

Making HDB towns more sustainable and liveable



COOLING HDB TOWNS

Cool coatings

- Less heat absorbed by cool facade or pavement during the day
- Less heat emitted from cool facade or pavement at night



Green intensification at multi-storey car parks

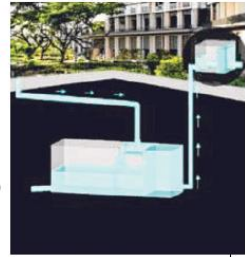
- Cool down surrounding environment
- Expand green community spaces for residents



RECYCLING RAINWATER

Urban water harvesting system

- Using harvested rainwater for irrigation and washing of common areas
- Slowing down discharge of rainwater to drainage system after a rain event



REDUCING ENERGY CONSUMPTION

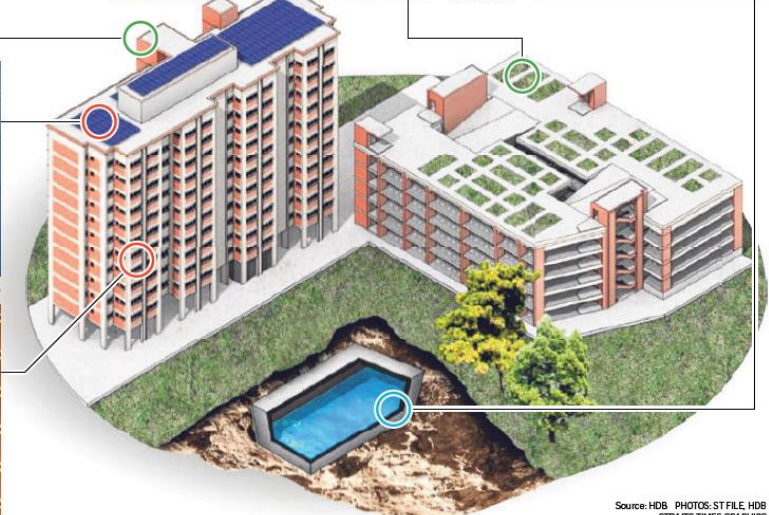
Solar panels

- Able to achieve net-zero energy consumption for common services in HDB blocks (such as lights and lifts)



Smart LED lighting

- Proximity and predictive illumination to turn on a few lights in advance
- Data insights on residents' movement and space usage behaviour



Source: HDB PHOTOS; ST FILE; HDB STRAITS TIMES GRAPHICS

HDB's Green Towns plan ambitious but doable: Experts

New heat reflecting paint, solar panels, LED lights, green canopy and recycling rainwater will transform estates

Michelle Ng

A 10-year plan to make Housing Board (HDB) towns more environmentally sustainable and liveable is ambitious, but observers say it can be done.

The HDB has lined up a range of initiatives that it believes can help it achieve its eco-target.

One involving a new type of paint containing pigments that reflects the sun's heat may go a long way in helping to cool estates.

Preliminary studies by the HDB suggest that the paint could reduce ambient temperature by up to 2 deg C when applied to building facades, roofs and pavements.

Professor Subodh Mhaisalkar, executive director of the Energy Research Institute at Nanyang Technological University, noted that a two-degree drop is a "very big deal" when it comes to reducing energy consumption.

"For west-facing blocks and top-floor units, which get more heated than other locations, cool paints on the building facade can help reduce the air-conditioning load very significantly," he noted.

"When you adjust your air-conditioning temperature from 22 deg C

to 24 deg C, your electricity consumption drops tremendously. It drops even more if you switch the air-conditioning off and supplement with fans or natural ventilation."

The paint will first be trialled in a large-scale pilot involving several neighbourhoods and then rolled out nationwide if successful.

Cool paint is just one part of the new HDB Green Towns programme, a 10-year plan to make HDB towns more sustainable and liveable.

The programme, which was announced by National Development Minister Lawrence Wong in Parliament last Wednesday, will focus on cooling HDB towns, reducing energy consumption and recycling rainwater.

Experts say the move puts Singapore one step closer to other established green cities such as Copenhagen, Amsterdam and Vancouver, although it faces a number of challenges that require innovative solutions.

Prof Subodh said: "Our tropical climate and land constraints place additional burden on incorporating sustainable design features when we build and improve our towns. This is when technology comes into play."

He noted that cool paint is a cost-effective way to tackle the urban heat island effect - a phenomenon in which buildings and pavement surfaces release heat into their surroundings, particularly at night.

The Green Towns programme will involve more housing precincts being fitted with an urban water harvesting system that collects,

COST-EFFECTIVE

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PROFESSOR THOMAS SCHROEPFER, founding associate head of Architecture and Sustainable Design at Singapore University of Technology and Design.

stores and treats rainwater to be recycled for non-potable uses such as irrigation and washing of common areas.

Besides cutting the use of potable water by more than half, the system also helps to mitigate flood risk as it slows down the discharge of storm water into the drainage system.

Smart LED lighting will be installed in all common areas in HDB estates. It uses smart sensors to progressively illuminate the user's path in advance, without causing a sudden brightening effect.

These sensors have the added benefit of charting how and when residents use the common areas in HDB estates, which enables planners to better design spaces.

The collected data can also predict potential faults so service providers can carry out proactive maintenance before a breakdown occurs.

Moves to install solar panels in 70 per cent of HDB blocks by 2030 will further reduce energy consumption.

The average amount of solar energy generated by a typical HDB block is enough to cover common services such as lifts, lights and water pumps - resulting in a net-zero energy consumption for the common areas. Excess energy is channelled back to Singapore's electrical grid.

Greenery will be introduced to the top decks of multi-storey

carparks, where urban farms, skyscraper greenery and community gardens can be housed.

These initiatives come on top of the HDB's previously introduced greenery provision guidelines, which mandate a green cover of around 45 per cent to 60 per cent in new HDB developments.

Professor Thomas Schroepfer, founding associate head of Architecture and Sustainable Design at Singapore University of Technology and Design, said the integration of greenery in HDB estates not only has an ecological impact but also a social component.

"Greenery increases biodiversity, decreases surface temperature and generally creates a nicer environment," he said.

"What greenery also does is make public spaces more used as people appreciate them more, and injects life and energy into a space - all these make a city more liveable."

He cited SkyVille@Dawson, a public housing project that was built according to the new guidelines, as a successful example of integrated greenery in a high-rise building.

The HDB has been driving efforts to achieve a 10 per cent reduction in annual energy consumption in towns since 2005.

It hopes the Green Towns programme will reduce this by a further 15 per cent by 2030.

While the HDB did not specify how much the programme is expected to cost, experts concur the electricity consumption savings will likely offset the set-up cost in the long run.

Prof Schroepfer noted: "LED lights, solar panels and cool paint are not terribly expensive; many cities have implemented them. Over time, the return on investment will by far exceed the upfront cost so it makes economic sense."

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