

# EXECUTIVE SUMMARY

The Net-Zero Action Plan serves as a strategic guide for HKUST to realize our commitment to achieving net-zero greenhouse gas (GHG) emissions by 2045. The Action Plan builds on the University's 2020 and 2028 Sustainability Challenges by offering an essential framework that harnesses the University's research, teaching, and operational capabilities in a way that ensures that we mitigate climate change while pursuing the University's mission.



# Greenhouse Gas Footprint

As of the 2022-23 academic year, the University is responsible for roughly 42,000 metric tons of global warming GHG emissions into the atmosphere. The emissions mostly come from the use of electricity, but also come from the use of fuels for transportation and stationary uses, as well as fugitive gases from refrigeration and lab practices. These emissions are categorized as Scope 1 and Scope 2 emissions. These are the emissions that must be reduced to zero by the target year of 2045. Selected Scope 3 emissions—from supply chains—are also tracked and addressed separately.

## Net-Zero Definition and Target Date

“Net-zero” refers to a state in which the total amount of GHG emitted into the atmosphere is balanced by an equal amount of GHG that have been removed from the atmosphere. The goal for HKUST is to reduce the overall emissions to the greatest extent possible, then invest in carbon removal and sequestration projects to offset the remainder. HKUST has determined that the University shall reach a state of net-zero emissions by the year 2045.

## Oversight and Progress Checks

While the ultimate goal is to achieve a level of net-zero emissions by 2045, it is important to have interim goals and targets to ensure we are on track. The earliest GHG baseline was the year 2014, which became the starting point for the first University-wide sustainability plan (the HKUST 2020 Sustainability Challenge). In 2014, HKUST emitted 61,200 metric tons of GHG. By 2023, HKUST had reduced emissions by 38%. Further reductions will continue to be difficult due to campus growth, but to remain in alignment with Hong Kong’s decarbonization plan, HKUST will cut emissions by 50% to roughly 30,000 metric tons by 2035. These cuts will be accompanied by comparable reductions in water consumption, waste to the landfill, and overall campus sustainability advances as articulated in each seven-year sustainability plan update (currently the HKUST 2028 Sustainability Challenge).

### Responsibility for the oversight and stewardship of the Net-Zero Action Plan will be done by:



#### The Sustainable Operations Executive Committee

[OpCo, existing, VPAB Chair] will be responsible for overseeing the progress and performance of campus operations, new buildings, campus renewal, and adaptation and resilience measures. The OpCo will also be responsible for ensuring that funding and resources are available and allocated measures needed to meet the interim and long-term goals of the Action Plan.



#### The Sustainable Smart Campus as a Living Lab

[SSC, existing, DSENG and DSUST Co-Chairs] will be responsible for supporting faculty and alumni researchers who implement proof-of-concept decarbonization interventions on the HKUST campus.



#### The Sustainability/Net-Zero Office

[SUST, existing] will serve as the steward of the Plan and will provide the staffing and resources for the Committee above. The SUST will also be responsible for collecting data to measure performance and will report progress in HKUST’s ESG annual report.



#### The Net-Zero Education Committee

[NSEC, proposed, Provost Chair] will be responsible for ensuring that support is garnered for the development of educational resources and hands-on learning opportunities for students and members of the broader community. The NSEC will also oversee the establishment and facilitation of the proposed Net-Zero Global Alliance to activate campuses around the world as living laboratories for innovation and experiential learning.



#### HKUST’s Senior Leadership

Senior Administration will review updates from each of the Committee Chairs on an annual basis (or more frequently) and will inform University Council on progress and performance towards the net-zero target.

## Five Strategic Areas for Action

To reach the target of achieving net-zero emission by 2045, HKUST shall undertake the following five strategic areas for action:

1

### All New Buildings Must Be Designed and Operated as Net-Zero Carbon Buildings

This strategy entails (1) offsetting all embodied carbon from the design and construction process; (2) offsetting all operational carbon emissions from the operations of the new buildings; and (3) implementing cost recovery measures to ensure that carbon offset costs are fully funded through revenue from building-integrated renewables, or through service fees for the building occupants.

2

### Invest Aggressively in Energy Conservation, Renewables, and Decarbonization

This strategy entails (1) implementing the Campus Renewal Plan (CRP) to address the most consequential existing buildings on campus in terms of overall improvements and carbon reduction; (2) allocating funding for improvements for buildings, infrastructure, and equipment not covered by the CRP; (3) continuing to invest in the “smart” infrastructure backbone of meters, sensors, monitors, and other data collection and visualization measures; and (4) exploring new decarbonization opportunities on the campus, utilizing the slope, landscape, soils, and waterfront.

3

### Implement Measures that Allow Us to Adapt and Become Resilient to Climate and Weather Changes

This strategy entails (1) focusing on redundancy of slopes through maintenance and design to ensure their stability; (2) developing measures to protect the coastline from storm surges and rising seawater levels; (3) preparing for extreme by heat developing standards for workers and monitoring systems for airborne illnesses and other stresses on campus biodiversity; (4) adopting measures to reduce the urban heat island effect within the campus to mitigate further heating within the campus microclimate; (5) adopting “sponge city” measures to ensure that when heavy rainfall events occur, the campus can deflect the large volumes of rainwater away from buildings and critical infrastructure; and (6) creating new policies on remote learning, working from home, and flexibility in job functions to flow more easily to adapt to alternative work and learning patterns during extreme weather events.

4

### Create Viable Pathways to Net-Zero Research and Skill-Building

This strategy entails (1) creating funding pathways for research and implementation of campus-based energy production and carbon removal; (2) establishing a global research alliance of like-minded universities to utilize our campuses as living labs for sharing and collaborating on decarbonization solutions; (3) creating course content and hands-on extra-curricular programs to engage students throughout their programs to build sustainability thinking skills and problem-solving competencies; and (4) developing educational resources for the professional staff of the broader Hong Kong community.

5

### Create Sensible Cost-Recovery Mechanisms to Fund Decarbonization Actions

This strategy entails (1) implementing the provisions in the ESG Policy for the Long-Term Investment Pool, and review and update on a tri-annual basis; (2) allocating all Feed-in-Tariff revenue (or avoided utility costs) from on-site renewables for decarbonizing new buildings and forming a research pool for on-site decarbonization research; and (3) implementing cost recovery mechanisms based on the energy intensity (and resulting carbon footprint) of space used by schools and administrative units.