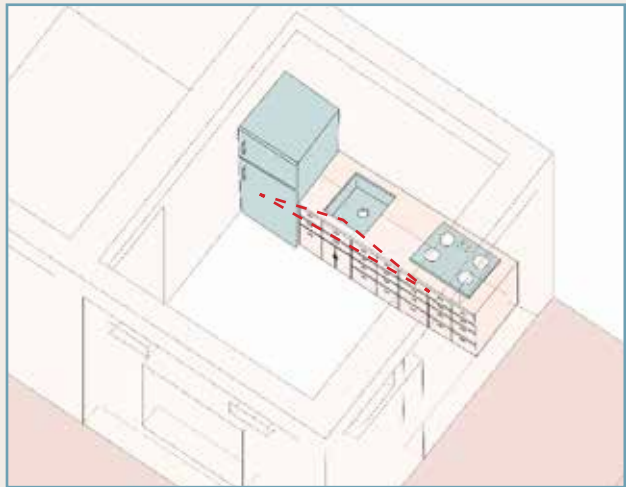
## L-Shaped Kitchen

A kitchen has high internal heat, and should ideally be



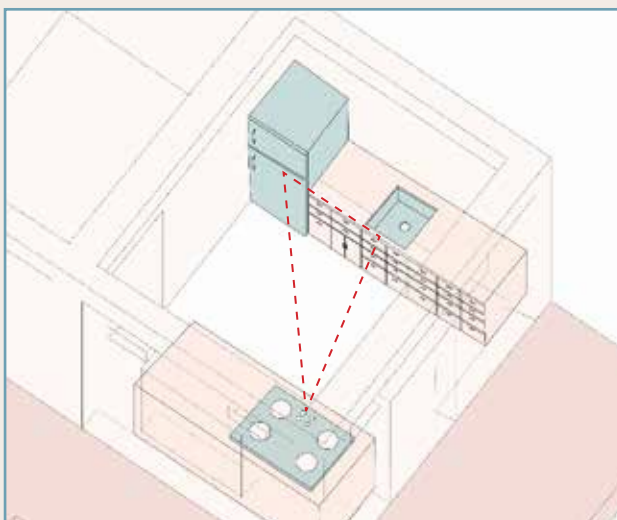
## Straight Kitchen

When you have single wall and narrow space, this design is a good option.



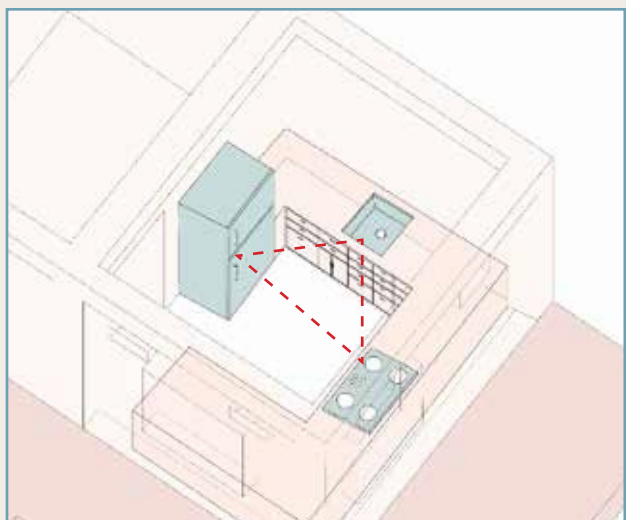
## Parallel Kitchen

Allows for easy walking area between the platforms if you have rooms on two sides of the kitchen space.



## G-Shaped Kitchen

Uses all walls, long counter, allowing ample preparation and cooking space.

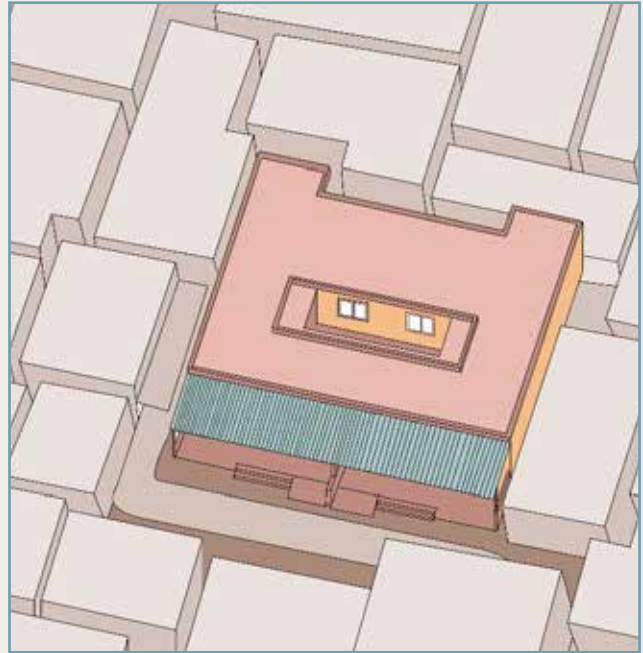
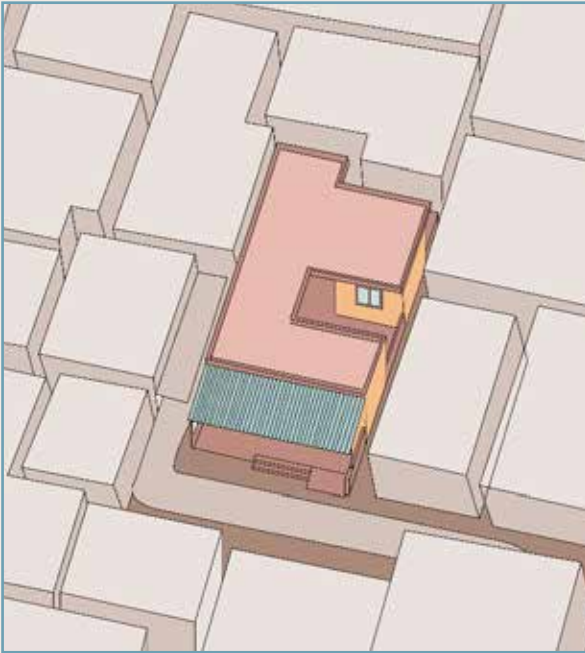




# Every house needs good quality open spaces, choose a design that suits your needs!

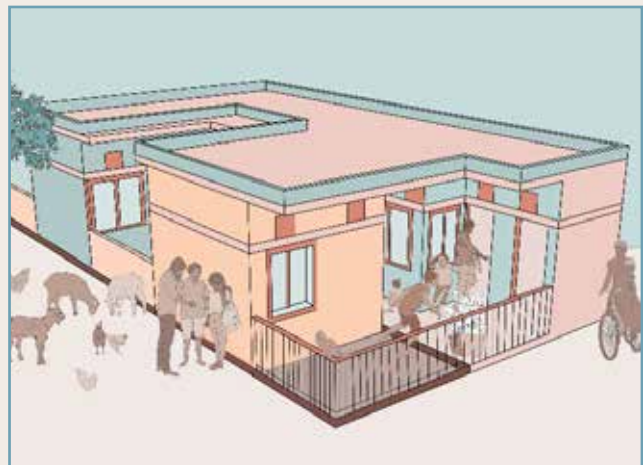
## J. OPEN SPACES

Simple Open spaces have many benefits and joys!



### A relief in dense growth

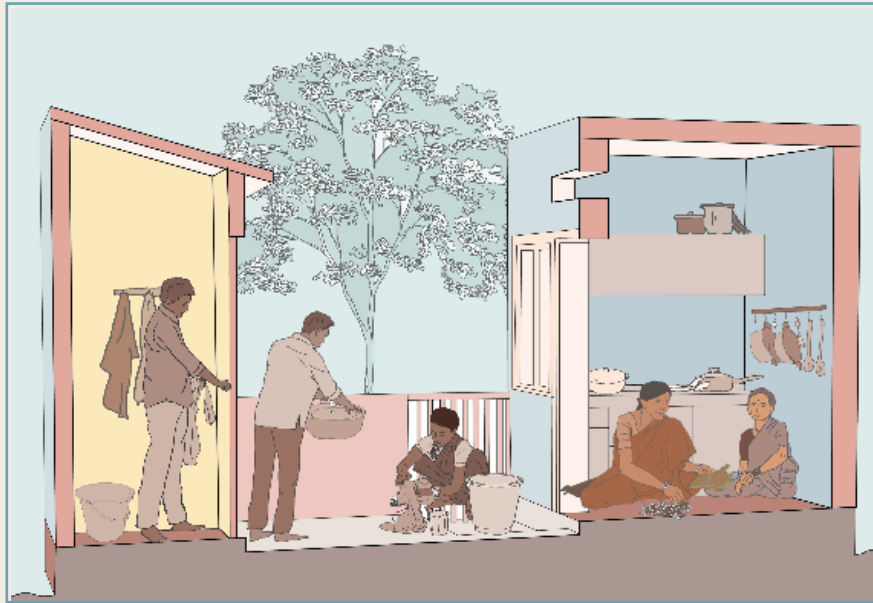
If the neighborhood keeps growing, and your neighbors keep building till the edge and higher, a small courtyard can ensure that your house does not suffocate in this chaos. Planning with your next door neighbor can allow for a larger courtyard as well, that you can share!



### Growth is possible without losing the charm

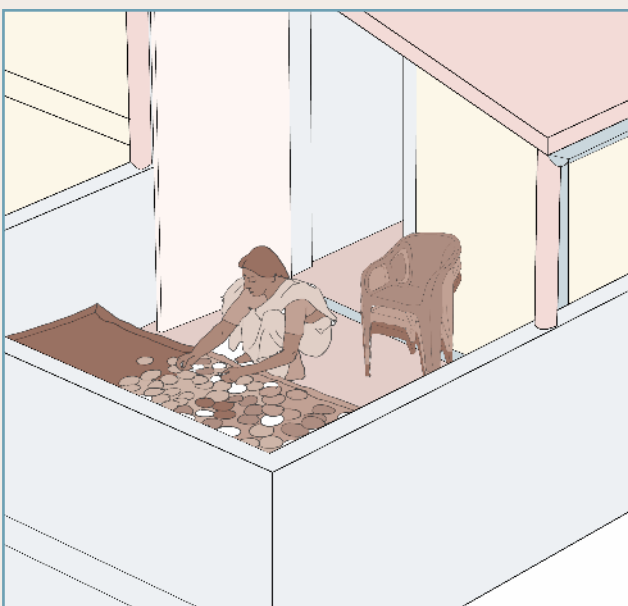
A large backyard that your family enjoyed does can adapt into two smaller ones where you can split the activities. A courtyard for washing and a yard for playing are still possible when you add a bed room.

## Creating multiple open spaces is possible in the house



### **A service courtyard connecting the kitchen and bathroom.**

This small open space where a sink and wash area is provided, also helps a lot in keeping the house well lit, ventilated and cool in the summer!



### **An open to sky terrace is always useful!**

Especially when facing the south, it is great to dry your papads, make some achaar, clothes and to soak in the winter sun.

# Want a cool and energy efficient home? Here are some easy strategies!

## K. GREEN PASSIVE STRATEGIES

### Chaajas for Shading



### Designed or retrofit - Chajjas are great!

If you cannot recede your walls under the slabs, chajjas are necessary to protect your homes. They will not let sunlight or rain enter through windows directly, so you can keep them open to let in fresh air. They also protect walls from direct rain.

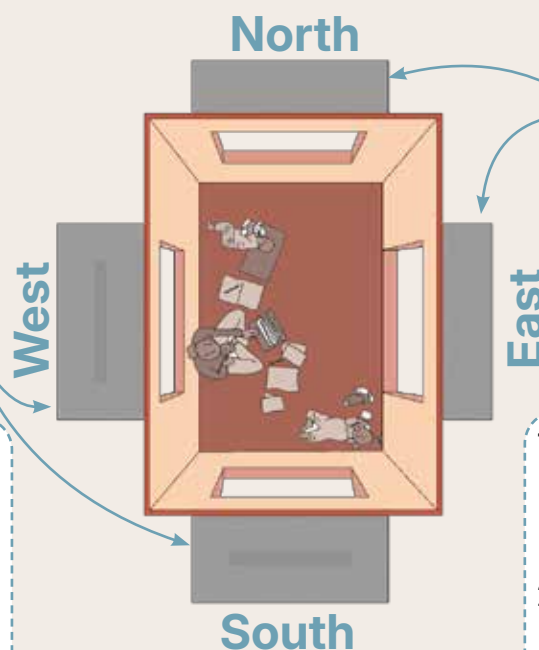
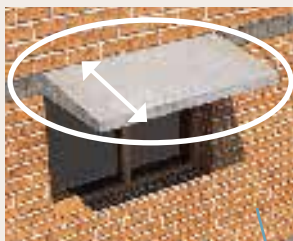
### Points to note!



*Width of chaaja should be slightly greater than the width of window. 6 inches bearing is recommended on both sides.*

## Depth of Chajjas

Apart from size of openings, size of chajja also depends on intensity of sun falling on that particular facade.



1. South and West Facing Facades have high sun exposure throughout the year.
2. Thus, for effective shading, these require deep chajjas.

1. North Facing facades tend to have least amount of sun exposure at any given time of the year.
2. Thus, standard depth of chajjas (i.e. 2 feet) is sufficient for protection in summers and rains.

## Points to note!

*Jalis can be decorative, and improve indoor ventilation in hot climates.*



*They allow air circulation thus making the indoor temperature comfortable.*



*Jalis are cheap and easy to build.*





# Want a cool and energy efficient home? Here are some easy strategies!

## L. GREEN PASSIVE STRATEGIES

### 1. Overhangs to protect from excessive rainfall/sun



#### **Overhangs to protect the wall from the rain**

Especially if you have not been able to plaster your walls, it is important that direct rain does not hit the bricks. This causes seepage and reduced strength. Receded walls will stay dry and last longer.

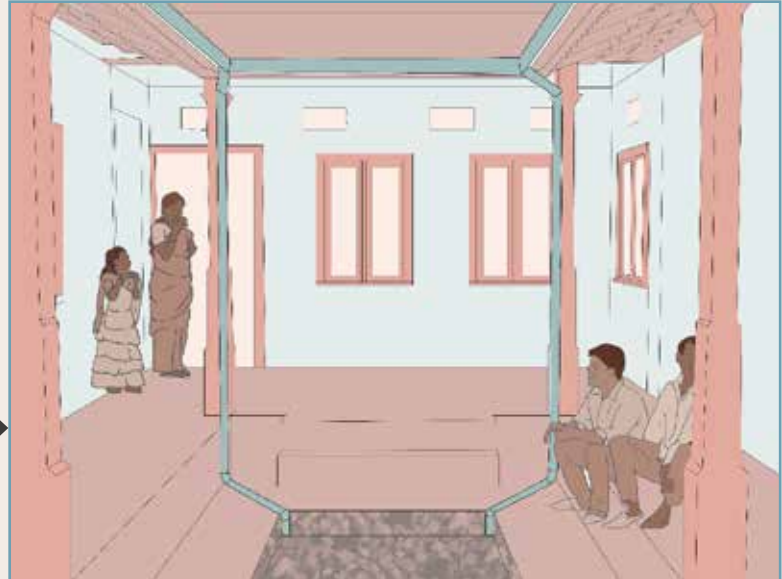
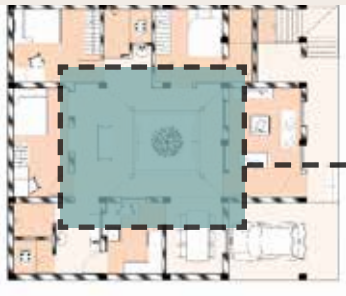
### 2. Benefits of Ventilation



#### **Bring in natural light and cross ventilation**

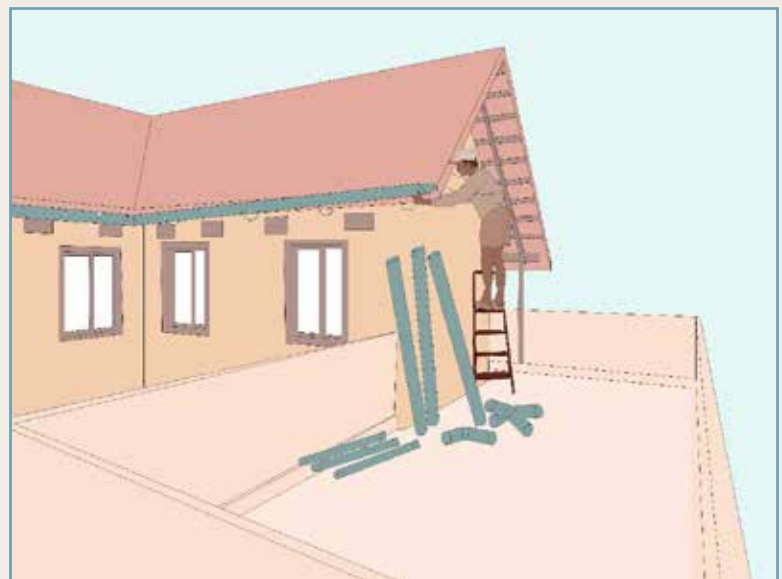
Ventilators allow light to enter from the edge of the house, across internal walls to give a soft glow to rooms inside without turning on any electric lights. They allow air to flow around so no room feels suffocating.

### 3. Rainwater Harvesting



#### **Collecting rainwater in the ground**

Rain water from the terrace can be channeled into gutters that release the water into an open pit in the courtyard that leads to the rainwater collection tank. This cools your house and saves water!



All the sloping roofs and chajjas need to have gutters installed at the edge so that water can be channeled into gutters that lead it to the rainwater collection tank. This protects your house and saves water!

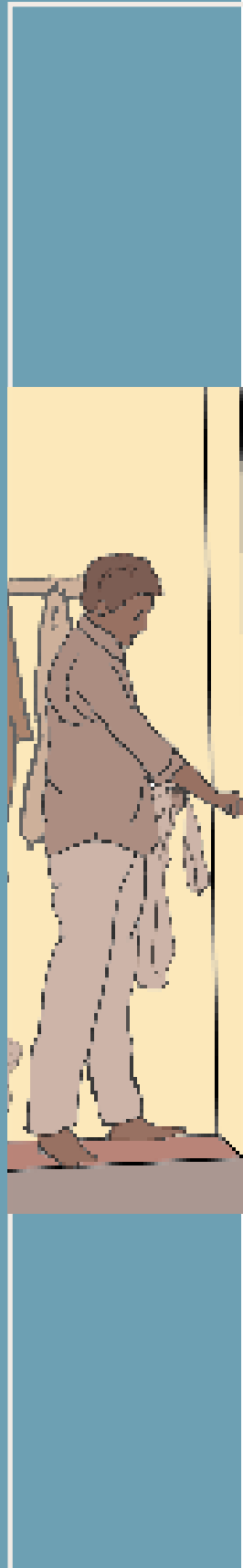


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1. How do I heatproof my home?
2. How do I waterproof my home?
3. How do I select the right materials?
4. How do I select the right construction team and supervise the work?
5. How to develop the site and construct a strong foundation?
6. How to build strong walls and design windows?
7. How to build a strong roof?
8. How to choose the structural system for your home?
9. How to build a well-serviced home?
10. What are the tips for good RCC construction?
11. How do I maintain my home after construction?
12. How do I design my home?

**Disclaimer:**

The toolkits offer general guidance based on hot and dry climate conditions in India, and is intended for informational purposes only. It does not replace professional advice. For safe and effective construction, please consult a qualified architect or engineer in your area. We are not liable for any outcomes from the use of this toolkit. If you want us to customise this toolkit for your geographic context, or need more information, feel free to contact us.



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