

Buildings with life

Buildings that support plant growth on them are becoming increasingly common

If you have noticed, advertisements of premium apartments these days have a difference: they look very live, with green foliage peeping out of the balconies. Why the sudden love for green?

It's no more a fad, and not limited to apartments. World over, designers increasingly go in for green looks for buildings they create. They have abandoned the received wisdom that concrete buildings support no life forms other than human beings. The new trend is that flower and vegetable gardens come up on them. And the new-found green opportunity on concrete is not

limited to residential buildings. People have started designing outdoor structures such as bridges, which grow vegetable and flowers!

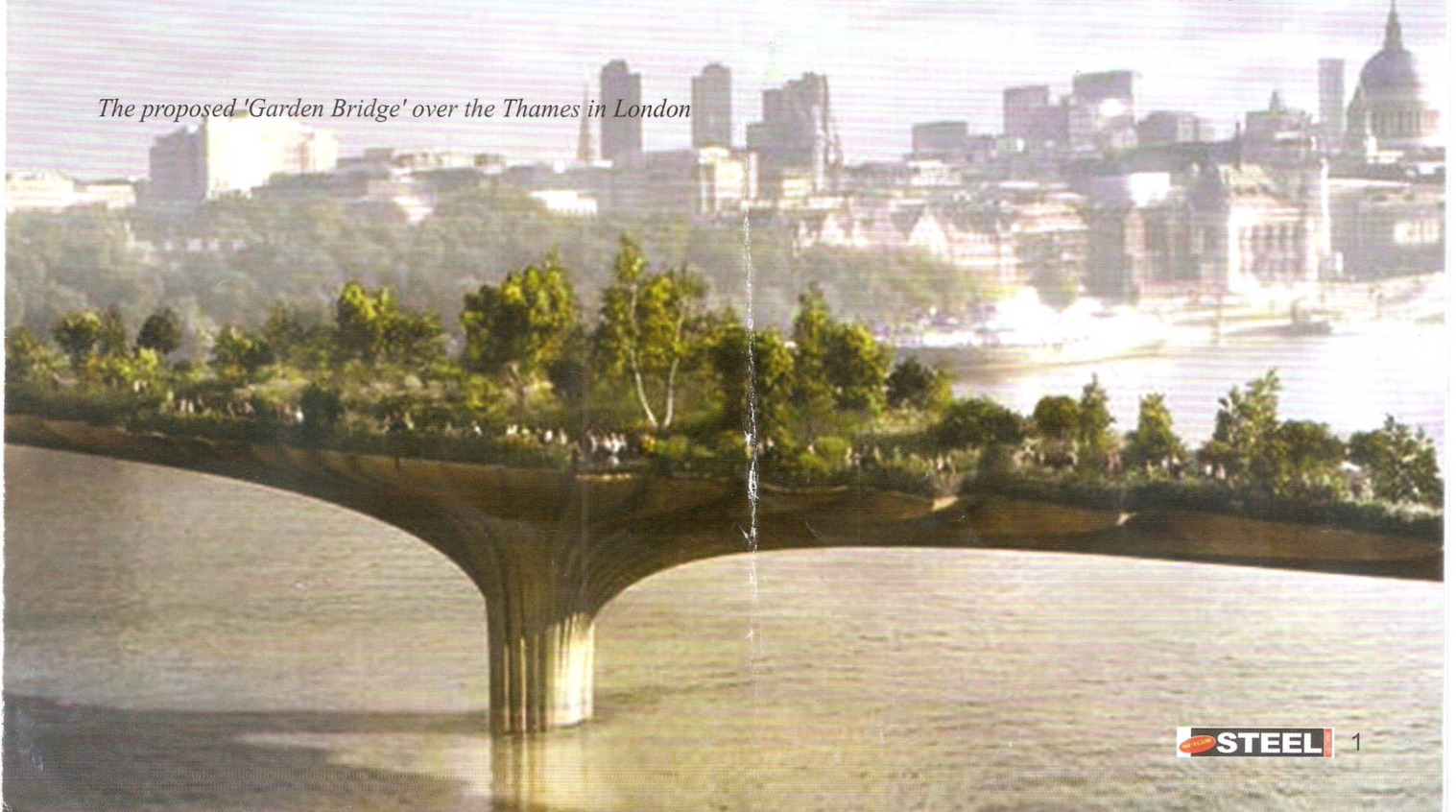
From the home grown V-Guard headquarters at Vennala in Ernakulam to premium apartments to the London's Golden Garden Bridge project — a planned pedestrian bridge across the Thames — planners think that the buildings would look better with vegetation.

The V-Guard corporate office is a 13-storey 1.2 lakh sq ft building. "I was born and brought up in a village in Kerala, the pristine beauty of which still lingers with me. So my idea of a perfect

office space was a building that is environment friendly," says Mr Kochouseph Chittilappilly, Chairman, V-Guard Industries.

The building was designed to beat the heat on the south and west, which always get maximum sunlight during the daytime. So, each floor has a two metre-wide verandah lined with flower beds. The plants, as well as the verandah, help prevent sunlight falling directly on the walls. It reduces the heat inflow into the workstations and keeps the interiors of the building cool even at noontime in the summer, cutting down the requirement for air-conditioning. "The veran-

The proposed 'Garden Bridge' over the Thames in London





The V-Guard corporate office at Kochi

A report by Arup, an engineering and design consultancy envisions "cities of the future as integrated networks of intelligent green spaces, designed to improve the health and wellbeing of citizens"

dah bordered by the flower beds might be seen as a waste of space," says Mr Roy Antony, the architect. "But it has proved exceptionally good in resisting heat. A major portion of the incident rays gets scattered. Also, an office space with greenery all around provides a soothing effect."

The rooftop garden is a big attraction of this building. Half the area, paved with tiles, is made into a staff dining room while the other half is a lawn. The building also consists of a play area and fitness centre for the staff.

It is not just offices; apartments too are coming up with spaces for vegetation. "Many people in our state come

from an agrarian background and they like to have a green space even when they move into apartments in the cities," says Mr Antony. "Farming troughs can be built in the apartments to satisfy the need."

The advantages are many, but it comes at a cost too. "Such buildings incur more structural costs. Providing adequate drainage facilities and waterproofing that are necessary for such buildings, also increases the costs," says Mr Antony.

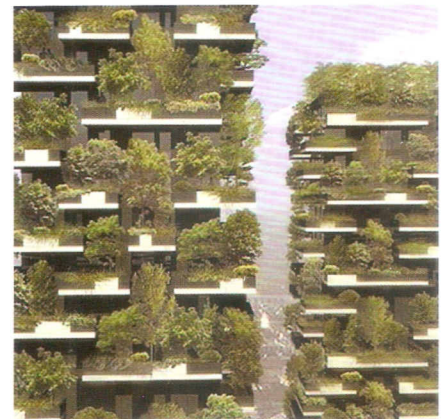
Arup, an engineering and design consultancy headquartered in UK, in a report envisions "cities of the future as integrated networks of intelligent green

The Arup report suggests use of genetically modified trees. The tree DNA spliced with that from bioluminescent organisms would allow it to convert renewable energy by day into light by night. This could allow trees to replace street lights entirely.

The report also mentions a product called Starpath, a water-resistant, spray-on coating that makes roads glow in the dark.

Developed by a UK-based company Pro-Teq, last year, the coating absorbs and stores UV light during the day and releases it at night.

"Starpath has the potential to reduce the need for complex lighting installations in parks and alleyways while allowing for the introduction of lighting and the safety and security that brings," the report said.



'City trees' could be common in future

spaces, designed to improve the health and wellbeing of citizens."

Arup suggests that more efforts should be made to plant vegetation wherever possible, and to integrate all the infrastructure more intelligently — such as by monitoring and rerouting cars.

According to the report, plant-covered high-rise city blocks could help increase life expectancy and reduce absences at work through sickness. Research has shown that workers with a view of a park are less likely to take time off, that increasing activities such as cycling slashes healthcare costs in the long run, and that crime rates can be lowered by greater access to vegetation.

The interest in gardens within buildings is increasing within the State. It has been reported that the presence of vegetation has advantages like increased productivity. People are increasingly recognizing this and are demanding such gardens.

Most architects and engineers are open to the idea of incorporating such a refreshing feature into their designs. It would be ideal if you engage such an architect/engineer.

It would be better if the necessary planning is done and precautions taken during the construction phase itself. If you are planning to have a real green home with a lot of plants and vegetation, you must ensure structural stability also. You may tell the architect/ builder about your plans in the drawing stage itself so that they can factor in while designing the structure.

Growing a terrace garden with plants in pots may not be a problem. All that you have to do is to waterproof the roof. However, it would be advisable to consult an engineer if you are planning to have a soil carpet on the floor.

Precautions:

- The structure should be strong enough
- Waterproofing is a must.

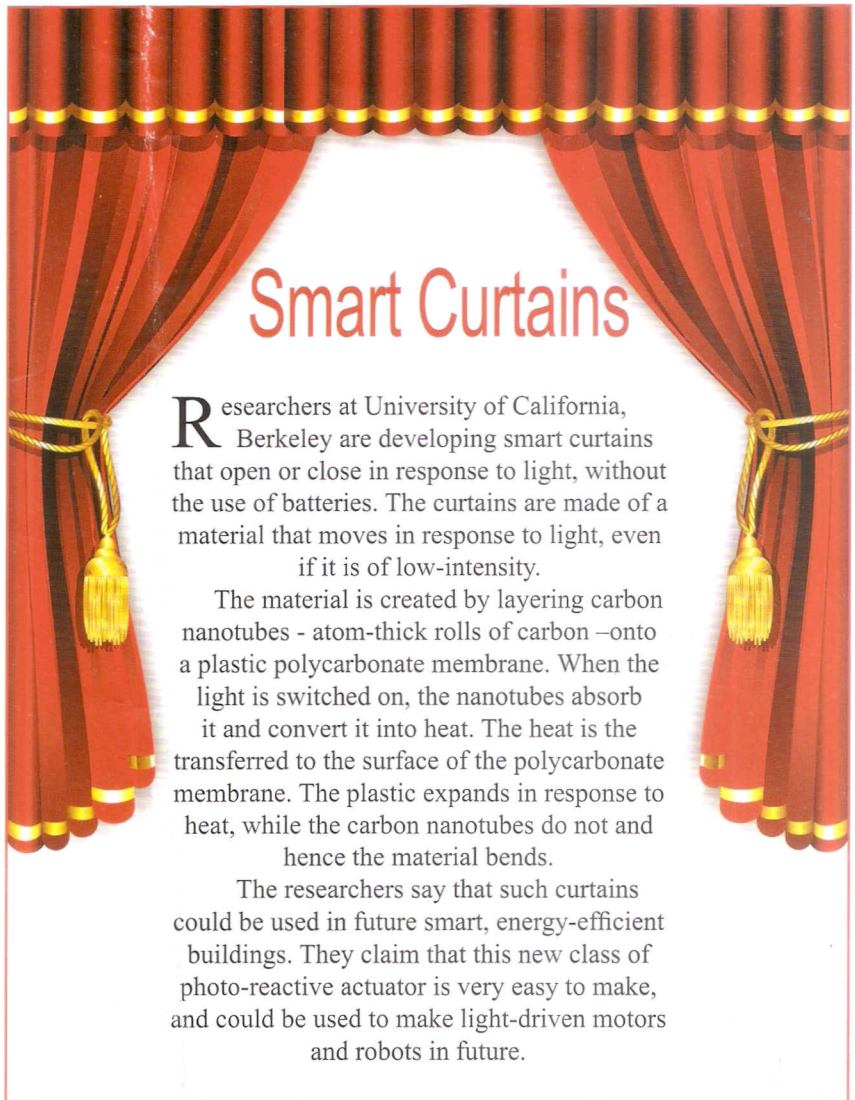
For flower garden

- Avoid plants with thick roots as they can affect the cement
- Plants such as "cicus", "palms", "syngonium" are preferred in buildings.
- Plants which grow in the shade have to be preferred.

Vegetable garden

- Fungus attacks are usually more in vegetable gardens on terraces. Hence more care is required for such plants
- The vegetables have to be grown in pots – waterproofing is a must if the plants are being grown on the floor
- One should be willing to invest the time and effort if the garden is to be successful

(With inputs from Faaiqu Harris MP, managing director, Blissindoor. He can be contacted at 81380 55005)



Smart Curtains

Researchers at University of California, Berkeley are developing smart curtains that open or close in response to light, without the use of batteries. The curtains are made of a material that moves in response to light, even if it is of low-intensity.

The material is created by layering carbon nanotubes - atom-thick rolls of carbon - onto a plastic polycarbonate membrane. When the light is switched on, the nanotubes absorb it and convert it into heat. The heat is transferred to the surface of the polycarbonate membrane. The plastic expands in response to heat, while the carbon nanotubes do not and hence the material bends.

The researchers say that such curtains could be used in future smart, energy-efficient buildings. They claim that this new class of photo-reactive actuator is very easy to make, and could be used to make light-driven motors and robots in future.

New coating that cools buildings

Stanford researchers have developed a new coating material that can help cool buildings by radiating heat away from them, directly into space.

The ultrathin (it is just 1.8 microns thick), multilayered material, allows for 'photonic radiative cooling'. "We've created something that's a radiator that also happens to be an excellent mirror," said Aaswath Raman, a research associate who worked on the project.

The coating cools the building in two ways. Virtually all (97 per cent) of the sunlight that strikes the coating is reflected back, while the invisible, heat-bearing infrared light, is

radiated away. The heat is radiated at the precise frequency that allows it to pass through the atmosphere into space without warming the air, a feature that is extremely important in these times of global warming.

The coating reduces the temperature by nearly 9 degrees Fahrenheit than the surrounding air during the day, reducing the need for air-conditioning in the buildings. Researchers are also trying out techniques to transfer the heat inside the building to the coating, from where it can be radiated away.

The material has been designed to be cost-effective for large-scale deployment on building rooftops.

Grow them on your terrace

Feel like taking to vegetable farming? Good. You need not have a huge space and a dedicated workforce to grow vegetables that can meet your kitchen's requirements. A few square meters of land and the willingness are the only pre-requisites for it. In fact, you don't even require land; you can grow your garden on your terrace.



Vegetables grown on the terrace of a house

It will be helpful if you have some basic tips about terrace farming before you start off.

Where to plant

You can grow vegetables in a pot, a plastic bag or even torn tyres. There are grow bags too, which are plastic bags specially made for growing vegetables. The grow bags are available with VF-PCK centres in all districts.

How to prepare the soil

The ideal mixture contains red soil, sand and dried and powdered cow-dung in equal measure. Ensure that there are no stones, even small ones, in the mixture as they impede the growth of roots. Make a small hole at the bottom of the

pot or bag, covered with a small stone or broken tile to ensure that excess water drains off. One may use one mixture for up to two years. Take care not to grow the same kind of vegetable repeatedly.

You can even have pumpkin and ash gourd grown on your terrace. Spread coconut leaves so that vine grows healthy.

Seeds/seedlings

One may ensure that one gets high-yielding varieties of the vegetables for cultivation. They are available in local nurseries as well as in government farms. VF-PCK has retail centres from where one can get quality seedlings

Planting

Most vegetable plants grow well if you

plant seedlings. You can grow them on a specially prepared bed and then replant them in the pots. Coir pith is a good medium for planting the seeds as they are easy to replant.

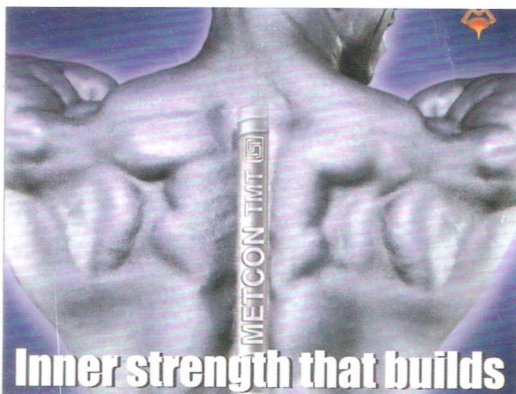
Fertilizers

It is ideal to use only organic manure, especially if you are growing vegetables only for home consumption. Cow dung, lime and organic slurry are considered ideal fertilizers. Oil cakes of ground nut are another good option. Vermi-compost and home compost are also good fertilizers, which help get a good harvest.

Pesticides

Neem oil-garlic emulsion: this is one of the most commonly used organic pesticide. Mix 100 ml of neem oil with 6 gm of washing soap. Dilute it by adding 4 litres of water. You can also add a paste of garlic at the rate of 20 gm per litre to make it more effective.

Tobacco-soap emulsion: Keep 500 gms of tobacco immersed in 4.5 litres of water for 24 hours. Squeeze the tobacco out and drain the essence. Add a washing soap (120 gm) and mix well. This concentrate may be diluted at the ratio of 1:6 before spraying on the vegetables.



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