VINUNIVERSITY
Smart Green Transformation Center

GREEN-X

SMART GREEN TRANSFORMATION CENTER

> Innovating the Green Future

“Open Letter

Dear Prospective Clients, Partners, and Sponsors,

At COP26, Vietnam pledged to reach net-zero emissions by 2050—a call for solutions that are practical, scalable, and evidence-based. In this spirit, the VinUni Smart Green Transformation Center (GREEN-X) is pleased to introduce our mission and capabilities to support Vietnam and the region on a sustainable growth path.

GREEN-X unites nearly 50 leading experts from Vietnam and abroad, working alongside close to 20 academic and industry partners. We operate on two reinforcing pillars: Research and Consultancy in Smart Green Transformation. Our work addresses persistent gaps—limited scalable, research-based solutions to balance decarbonization and growth; macroeconomic policy misalignment; and weaknesses in innovation and competitiveness metrics—alongside the execution challenges of the net-zero pathway.

Our research focuses on five program areas that convert science into tools for action: Carbon Footprint Monitoring and Management System (CFMMS), Smart Marine Aquaculture System (SMAS), Smart Waste Management for Urban Circular Economy (SmartWaste), Green Policy Design and Evaluation (GreenPolicy), and the Vietnam Innovation & Green Growth Index (VIGGI). Building on this foundation, we provide end-to-end advisory and capability enhancement, including Smart Green Transformation Master Plan Development and Deployment Consulting, Technology-based Solutions and Capacity Building tailored to public and private needs.

Trusted by global partners, local governments, and businesses, GREEN-X is committed to delivering professional, high-quality, and reliable services that help translate Vietnam’s net-zero ambition into reality for current and future generations.

Sincerely,
VinUni Smart Green Transformation Center (GREEN-X)

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About GREEN-X

OUR VISION

By 2030, GREEN-X aims to be internationally recognized as a leading center for research, innovation, and policy consulting in smart green transformation in Southeast Asia.

OUR MISSION

GREEN-X conducts scientific research and technology development to provide green and digital transformation services and solutions, contributing to sustainable development and enhancing the competitiveness of localities and businesses.

ACADEMIC PARTNERS

INDUSTRY PARTNERS

GOVERNMENT PARTNERS

Leaders, Advisors & Core team

LEADERS OF THE CENTER

Chief Scientific Director (CSO)

Professor Edmund Malesky
Director of the Duke University Center for International Development

Chief Executive Director (COO)

Assoc. Prof. Phan Thi Thuc Anh
Associate Vice Provost
VinUniversity

ADVISORS AND COLLABORATORS

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University of Technology, Sydney
Award-winning marine biologist

Professor Brian Silliman
Professor of Marine Biology and Conservation
Director, Duke RESTORE
Director, Duke Wetland and Coasts Center

Professor Chris K Anderson
Professor and Area Chair for Services Management
Cornell University

Professor Soumitra Dutta
Former Dean of Said Business School, University of Oxford, UK

GREEN-X'S CORE TEAM

Dr. Nguyen Tu Anh
Research Project Director (Macroeconomics)

Dr. Bui Thanh Tuong Thuy
Project Director

Dr. Nguyen Tuan Viet
Chief Technologist

Asst. Prof. Ly Quang Viet
Senior Researcher

Asst. Prof. Pham Van Kien
Senior Researcher

Nguyen Ha Tram Anh, MIA
Research Assistant

Pham Thi Thuy Anh
Project Officer

Do Huong Ly
Project Officer

Our main focus

RESEARCH

05 key research programs

01 Carbon Footprint Monitoring and Management System (CarbonFootprint)

02 Smart Marine Conservation and Aquaculture System (SmartMarine)

03 Smart Waste Management for Urban Circular Economy (SmartWaste)

04 Green Policy Design and Evaluation (GreenPolicy)

05 Vietnam Innovation & Green Growth Index (VIGGI)

CONSULTANCY

Consultancy services on Smart Green Transformation Strategies and Solutions

Master Plan Development

Master Plan Deployment

Green Transformation Solutions

Capacity Building

RESEARCH PROJECT #1

CARBON FOOTPRINT MONITORING AND MANAGEMENT SYSTEM (CARBONFOOTPRINT)

PROJECT TEAM

Principal Investigators

Assoc. Prof. Phan Thi Thuc Anh (GREEN-X, VinUni)
Prof. Yin Chun Yang (CECS, VinUni)
Prof. ZengChang Qin (CECS, VinUni)

Members

Asst. Prof. Pham Van Kien (GREEN-X/CBM, VinUni)
Prof. Christopher Anderson (Cornell University)

CHALLENGES

- High-emission sectors (energy, transport, construction, tourism, manufacturing) lack tools to measure and manage carbon footprints.
- Limited data and transparency hinder emission reduction, energy efficiency, and investor confidence.
- No systematic approach to measure carbon footprint.

SOLUTION

- Develop a Carbon Footprint Monitoring and Management System (CFMMS) integrating carbon accounting, life-cycle assessment (LCA), and AI/ML analytics.
- Use IoT sensors, smart monitoring devices, and AI-driven big-data analytics to automate data collection and optimization across industries.

STAKEHOLDER IMPACT AND BENEFITS

GOVERNMENT

- Strengthen capacity for carbon monitoring, reporting, and verification across key sectors.
- Support evidence-based policies and carbon pricing toward Vietnam's Net-Zero 2050 goal.
- Improve compliance with international commitments and attract green investments.

BUSINESS

- Provide accurate, real-time carbon data to identify emission hotspots, cut costs, and enhance ESG performance.
- Boost competitiveness and credibility through transparent carbon disclosure.
- Facilitate access to green finance and carbon-credit markets via verified emission reductions.

COMMUNITY

- Raise public awareness and participation in carbon reduction through open-access data.
- Promote sustainable production and consumption across industries.
- Contribute to cleaner air, healthier environments, and stronger climate resilience.

RESEARCH PROJECT #2

SMART MARINE AQUACULTURE SYSTEM (SMARTMARINE)

PROJECT TEAM

Principal Investigators

Asst. Prof. Do Danh Cuong (CECS, VinUni)
Asst. Prof. Phung Manh Duong (GREEN-X/ CECS, VinUni)
Dr. Dinh Van Dzung (VNU)

Members

Prof. Jeremiah Kebreab (UC Davis)
Prof. Brian Silliman (Duke University)
Prof. Emma Camp (University of Technology Sydney)
Dr. Nguyen Van Dinh (Trinity College Dublin)
Dr. Pham Huy Hieu (CECS, VinUni)
Dr. Nguyen Tuan Viet (GREEN-X, VinUni)

CHALLENGES

- Severe degradation of marine ecosystems (40% mangroves, 30% coral reefs).
- Manual, small-scale aquaculture with low productivity and high pollution.
- Limited tools for monitoring water quality, disease, and environmental risks.
- Unstable connectivity and harsh marine conditions affecting IoT device performance.
- Fragmented sensor and video data, limiting accurate AI-based health assessment.
- Low farmer adoption due to complex systems and limited digital skills.

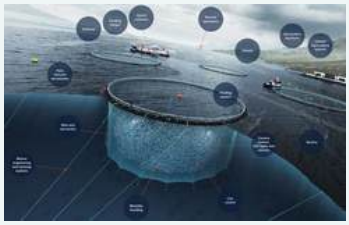
SOLUTION

Marine Ecosystem Monitoring: use underwater sensors and AI analytics to detect degradation and predict pollution.

Automatic Feeding System iAFS1.0

Smart Aquaculture Management: automate water-quality tracking, feeding, and disease prediction through a centralized dashboard using:

- Integrated Multimodal Sensing (MC-1)
- Hybrid Cloud-Edge Design
- AI-Driven SmartFeed 1.0
- Farmer-Centric Dashboards



Smart IoT cage

STAKEHOLDER IMPACT AND BENEFITS

GOVERNMENT

- Strengthen governance and monitoring of marine resources and coastal ecosystems.
- Support data-driven policies for blue economy and climate-resilient aquaculture.
- Enhance alignment with international marine sustainability frameworks.

BUSINESS

- Improve production efficiency through real-time monitoring and AI-driven feeding and disease prediction.
- Cut input costs and risks via better water management and reduced feed waste.
- Boost income and market access through traceable, eco-certified aquaculture practices.

COMMUNITY

- Protect coastal livelihoods through sustainable aquaculture and ecosystem restoration.
- Raise awareness of marine conservation and responsible seafood production.
- Support ecological balance, cleaner coasts, and long-term food security.

RESEARCH PROJECT #3

SMART WASTE MANAGEMENT FOR URBAN CIRCULAR ECONOMY (SMARTWASTE)

PROJECT TEAM

Principal Investigators

Asst. Prof. Ly Quang Viet (GREEN-X, VinUni)
Prof. Long Nghiem (University of Technology Sydney)

Members

Prof. Truyen Tran (Deakin University)
Prof. Tran Thi Viet Nga (HUCE)
Dr. Huynh Thanh Trung (CECS, VinUni)
Dr. Nguyen Tuan Viet (GREEN-X, VinUni)

CHALLENGES

- Severe water and urban waste pollution (70% of rivers/lakes polluted; 20+ million tons of organic waste landfilled yearly).
- Inefficient waste treatment and recycling systems, causing high emissions and energy use.

SOLUTION

Apply AI and IoT to develop smart treatment and recycling models for green, circular cities.

- AI-MBR: AI-enhanced membrane bioreactor for efficient wastewater treatment and reduced energy use.
- SmartCompo: Solar-powered BioBin® system using AI to optimize composting and produce quality organic fertilizer.

STAKEHOLDER IMPACT AND BENEFITS

GOVERNMENT

- Strengthen capacity for managing urban waste and water pollution with AI-driven solutions.
- Support circular economy policies and sustainable urban development.
- Enhance governance and compliance with international green-city frameworks.

BUSINESS

- Reduce treatment and energy costs through smart waste and wastewater technologies.
- Create opportunities in green innovation, recycling, and sustainable product markets.
- Improve reputation and attract investment via transparent environmental performance.

COMMUNITY

- Enhance urban living by reducing pollution, odors, and landfill dependence.
- Encourage public participation in waste sorting and recycling for cleaner cities.
- Contribute to healthier environments, resource efficiency, and climate resilience.

RESEARCH PROJECT #4

GREEN POLICY DESIGN AND EVALUATION (GREENPOLICY)

PROJECT TEAM

Principal Investigators

Prof. Edmund Malesky (GREEN-X/Duke)
Dr. Nguyen Tu Anh (GREEN-X, VinUni)

Members

Dr. Bui Thanh Tuong Thuy (GREEN-X/CAS, VinUni)
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Asst. Prof. Nguyen P. Quy Duy (GREEN-X/CECS, VinUni)
Nguyen Ha Tram Anh (GREEN-X, VinUni)
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Prof. Wim Vanhaverbeke
Prof. Shanjun Li (Stanford University)
Dr. Nguyen Tuan Viet (GREEN-X, VinUni)

CHALLENGES

- Gap between policy design, implementation, and business behavior.
- Limited quantitative evidence in policy evaluation.
- Uneven green tech adoption and unassessed impacts of EV & HSR projects.

SOLUTION

Establish **GreenPolicy**, an interdisciplinary program combining policy science, behavioral insights, and digital technologies.

Five components:

- Improve business compliance via participatory frameworks & AI chatbot.
- Assess green tech readiness of enterprises.
- Evaluate electric vehicle (EV) policies for emissions & equity.
- Analyze high-speed rail (HSR) socio-economic impacts.
- Deliver evidence-based policy advice for Green Growth & Net Zero 2050.

STAKEHOLDER IMPACT AND BENEFITS

GOVERNMENT

- Strengthen evidence-based policymaking with data analytics and policy evaluation tools.
- Improve regulatory effectiveness and inclusiveness for SMEs and large enterprises.
- Advance Vietnam's Green Growth Strategy, Circular Economy, and Net-Zero 2050 goals.

BUSINESS

- Support environmental compliance via the AI-powered legal advisory chatbot.
- Enhance readiness for green innovation and technology adoption.
- Boost competitiveness and attract investment through sustainable practices.

COMMUNITY

- Promote transparency and public participation in the green transition.
- Ensure social and environmental equity in green infrastructure projects.
- Build a low-carbon, resilient economy for sustainable livelihoods.

RESEARCH PROJECT #5

VIETNAM INNOVATION & GREEN GROWTH INDEX (VIGGI)

PROJECT TEAM

Principal Investigator

Prof. Edmund Malesky (GREEN-X/Duke)
Assoc. Prof. Phan Thi Thuc Anh (GREEN-X/CBM, VinUni)

Member

Prof. Soumitra Dutta (GII)
Prof. Tor Andreassen (NHH Norwegian School of Economics)
Prof. Noel Scott (University of the Sunshine Coast)
Dr. Bui Thanh Tuong Thuy (GREEN-X/CAS, VinUni)
Dr. Pham Van Kien (GREEN-X/CBM, VinUni)
Nguyen Ha Tram Anh (GREEN-X, VinUni)

CHALLENGES

- Lack of effective measurement framework for innovation and sustainability across industries and provinces.
- Limited data consistency hinders effective monitoring, comparison, and policy coordination.

VII PCI & PGI

SOLUTION

Implement the VIGGI Program integrating two initiatives:

- **Vietnam Industry Innovation Index (VII):** measures innovation levels, clarifies ministry responsibilities, and supports enterprise competitiveness assessment.
- **Provincial Green Index (PGI):** evaluates environmental policy implementation, clean technology adoption, and green governance efficiency.

Establish a dual data framework (vertical by industry, horizontal by province) for consistent, evidence-based monitoring and policymaking.

STAKEHOLDER IMPACT AND BENEFITS

GOVERNMENT

- Build a unified, data-driven framework to assess innovation and green growth across sectors and provinces.
- Strengthen coordination among ministries and local authorities in sustainability implementation.
- Enhance transparency, accountability, and evidence-based policymaking for green growth.

BUSINESS

- Provide benchmarking tools to measure innovation and environmental performance.
- Support strategic planning, technology adoption, and alignment with green growth goals.
- Improve reputation and investor confidence through transparent sustainability reporting.

COMMUNITY

- Promote regional equality by highlighting local strengths and empowering participation.
- Encourage public engagement in sustainable local development and green governance.
- Contribute to an inclusive, innovative, and environmentally responsible economy.

Smart Green Transformation Consultancy

Comprehensive GT-GG Master Plan

Planning the green transformation process, aiming toward sustainable development

GT-GG solutions

Providing GT-GG solutions for specific sectors and areas

Deployment Consulting

Consulting and monitoring the implementation of programs and projects that contribute to GT-GG goals

GT-GG Leadership Training

Enhancing leadership capacity in GT-GG

OUR CLIENTS

Nha Trang City

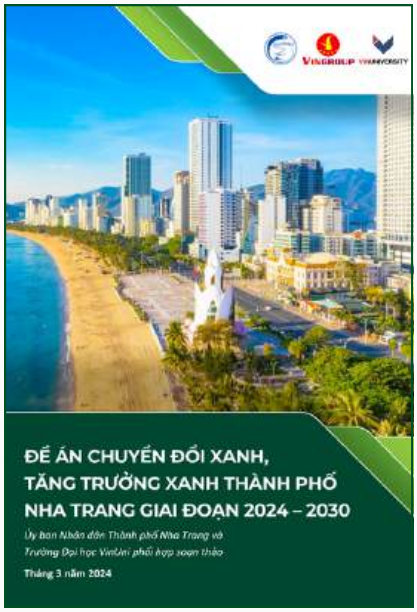
Khanh Hoa Province

Binh Dinh Province

Ho Chi Minh City

Developed Master Plans

IN NHA TRANG - KHANH HOA



Nha Trang City Green Transformation and Green Growth Master Plan (2024-2030)

Khanh Hoa Province Green Transformation Master Plan (2024-2030)

IN BINH DINH

Binh Dinh Province Green Transformation Master Plan (2025-2030)

IN HO CHI MINH CITY

Ho Chi Minh City Green Transformation Master Plan (2025-2030)

COMPLETED GREEN SOLUTIONS

Khanh Hoa Green Tourism Standards

OBJECTIVES

For tourism businesses/establishments

1. Improve service quality and visitor experience
2. Promote green innovation and environmental protection
3. Provide methodologies for waste and environmental quality assessment and reporting.

For government authorities

Control | **Monitor** | **Incentivize**

green-oriented tourism development

Establish a sound foundation for long-term, sustainable sector growth.

Standards for Green Accommodation Establishments

(1) Criteria on GHG reduction
(2) Green Action criteria across 4 themes:

- *Governance*
- *Environment*
- *Society*
- *Customers & Employees*

Scan QR for more details

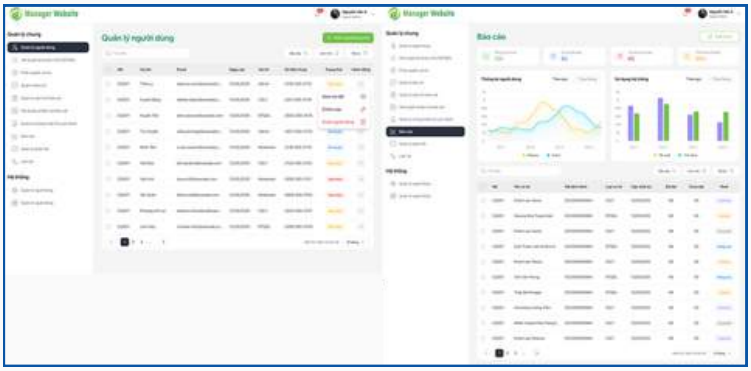
Standards for Green Tourist Attractions

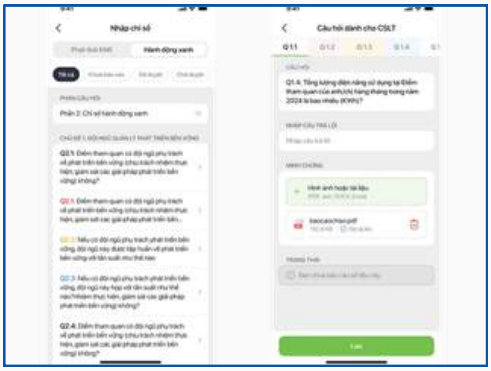
(1) Criteria on GHG reduction
(2) Green Action criteria across 6 themes:

- *Governance*
- *Environment*
- *Society*
- *Customers & Employees*
- *Green Mobility*
- *Protection of Natural and Cultural Resources*

Scan QR for more details

Launching Ceremony for Green Tourism Standards - Khanh Hoa Province





Application interface on web and mobile app

COMPLETED GREEN SOLUTIONS

Green Values Handbook & Green-Living Chatbot

HANDBOOK CONTENT

9 core topics

- Solid-waste pollution reduction
- Efficient energy use.
- Sustainable consumption
- Sustainable mobility
- Urban "city farmer" living
- Toward a green office
- Efficient use of the kitchen and bathroom
- Sorting of household solid waste
- 3R practices at the offices

PUBLIC EDITION

Design Version

- For the general public
- Concise
- Well- illustrated
- Easy to disseminate.

Scan QR for access

PRACTITIONER EDITION

Detailed version

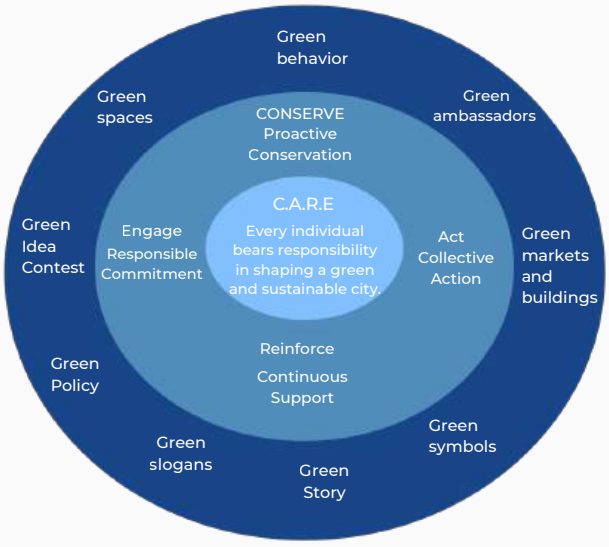
- For communication officers;
- Connect environmental and personal benefit
- Compiles current regulations on waste sorting and environmental protection

GREEN-LIVING CHATBOT

AI-assisted (ChatGPT-based) tool supporting daily green practices.

Scan QR for trial

HANDBOOK VALUE FRAMEWORK (C.A.R.E)



- **Artifacts & Behaviors:** Representative factors and actions
- **Values:** Core values
- **Basic Assumptions:** Shared implicit understandings

C . A . R . E

CONSERVE	ACT	REINFORCE	ENGAGE
Actively preserve and protect natural resources: maintain green spaces, clean beaches, and biodiversity.	Take collective actions for sustainable lifestyles and consumption.	Focus on nurturing long-term values: promote green lifestyles in harmony with nature.	Commit to correct implementation of regulations and guidance; propose measures for environmental protection.

COMPLETED GREEN SOLUTIONS

Monitoring and Evaluation Framework for Green Transformation

Objective: To operationalize a total of 62 monitoring and evaluation indicators to assess the implementation progress of the Green Transformation in Khanh Hoa Province.

FRAMEWORK CONTENT

Two Levels of Indicators

- ***Level 1 Indicators (9):*** *General indicators reflecting the main areas of focus.*
- ***Level 2 Indicators (61):*** *Detailed indicators corresponding to specific sectors.*

Scan QR for more details

Level 1	Level 2	Notes
Greenhouse gas emission intensity	1	Reflecting national targets (Decision No. 1658/QĐ-TTg dated 01 October 2021 by the Prime Minister approving the National Green Growth Strategy for the period 2021–2030, with a vision to 2050)
Total greenhouse gas emissions	1	
Energy intensity / Economic growth rate (GRDP)	1	
Green industry	8	Reflecting provincial priority sectors (Decision No. 2690/QĐ-UBND dated 15 October 2024 by the People's Committee of Khánh Hòa Province approving the Provincial Green Transformation Plan for the period 2024–2030).
Green agriculture	11	
Green tourism	12	
Green infrastructure	14	
Green transport	9	
Green lifestyle	4	
9 indicators	**61 indicators**	

Training, Introduction, and Pilot Operation of the Green Transformation Monitoring and Evaluation System

User Web home page

Mobile app

Application interface on web and mobile app

Capacity-Building Activities

>100
government leaders trained

03
training courses implemented

>100
specialized training materials developed

TRAINERS

04
international professors

16
domestic experts

1 Leadership Training on Green Transformation | Khanh Hoa Province

2 Leadership Training on Green Transformation and Green Growth | Nha Trang City

3 Leadership Training on Innovation and Sustainability | Ha Noi

Early achievements

In the last 2 years, GREEN-X has already earned recognition through several national and international awards.

NATIONAL AWARDS

With the project “Green Transformation and Green Growth in Nha Trang – Khanh Hoa”, VinUniversity was honored at the Vietnam ESG Awards 2024 in the category “Actions for Local Green Transformation.”

INTERNATIONAL AWARDS

VinUniversity achieved a double victory at the ESG Business Awards 2025 – Asia–Pacific region, reaffirming the university’s international influence and leadership in sustainable development.

STUDENTS’ ACHIEVEMENTS AT INTERNATIONAL COMPETITIONS

First Prize (Regional Round) — ASEAN Data Science Explorers 2024

Second Prize — Green Industrial Artificial Intelligence Challenge

Leaders, Advisors & Core team

INTERNATIONAL CONFERENCES

International Conference on Green Transformation and Green Growth in Nha Trang – Khanh Hoa

International Conference on Open Innovation for a Green Future 2024 in Ha Noi

WORKSHOPS

Workshop on Innovation Policy: Global Perspective and Best Practices in Ha Noi

Current Situation and Solutions for Green transformation in Ho Chi Minh City.

SCIENTIFIC SEMINARS

Action Program
“For a Green Cần Giờ.”

Development of the Monitoring and Evaluation Toolkit for Ho Chi Minh City’s Green Transformation

Media coverage

Why collaborate with GREEN-X?

Multidisciplinary expertise 01

Integrating insights from environmental science, economics, urban planning, and technology to address complex sustainability challenges with innovative and practical approaches.

Proven record of impactful publications & solutions 02

Successfully developed comprehensive master plans and conducted high-impact research projects that contribute directly to sustainable goals.

Strong academic-industry-government partnerships 03

Established collaborations with local governments and businesses (Vingroups and others) through green transformation consulting and research projects, ensuring solutions are grounded in real-world needs.

Access to extensive global research networks 04

Partnering with world-renowned institutions such as Oxford, Duke, Cornell, and NTU to exchange best practices and leverage global expertise for local impact.

Innovating the GREEN FUTURE ”

For more information

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SUPPORT LE TU ANH
NGUYEN THI THUY DUONG
PHAM THI THUY ANH

CONTENT GREEN-X TEAM

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Download our booklet here

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