

# GreenSmart Cities

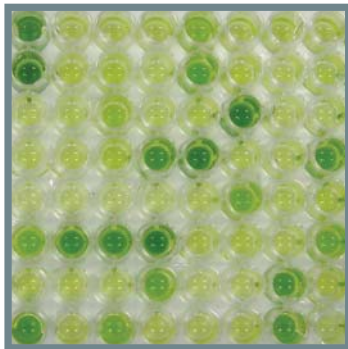
Integrating green algae production systems for sustainable solutions



Centre for  
Solar Biotechnology

# The initiative

*Integrating green technology into cities of the future. Pictured above: A rendering of an algae overpass by Frederico Fialho.*



*Top: Microalgae optimisation. Middle: The Supertrees in Singapore are examples of 'green art'. Bottom: The BIQ Algae House, Hamburg, Germany, the world's first home with an algae façade. Image from Wikimedia.org.*

## VISION

The GreenSmart Cities initiative is designed to advance cutting edge green technologies based on microalgae that can be integrated aesthetically into evolving cityscapes.

Our vision is to re-green our cities to make them increasingly functional and livable, and to open up new sustainable employment and economic opportunities.

**Imagine the integration of modular microalgae systems into buildings to develop eco-cityscapes. These can provide thermal control, help to power buildings, abate street noise and produce bio-products whilst absorbing CO<sub>2</sub> and pollutants from the air.**

The GreenSmart Cities initiative will facilitate the integration of aesthetic, high-efficiency architectural microalgae production units into rapidly evolving cityscapes to enhance our urban living spaces and provide a more sustainable future.

Microalgae are rapidly growing, solar-driven microscopic 'cell factories' which capture CO<sub>2</sub> and can use low-grade water to reduce greenhouse gas emissions and improve air quality, whilst producing O<sub>2</sub>, clean water and biomass. This biomass can be used to derive valuable bio-products including renewable fuels, bio-plastics, green chemicals and bio-fertilisers.

The Centre for Solar Biotechnology has invested over 50 person years into the development of an advanced process development pipeline which can now fast track systems optimisation. The modular units for microalgae production are guided by robust techno-economic and life cycle analysis, coupled with 'laboratory-to-pilot' screening that identify the best production conditions. This ensures the design of robust, economically scalable, automated, high-efficiency systems. In addition to their productive use, they can be crafted into visually striking 'living art' designs that will attract visitors, locals, business and innovators.

For more information, please contact us.

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