GREEN HOME GUIDE

A user friendly manual for eco friendly homes

Edge

IFC International Finance Corporation WORLD BANK GROUP
Creating Markets, Creating Opportunities

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PREFACE

This guide has been developed for homeowners, contractors, architects, engineers, and suppliers involved in the design and construction of green homes through Aavas Financiers Ltd, a Housing Finance Company engaged in provision of affordable home loans across unbanked and underserved communities in India.

A green home is one that reduces expenditure on electricity and water, provides a healthier indoor environment and does not harm the planet. This is done by selecting certain design features and efficient equipment. These measures are easy to purchase and install and do not increase the cost of the house significantly. By selecting these measures, you can save at least 20% on your electricity and water bills. This guide describes the benefits green homeowners will get and provides some technical information on purchasing right material and installing the green measures. If the green measures are installed correctly and verified, your house can get an EDGE green building certification from IFC (World Bank Group). Every page of this guide describes a green measure. You can share individual pages with your contractor, architect, engineers, and suppliers as needed.

NO RED BRICKS ON WALLS (REQUIRED)

Why should you not use red bricks?

> The red bricks are costly and have negative impacts on the environment.

> During construction, I saved a significant amount of water by not using red bricks which reduced my water cost.

Approximate cost of wall construction without plaster for different bricks/blocks is shown below.

Brick/Block Name	Solid Concrete	Hollow Concrete	AAC	Compressed Earth	Fly Ash	Red Bricks
Standard Size	24"x12"x10"	24"x12"x10"	24"x8"x9"	9"x4"x3"	9"x4"x3"	9"x4"x3"
Approx. Brick Cost (Per piece)	₹ 48	₹ 50	₹ 52	₹ 3	₹ 6	₹ 8
No. of blocks required (Per foot)	5	5	6	133	133	133
Approx. Material cost (Per foot)	₹ 240	₹ 250	₹ 433	₹ 400	₹ 800	₹ 1,067
Surface Finish	Good	Good	Good	Average	Average	Poor
Time & Effort for Construction	Low	Low	Low	Medium	Medium	High
Wastage (In Transportation or Construction)	2%	2%	2%	5%	3%	8%
Environmental Impact	Medium	Medium	Medium	Low	Low	High

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EXTERIOR SHADING ON WINDOWS (REQUIRED)

Atleast 2 feet overhang above window

Why is it important?

> The shades on my windows block direct sun in summers but allow it in winters which keeps my home comfortable.

> My electricity bill for cooling the house is now 10% lower because of the shades.

You can do this too

1. Horizontal (overhang) for windows in all directions except North.

2. Shading can be achieved by extending the roof or projecting the balcony.

Vertical (fins) or Jalis on the East and West Windows.

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REFLECTIVE PAINT ON ROOF (REQUIRED)

Why is it important?

> Now, I can walk bare feet on my terrace in peak summer

> It keeps my house cooler, reducing the need for fans & AC.

> It didn't cost me much and reduced my electricity bill by 2%.

You can do this too

1. Choose a reflective roof paint (commonly popular as high SRI paints, cool roof paints, cool coats, etc.) with an SRI of 85 or more. Available at local stores and online.
OR
Make your own paint by mixing lime powder (chuna), Fevicol DDL, and water. For detailed instructions, click on the link below.

2. Get a painter to do the coating or do it on your own using a brush or roller. 1-litre paint covers a double coat of approx. 30 sq. ft. surface area. The same shall follow in other places wherever there's this unit (sq. ft.).

Regularly remove dust from the roof. For optimum performance, repaint the roof every year. Homeowners are free to choose any brand they prefer. The paint buckets displayed here are for reference purposes only.

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DUAL FLUSH TANK IN TOILET (REQUIRED)

Why are they better than normal toilet flushes?

> I can flush my toilet with less water now.

> I am saving about 5% on my water bills.

> I don't need a big water tank now. A smaller one is sufficient.

You can do this too

1. Buy a dual flush tank with 5L and 3L capacity. These are available in local stores and online as well.

2. For western toilets, the dual flush tank is typically integrated with the seat.

3. For Indian toilets, dual flush tanks can be purchased separately and connected to the seat.

This measure is only applicable to those houses where flush system will be installed. Press the smaller button for liquid wasted and the bigger button for solid waste. Requires general cleaning every 3-4 months.

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LOW FLOW TAPS (REQUIRED)

Maximum 4 litre/min water flow rate

Why are they better than normal taps?

> My water & electricity bills are 20% lower after I installed these taps.

> Earlier I had to order tankers every week but now I need it in about 10 days.

You can do this too

1. Buy water taps that have a water flow rate less than 4 liters per minute.

2. Buy and install aerators on regular taps.

This measure is only applicable to those houses where shower head will be installed. Clean the aerator regularly to remove impurities. Steel aerators can last for up to 10 years but cost a little bit more than plastic aerators.

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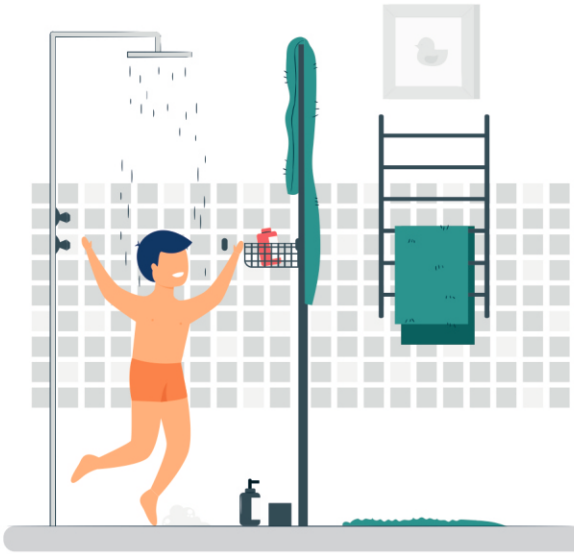
LOW FLOW SHOWER HEAD (REQUIRED)

Why are they better than normal shower heads?



> It doesn't feel different from my old shower but it uses much less water.

> I am saving more than 15% on my water & electricity bills.

> I don't need a big water tank now. A smaller one is sufficient.

You can do this too

1. Purchase a shower head having a water flow rate of 6 liters per minute (LPM) or lesser. These are available in local stores and online.

2. These shower heads are installed in the same way as regular shower heads.

Requires cleaning every month to ensure no accumulation of water impurities as impurities affect the water flow. This measure is only applicable to those houses where shower head will be installed.

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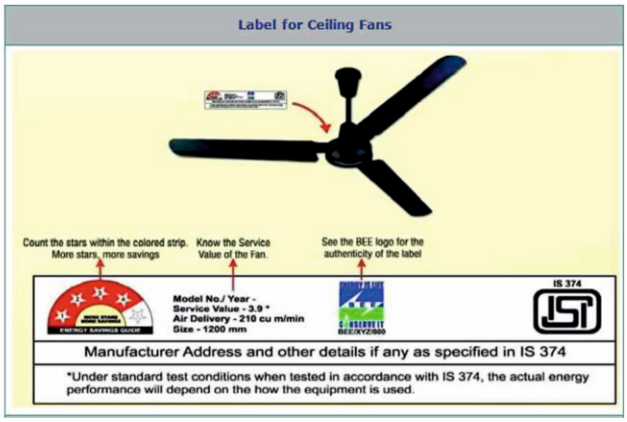
ENERGY EFFICIENT CEILING FANS (REQUIRED)

4-star labeled, 50-watt power

Why are they better than normal fans?

It helped me save 10% on my electricity bills.

You can do this too



1. Purchase at least 4-star BEE (Bureau of Energy Efficiency) labeled fans with a maximum of 50-watt power. Higher the star, lower the electricity bills.

2. Installation of such fans is just like usual fans.

Requires less maintenance and has longer life due to improved motors and blade designs.

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RAINWATER HARVESTING (OPTIONAL)

Why is it important?

> Now, I have enough water to use in case of shortage in water supply.

> It reduces my everyday water needs.

> My water bills are much lower than before.

You can do this too

1. Contact your local technician to select an adequate-sized storage tank (based on estimated rainfall, collection area, and water requirement) on site.

2. Dual piping is required to separate rainwater from the main pipeline and distribute collected water after filtration.

3. Rainwater collected in the tank can be used for toilet flushing, irrigation, and other washing needs.

4. The rainwater should be collected from at least half of the roof area.

Regular maintenance and basic filtration is required to avoid blockage in pipes.

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SOLAR WATER HEATER (OPTIONAL)

Minimum 100 liters water tank capacity

Why is it better than geysers?

> A cost-effective way to get hot water for my home.

> Zero electricity bills for water heating.

> I use it in all climates, even with minimal sunlight.

You can do this too

1. Contact the local supplier or an expert to determine the size and capacity of the solar water heater according to your location and hot water needs.

2. Roof is recommended for installation. The collectors should face South direction for maximum sunlight.

Two types are commonly available; Evacuated Tube Collector (most economical) and Flat Plate Collector. Ensure that the collector plates and tubes are always clean. No shading from surrouding buildings and trees. Keep checking piping & wiring for leakage/breakage. Some government agencies also provide incentive for installation

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SOLAR PHOTOVOLTAIC (OPTIONAL)

Why is it important?

> A cost-effective way to get free electricity for my home.

> We reduced our electricity bills.

> Whether it is summer or winter, sunny or cloudy, they produce electricity everyday.

You can do this too

EXIDE SOLAR, LUMINOUS SOLAR, vikramsolar, USHA SHRIRAM, WAAREE, JAKSON, adani, LG, REC Solar, moserbaer Solar, Fronius, solaredge, SMA, DELTA ELECTRONICS INC., TATA POWER SOLAR, ABB, SUNGROW, CONSUL NEOWATT, EXIDE, HAVELLS

1. Contact the local supplier or an expert to determine the size and capacity of the solar panel for your location and electricity needs.

2. Roof without any shade throughout the year is recommended for installation. The collectors should face South direction for maximum sunlight.

Two types of solar panels are predominatly used; Monocrystalline (most efficient) and Polycrystalline (economical). Remove dust from solar panels regularly. Keep checking wiring for beakage. Some government agencies also provide incentives for installation.

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