Cooling the Crisis: Penang Accelerates Malaysia's First Urban Nature-Based Shield

PNBCAP awards ten urban greening grants and strengthens youth resilience as a national blueprint for climate-responsive urban living

George Town, 10 February 2026 – As urban heat becomes a daily challenge in Penang's densest neighbourhoods, urban greening projects are being implemented across George Town and Bayan Lepas to cool streets, buildings, and public spaces through Nature-based Solutions (NbS).

These efforts were recognised today at the Penang Nature-based Climate Adaptation Programme (PNBCAP) Awards Ceremony, which also saw the signing of a Memorandum of Understanding (MoU) between Think City and the Penang Green Council (PGC) to formalise longer-term collaboration in advancing climate action, environmental sustainability, and community resilience in Penang.

Supported by the Adaptation Fund and UN-Habitat, PNBCAP is Malaysia's first comprehensive climate adaptation programme focussed specifically on urban areas. It is implemented through a partnership between the City Council of Penang Island, the Department of Irrigation and Drainage Penang, and Think City, marking a shift from reactive disaster response towards planned, preventative adaptation that strengthens city functionality under sustained climate pressure.

Elevated surface and ambient temperatures limit walkability and increase heat-related health risks across Penang's urban areas. These impacts are especially pronounced in high-traffic heritage and commercial precincts, where daily economic and social activity is concentrated.

PNBCAP addresses this through the George Town and Bayan Lepas Urban Greening Grants Programme, implemented by Think City. The programme supports ten physical intervention projects, including green roofs, green façades, tree planting, and shaded landscape systems that utilise passive cooling to mitigate the Urban Heat Island effect and improve thermal comfort across a mix of public spaces, heritage buildings, commercial sites, and individual properties. Collectively, these projects demonstrate how cooling solutions can be applied across different building types, scales, and ownership models to deliver shared public benefit.

One such project is led by Mr Zulfikar Abdul Aziz, a senior shop owner who introduced a do-it-yourself green façade to cool his premises. His work reflects a core PNBCAP principle of adaptation that begins at the community level. *"I started this because the heat inside my shop was becoming unbearable,"* he said. *"I didn't want to wait for someone else to fix it. With simple greening, the space is cooler and more comfortable, and others can do the same."*

Speaking at the ceremony, YB Tuan Zairil Khir Johari, Chairman of the PNBCAP Steering Committee and Penang State EXCO for Infrastructure and Transport, said Penang's approach shows how climate adaptation can be integrated into urban development without compromising the character or liveability of the city. *"If our streets are too hot for transit and our public spaces are unusable, our urban systems are failing. PNBCAP restores that functionality by incorporating climate resilience into the daily lives of our communities. Through a strategic mix of physical intervention and social investment, we can sustain city life even as climate pressures intensify,"* he said.

The partnership between Think City and PGC expands this social investment through the Sustainable School Programme (SSP), launching in five schools across George Town and Bayan Lepas: SJKT Sungai Ara, SMK Raja Tun Uda, SJKC Wen Khai, SMKA (P) Al Mashoor, and SMK Padang Polo. SSP complements ongoing Green School efforts led by PGC, with a stronger emphasis on climate education and hands-on, school-based action.

Josephine Tan, CEO of PGC, emphasised that schools play a critical role in reinforcing long-term culture change and that cooling cities requires more than just hardscape. *"Cooling cities is not only about physical infrastructure, but also about building understanding, preparedness, and resilience from a young age, so communities are better equipped to respond to climate risks. Through programmes like SSP, PGC is supporting curriculum integration, capacity building, and practical climate action at school and community levels under Penang Green School Program. Our role is to catalyse partnerships and provide technical support, building a foundation of climate knowledge and resilience among young people so they are prepared to lead and strengthen our communities in a changing climate,"* she said.

Beyond schools, PNBCAP also strengthens social resilience and youth leadership through initiatives such as the Youth Climate Summit 2024–Southeast Asia (YCS 2024-SEA), developed through collaboration between PGC, Think City, PowerSains, Penang Hill, Entopia, Penang Hill Biosphere Reserve, and others. The programme equips youth with the knowledge, skills, and practical tools to develop and implement Climate Action Plans (CAPs) through place-based, participatory approaches within their schools and communities.

Originally developed by The Wild Center, YCS was introduced to Southeast Asia for the first time in 2024. Following the programme, five schools and colleges across the region were recognised for their outstanding CAPs, demonstrating tangible, real-world impact.

According to Think City Managing Director Dato' Hamdan Abdul Majeed, the programme's success lies in bridging the gap between implementation and institutional learning to move climate adaptation into mainstream urban practice. *"PNBCAP translates climate science into spaces people use every day,"* he said. *"By working across different sites and scales, Penang is building a model that can be replicated by other cities facing similar heat and climate pressures."*

With its current focus on George Town and Bayan Lepas, PNBCAP establishes Penang as a national testbed. By integrating implementation with knowledge-sharing, the programme is scaling climate-responsive design, infrastructure, and governance to ensure urban liveability remains the standard for cities across Malaysia.

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About the Penang Nature Based Climate Adaptation Programme (PNBCAP)
The Penang Nature-Based Climate Adaptation Programme (PNBCAP) is Malaysia's first integrated urban climate adaptation programme, addressing urban heat, flooding, social resilience, institutional capacity, and knowledge exchange through nature-based solutions in George Town and Bayan Lepas. Supported by the Adaptation Fund and UN-Habitat, and implemented with the City Council of Penang Island, the Department of Irrigation and Drainage Penang, and Think City, PNBCAP is designed to strengthen urban resilience under increasing climate pressure. For more information, log on to thinkcity.com.my.

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Redakan Bahang: Pulau Pinang Pergiat Pelaksanaan "Perisai Hijau" Bandar Pertama di Malaysia

PNBCAP iktiraf sepuluh geran penghijauan bandar dan perkukuh daya tahan belia sebagai model adaptasi iklim nasional

George Town, 10 Februari 2026 – Ketika bahang kepanasan bandar kini menjadi cabaran harian di kawasan berketumpatan tinggi Pulau Pinang, projek-projek penghijauan bandar sedang giat dilaksanakan di sekitar George Town dan Bayan Lepas menerusi Solusi Berasaskan Alam Semula Jadi (NbS) bagi menurunkan suhu jalanan, bangunan, dan ruang awam.

Usaha ini diraikan hari ini di Majlis Anugerah Program Adaptasi Iklim Berasaskan Alam Semula Jadi Pulau Pinang (PNBCAP), yang turut menyaksikan pemeteraian Memorandum Persefahaman (MoU) antara Think City dan Penang Green Council (PGC). MoU ini bertujuan memperkukuh kerjasama jangka panjang tindakan iklim, kelestarian alam sekitar, dan daya tahan komuniti di Pulau Pinang.

Dibiayai oleh Adaptation Fund dan disokong oleh UN-Habitat, PNBCAP merupakan program adaptasi iklim komprehensif pertama di Malaysia yang memberi tumpuan khusus kepada kawasan bandar. Program yang dilaksanakan melalui kerjasama antara Majlis Bandaraya Pulau Pinang, Jabatan Pengairan dan Saliran Pulau Pinang, dan Think City ini menandakan anjakan strategik daripada tindak balas bencana bersifat reaktif kepada langkah adaptasi terancang bagi memperkukuh fungsi bandar.

Peningkatan suhu permukaan dan persekitaran bukan sahaja menjejaskan keselesaan pejalan kaki, malah meningkatkan risiko kesihatan serta memberi tekanan kepada mata pencarian, terutamanya di kawasan tumpuan seperti zon warisan dan komersial.

Bagi menangani cabaran ini, Program Geran Penghijauan Bandar George Town dan Bayan Lepas yang diterajui Think City menyokong projek intervensi fizikal, termasuk pemasangan bumbung dan fasad hijau, penanaman pokok, serta sistem landskap teduhan bagi mengurangkan suhu dan menangani kesan Pulau Haba Bandar. Projek yang melibatkan ruang awam, tapak warisan, serta premis komersial dan individu ini membuktikan keberkesanan solusi penyejukan bandar merentasi pelbagai jenis bangunan, skala, dan model pemilikan demi manfaat awam.

Salah satu projek utama diterajui oleh Encik Zulfikar Abdul Aziz, seorang pemilik kedai yang mengambil inisiatif sendiri memasang fasad hijau untuk menyejukkan premisnya. Usaha beliau mencerminkan prinsip teras PNBCAP, iaitu adaptasi yang bermula di peringkat komuniti. *"Saya mulakan usaha ini keadaan panas di dalam kedai sudah tidak tertanggung lagi,"* katanya. *"Saya tidak mahu sekadar menunggu bantuan luar. Dengan penghijauan ringkas, ruang ini kini lebih sejuk dan selesa, malah usaha ini boleh dicontohi oleh orang lain."*

Berucap di majlis tersebut, YB Tuan Zairil Khir Johari, Pengerusi Jawatankuasa Pemandu PNBCAP merangkap Exco Infrastruktur, Pengangkutan, dan Digital Negeri Pulau Pinang, menegaskan bahawa daya tahan iklim adalah kayu ukur prestasi harian sesebuah bandar. *"Jika jalan raya kita terlalu panas untuk dilalui dan ruang awam tidak lagi boleh digunakan, itu bermakna sistem perbandaran kita gagal berfungsi. PNBCAP berperanan memulihkan fungsi tersebut dengan meletakkan elemen daya tahan iklim ke dalam kehidupan harian masyarakat. Melalui gabungan strategik antara intervensi fizikal dan pelaburan sosial, kita mampu memastikan kelangsungan hidup warga kota meskipun tekanan iklim semakin meruncing,"* ujar beliau.

Kerjasama antara Think City dan PGC memperluas pelaburan sosial ini menerusi Program Sekolah Lestari (*Sustainable School Programme – SSP*) yang melibatkan lima buah sekolah di George Town dan

Bayan Lepas, iaitu SJKT Sungai Ara, SMK Raja Tun Uda, SJKC Wen Khai, SMKA Al Mashoor dan SMK Padang Polo. SSP melengkapkan inisiatif Sekolah Hijau sedia ada yang diterajui oleh PGC dengan penekanan terhadap pendidikan iklim dan tindakan berasaskan sekolah.

Ketua Pegawai Eksekutif PGC, Josephine Tan, menekankan bahawa peranan sekolah peranan penting dalam membentuk perubahan budaya jangka panjang. *"Menyejukkan bandar bukan hanya soal infrastruktur, tetapi juga tentang membina kefahaman, kesiapsiagaan, dan daya tahan sejak usia muda supaya komuniti lebih bersedia menghadapi risiko iklim. Melalui program seperti SSP, PGC menyokong pengintegrasian elemen iklim dalam kurikulum, pembangunan kapasiti serta tindakan iklim di peringkat sekolah dan komuniti di bawah Program Sekolah Hijau Pulau Pinang. Peranan kami adalah untuk memacu kerjasama dan menyediakan sokongan teknikal, sekali gus membina asas pengetahuan dan daya tahan iklim dalam kalangan generasi muda agar mereka bersedia memimpin serta memperkukuh komuniti dalam menghadapi perubahan iklim,"* katanya.

Selain sekolah, PNBCAP turut memperkukuh daya tahan sosial dan kepimpinan belia menerusi Sidang Kemuncak Iklim Belia 2024 – Asia Tenggara (YCS 2024-SEA), hasil kolaborasi antara PGC, Think City, PowerSains, Bukit Bendera, Entopia, Rizab Biosfera Bukit Bendera, dan banyak lagi. Program ini melengkapi golongan belia dengan pengetahuan, kemahiran, dan peralatan praktikal untuk membina serta melaksanakan Pelan Tindakan Iklim (*Climate Action Plans – CAPs*) melalui pendekatan partisipatori di sekolah dan komuniti mereka.

Asalnya dibangunkan oleh The Wild Center, YCS diperkenalkan di Asia Tenggara buat kali pertama pada 2024, dengan lima buah sekolah dan kolej di rantau ini diiktiraf atas keberkesanan CAPs mereka yang menunjukkan impak nyata di lapangan.

Menurut Pengarah Urusan Think City, Dato' Hamdan Abdul Majeed, kejayaan PNBCAP terletak pada keupayaannya merapatkan jurang antara pelaksanaan projek dan pembelajaran institusi bagi membolehkan adaptasi iklim menjadi usaha arus perdana yang diterapkan secara lebih meluas. *"PNBCAP menterjemah sains iklim ke dalam ruang yang digunakan masyarakat setiap hari,"* kata beliau. *"Melalui pelaksanaan merentasi pelbagai lokasi dan skala, Pulau Pinang sedang membangunkan model rujukan yang boleh dicontohi oleh bandar-bandar lain yang berdepan tekanan iklim yang sama."*

Fokus semasa PNBCAP di George Town dan Bayan Lepas kini meletakkan Pulau Pinang sebagai perintis peringkat nasional. Melalui penyepaduan pelaksanaan dan perkongsian ilmu, program ini memperluaskan penerapan reka bentuk, infrastruktur, dan tadbir urus responsif iklim bagi memastikan daya huni bandar kekal terpelihara di seluruh Malaysia.

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Mengenai Program Adaptasi Iklim Berasaskan Alam Semula Jadi Pulau Pinang (PNBCAP)
Program Adaptasi Iklim Berasaskan Alam Semula Jadi Pulau Pinang (PNBCAP) merupakan program adaptasi iklim bandar bersepadu yang pertama di Malaysia. Ia menangani isu haba bandar, banjir, daya tahan sosial, kapasiti institusi dan pertukaran pengetahuan menerusi penyelesaian berasaskan alam semula jadi di George Town dan Bayan Lepas. Disokong oleh Adaptation Fund dan UN-Habitat, serta dilaksanakan dengan kerjasama Majlis Bandaraya Pulau Pinang (MBPP), Jabatan Pengairan dan Saliran (JPS) Pulau Pinang dan Think City, PNBCAP direka bentuk untuk memperkukuh daya tahan bandar dalam mendepani tekanan iklim yang semakin meningkat. Untuk maklumat lanjut, layari thinkcity.com.my.

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APPENDIX: PNBCAP George Town and Bayan Lepas Urban Greening Grants Recipients

Recipient	Space/ Building Type	Type of Greening	Project Overview
Individual	Private shoplot	Green façade, trellis	A community-led, do-it-yourself greening project by a senior shop owner, demonstrating how individuals can take practical action to reduce heat in everyday spaces.
Paradigm Realty Sdn Bhd (Hin Bus Depot)	Community space	Extensive green roof (mat system)	A pilot green roof on metal decking that addresses high rooftop heat and demonstrates how cultural and community buildings can be adapted for urban cooling.
AHAM Asset Management Berhad	Corporate building (heritage area)	Multi-layered landscape design, green car park	A corporate landscaping project transformed into functional green infrastructure, shifting from decorative planting to heat-adaptive design within a heritage setting.
SENTRAL Education Sdn Bhd (SENTRAL College)	Educational institution	Green façade, cascading planting	An institution-led greening project translating ESG commitments into on-the-ground climate adaptation, informing future direct-to-institution delivery models.
Individual	Private residence & community space	Green roof, water garden, perimeter planting, parklet	A professional-led demonstration project reimagining how heritage neighbourhoods can integrate climate-responsive greening into residential and shared spaces.
Chief Minister Incorporated (CMI)	Public food court (Astaka Kota Selera, Fort Cornwallis)	Extensive green roof (mat system)	A large-scale green roof in a heritage precinct, delivering site-wide cooling benefits for hawkers and visitors in a high-use public space.
Individual	Low-cost residence	Green façade, cascading planting	A resident-led retrofit bringing climate-responsive design into an existing low-income home, demonstrating accessibility of greening solutions.

Project Team from Universiti Sains Malaysia & GDP Architects (Chulia Mansion Hotel)	Boutique hotel	Green façade (case study)	A scientific study generating performance data on surface temperature reduction to inform wider adoption of greening in the hospitality sector.
Project Team from Universiti Sains Malaysia & GDP Architects (YSH Hardware)	Industrial warehouse	Green façade, climbing plants	A scientific study transforming a warehouse into a living laboratory for climate-responsive design in the SME and light industrial sector.
CS Prima Auto Sdn Bhd	Car dealership	Multi-layered landscape design, green car park, parklet	A corporate pilot redefining “green” in commercial design by delivering real, living urban cooling infrastructure in a high-exposure environment.