
ESG Baseline and Gap Assessment

(English version)

CUHK School of Life Sciences

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1. Purpose and Methodology

This report forms part of Module 1: ESG Baseline Assessment. The objective of this stage is to understand the School's current ESG-related foundation before developing a formal ESG framework, indicators, data collection process, or external-facing sustainability report.

The assessment focuses on three questions:

- What ESG-relevant practices does the School already have?
- What are the major gaps compared with ESG reporting, SDG alignment, and university sustainability ranking expectations?
- What quick improvements can be implemented in the short term?

This is not a full ESG report. It is a baseline diagnostic designed to support future ESG system-building.

For external benchmarking, this report refers mainly to GRI Standards and the Times Higher Education Impact Rankings. GRI Standards focus on how organisations report their impacts on the economy, environment, and people, while THE Impact Rankings assess universities' contributions to the UN Sustainable Development Goals across research, stewardship, outreach, and teaching.

2. Overall Assessment

2.1 Core Finding

The CUHK School of Life Sciences already has a strong ESG-relevant foundation. Its existing strengths are particularly visible in:

- Sustainable agriculture and food security
- Biodiversity conservation and ecosystem research
- Food, nutrition, public health, and disease-related research
- Student research training and sustainability-related education
- Research centres, core facilities, and scientific platforms
- Science communication, public engagement, and knowledge transfer

However, the key issue is that these ESG-relevant practices remain fragmented across research, teaching, facilities, student programmes, and news materials.

Strong practices, but no unified ESG structure; strong cases, but limited indicators; strong achievements, but limited data-based reporting.

The School is therefore not starting from zero. The main task is to convert existing practices into a structured ESG system.

2.2 Initial ESG Maturity Assessment

Dimension	Current Assessment	Maturity Level
Environmental	Strong sustainability-related research, but limited operational environmental data at School level	Medium-low
Social	Strong education, research training, public health, and outreach foundation, but limited quantified social impact data	Medium
Governance	Good research centre and facility management foundation, but limited ESG governance structure and data ownership	Medium-low
Overall	ESG-relevant practices exist, but are not yet systematised	Level 2: Existing practices but not yet structured

3. Existing ESG-Relevant Practices

3.1 Environmental Dimension

3.1.1 Strong foundation in sustainable agriculture and plant resilience research

The School has a strong research base in Plant Cell and Agricultural Biology. This field focuses on enhancing plant resilience under environmental stress, increasing the value of agricultural products, and developing innovative biotechnologies for crop improvement and plant-based bioreactors. The School also applies approaches such as high-resolution microscopy, artificial intelligence, omics technologies, structural biology, and agricultural landscape genomics.

ESG / SDG Theme	Existing School Foundation
Climate adaptation	Plant stress response and environmental resilience
Sustainable agriculture	Crop improvement and agricultural biotechnology
Food security	Plant genomics and adaptive traits
Green biotechnology	Plant-based bioreactors and precision breeding

3.1.2 Biodiversity, conservation, coral, mangrove, and ecosystem research

The School has a clear research focus in Biodiversity, Conservation and Environmental Sciences. Its existing work covers biodiversity, ecosystem resilience, coral response to climate-related stress, mangrove ecosystems, environmental pollution, ecotoxicology, marine biology, and conservation science.

This area can be developed into flagship ESG narratives around:

- Biodiversity conservation

- Marine ecosystem protection
- Coral restoration and climate resilience
- Mangrove and blue carbon research
- Environmental pollution and ecological health
- Citizen science and environmental education

3.1.3 Green technology and sustainability-oriented innovation

The School's research also includes structural biology, protein science, biotechnology, biomaterials, and applied life science innovation. Its research centres include the Centre for Novel Biomaterials and the Centre for Organelle Biogenesis and Function, the latter of which has potential applications in biotechnology, increasing crop yields, preventing human diseases, and developing biofuels.

ESG / SDG Theme	Existing School Foundation
Green innovation	Bio-based materials, enzyme technology, plant biotechnology
Sustainable industry	Lower-impact biotechnology and biomaterials
Research translation	Turning life science discoveries into sustainability solutions
Climate-related solutions	Biological approaches to food, agriculture, and ecosystem challenges

3.1.4 Research facilities and laboratory infrastructure

The School has extensive scientific facilities, including biochemical analysis equipment, chromatography systems, centrifuges, mass spectrometry, microscopy and imaging systems, Cryo-EM, plant culture rooms, animal culture rooms, bacterial culture rooms, yeast culture rooms, algal culture rooms, and a Virus Lab.

These facilities provide a strong research infrastructure foundation. At the same time, they also make the following issues important for future ESG work:

- Laboratory waste management
- Chemical waste and hazardous materials
- Biological waste and biosafety
- Energy-intensive equipment
- Lab safety training
- Facility maintenance and compliance
- Shared equipment usage efficiency

3.2 Social Dimension

3.2.1 Comprehensive talent development system

The School has a broad teaching and research training structure. It has five undergraduate major programmes, research postgraduate programmes, and taught master's programmes, with a sizeable academic, technical, administrative, postdoctoral, and research staff base.

ESG / SDG Theme	Existing School Foundation
Quality education	Undergraduate, research postgraduate, and taught postgraduate programmes
Student development	Multi-disciplinary life science training
Research training	Laboratory-based learning, MPhil / PhD training, and student research exposure
Career readiness	Preparation for careers in science, health, food, environment, biotechnology, and research

3.2.2 Sustainability-related education

The School offers a taught MSc programme in Biodiversity, Environmental Management, Sustainability and Technology (BEST), which is directly relevant to sustainability education, environmental management, biodiversity, and professional training for sustainability-related careers.

This programme can support themes such as:

- SDG education
- Sustainability talent development
- Environmental management capacity-building
- Biodiversity and conservation training
- ESG-related career preparation

3.2.3 Student research training and engagement programmes

The School has student development initiatives such as the Young Scientist Mentorship And Research Training Programme (SMART), offering distinguished research experience to talented first-year students through individual guidance from professors in research laboratories.

The School also has SLS-CiPo, the School of Life Sciences Citizenship Portfolio. It is designed to enhance student engagement in life science activities, connect students with the scientific community, recognise participation through a tiered award system, and enhance employability through reflective practice and portfolio development.

ESG / SDG Theme	Existing School Foundation
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ESG / SDG Theme	Existing School Foundation
Student engagement	SLS-CiPo activities and award system
Research exposure	SMART programme and laboratory-based mentorship
Employability	Portfolio development and reflective practice
Career readiness	Broader exposure to life science activities and research opportunities

3.2.4 Public health, food, nutrition, and disease-related research

The School's research areas include Food and Nutrition, Neuroscience and Stem Cell Biology, and Structural Biology and Protein Science. The Food and Nutrition research area addresses chronic non-communicable diseases such as obesity, diabetes, cardiovascular disorders, Alzheimer's disease, and related dementias.

These research areas can be linked to:

- Public health
- Healthy ageing
- Food safety
- Nutrition improvement
- Disease prevention and treatment
- Biomedical innovation

3.2.5 Science communication and public engagement

The School's biodiversity and conservation work includes knowledge transfer, citizen science, educational outreach, monitoring projects, workshops, and public awareness-building. These activities can form a strong basis for ESG reporting under community engagement and public outreach.

This can be expressed as:

- Public engagement
- Science communication
- Community outreach
- Citizen science
- Environmental education
- Biodiversity awareness

3.3 Governance Dimension

3.3.1 Clear organisational and research platform structure

The School has an established structure of teaching staff, research staff, technical staff, administrative staff, research centres, and scientific platforms. Its research centre structure includes the Centre for Cell and Developmental Biology, Centre for Novel Biomaterials, Centre for Organelle Biogenesis and Function, Food Research Centre, RGC-AoE Center for Genomic Studies, Shiu-Ying Hu Herbarium, Simon F.S. Li Marine Science Laboratory, the Centre for Protein Science and Crystallography, and the Hong Kong Bioinformatics Centre.

These centres can become important ESG data nodes in the future.

ESG / SDG Theme	Existing School Foundation
Research centres	Potential sources of ESG research impact and SDG mapping data
Core facilities	Sources of safety, resource use, equipment sharing, and facility management data
Technical and administrative staff	Support for data collection and process implementation
Academic programmes	Evidence for teaching, student development, and research ethics management

3.3.2 Research facility management

The School's facilities page lists equipment categories, managers, and charge rates for multiple instruments and platforms. This indicates that some facility-level responsibility and management processes already exist.

This can be further extended into ESG governance through:

- Equipment usage rate tracking
- Maintenance records
- Safety training records
- Energy use monitoring
- Shared instrument efficiency
- Facility compliance records
- Cost transparency

3.3.3 E-learning resources include laboratory safety content

The School's e-learning resources include modules on laboratory equipment and techniques, data presentation, laboratory safety, virtual labs, synthetic biology workshop materials, field venture resources, evolution biology, and basic laboratory techniques.

This indicates that safety and technical training resources already exist. However, future ESG assessment still needs to confirm:

- Whether laboratory safety modules are mandatory
- Which student or staff groups are covered
- Whether completion records exist
- Whether refresher training is required
- Whether training is linked to laboratory access

3.3.4 Alignment with CUHK-level sustainability policies

CUHK has broader university-level sustainability and resource conservation initiatives. The University's sustainability approach includes climate action, resource conservation, waste management, sustainable procurement, and carbon-related actions. This provides an institutional foundation that the School can align with, rather than building every policy from scratch.

How are CUHK-level sustainability, safety, waste, and resource policies implemented at the School and laboratory level?

4. Key Gap Analysis

4.1 Environmental Gaps

Gap	Current Observation	Implication
Limited School-level operational environmental data	The School has strong environmental research, but limited visible data on energy, water, waste, carbon, and consumables at School level	Difficult to support a complete Environmental disclosure
Laboratory waste data not yet consolidated	No clear School-level data on chemical waste, biological waste, sharps, animal tissue, virus-related waste, or disposal volumes	This is likely to be one of the most important ESG issues for a life sciences school
Biosafety information is not yet consolidated	Facilities such as Virus Lab, animal culture rooms, bacterial culture rooms exist, but BSL levels, training records, approvals, and incident records are not yet visible	Important for compliance, risk management, and reputation
Green lab practices are not yet visible	No clear information on ultra-low temperature freezer management, fume hood management, shared equipment energy efficiency, or single-use plastic reduction	Limits the School's ability to demonstrate operational improvement
Research outputs not mapped	Many sustainability-related research areas exist,	Makes it harder to support

Gap	Current Observation	Implication
to SDGs	but no visible SDG mapping table has been established	THE, ESG, and sustainability reporting

4.2 Social Gaps

Gap	Current Observation	Implication
Student outcome data is incomplete	Existing education and research training programmes are strong, but data on employment rate, further study rate, career destinations, and overseas research participation are not yet consolidated	Difficult to quantify education and employability outcomes
Public engagement data is incomplete	Outreach, citizen science, workshops, and environmental education are mentioned, but annual activity numbers, participant counts, audience types, and partners are not consolidated	Difficult to create measurable social impact KPIs
DEI information is limited	No consolidated data on gender ratio, international student ratio, support for disadvantaged students, disability support, or inclusion policies	DEI is often expected in higher education ESG reporting
Student safety and support mechanisms not integrated	Lab safety resources exist, but coverage rate, completion records, incident data, and student support mechanisms are not yet integrated	Creates a gap between Social and Governance dimensions
Stakeholder feedback mechanism is unclear	No clear School-level mechanism for collecting feedback from students, alumni, employers, community partners, government, or NGOs	Limits future materiality assessment and continuous improvement

4.3 Governance Gaps

Gap	Current Observation	Implication
No School-level ESG governance structure	No visible ESG coordinator, ESG working group, or ESG data owner structure	ESG work may remain a one-off documentation exercise
No ESG indicator and data ownership system	Equipment managers exist, but ESG data owners are not yet defined	Annual ESG updates would be difficult to sustain
Research ethics information not integrated	No consolidated view of human subjects, human samples, animal research, stem cells, gene editing, or research integrity approval processes	Research ethics is a core governance topic for a life sciences school
Data governance is	The School has genomics, bioinformatics, AI, and	This could become a major

Gap	Current Observation	Implication
underdeveloped	data-intensive research, but data security, privacy, access rights, open data, and AI-use rules are not yet visible	governance issue in future ESG or research compliance discussions
Risk management loop is not visible	No consolidated data on lab incidents, inspections, corrective actions, near-miss reporting, or emergency drills	Weakens evidence of governance maturity

5. Key Benchmarking Implications

5.1 Move from "achievement display" to "evidence management"

THE Impact Rankings assess universities' sustainability contributions across research, stewardship, outreach, and teaching. This means the School needs to turn existing achievements into:

- Verifiable case studies
- Supporting documents
- Quantitative indicators
- Annual data tables
- Evidence packages for internal or external use

5.2 Move from "individual cases" to "indicator system"

GRI Standards focus on reporting organisational impacts and how these impacts are managed. For the School, each ESG issue should eventually have:

Element	Example
Indicator name	Laboratory safety training coverage rate
Definition	Percentage of relevant students and staff completing required training
Data source	School office, safety officer, e-learning system, lab records
Data owner	Named responsible person or unit
Update frequency	Annual, semesterly, or quarterly
Supporting evidence	Website, policy, training record, activity report, spreadsheet

5.3 Move from "university-level policy" to "School-level implementation data"

CUHK already has university-level sustainability policies and initiatives. The School should therefore focus on translating those university-level policies into School-level execution evidence.

Key questions include:

- How are university-level waste management policies implemented in SLS laboratories?
- Are there School-level records for hazardous waste?
- Are laboratory safety training records available?
- Can the School identify energy-intensive facilities and equipment?
- Are facility usage, maintenance, and safety inspection records available?

6. Quick Wins

6.1 Quick Win 1: Build an ESG Evidence Database

Objective: Convert existing materials into structured evidence for ESG reporting, SDG mapping, ranking submissions, and external communication.

Field	Example
ESG Dimension	E / S / G
Topic	Biodiversity, lab safety, student development
Existing Practice	Coral research, SMART, SLS-CiPo, laboratory safety module
Supporting Evidence	Website link, news article, policy document, activity record
Data Owner	To be confirmed
Quantifiable?	Yes / No
Missing Information	Participant numbers, training coverage, annual data, etc.

6.2 Quick Win 2: Complete an SDG Mapping Table

Objective: Map existing research, teaching, and outreach activities to relevant SDGs.

School Content	Potential SDG Alignment
Sustainable agriculture, plant resilience, food security	SDG 2 / SDG 13 / SDG 15
Coral, mangroves, marine ecology, biodiversity	SDG 13 / SDG 14 / SDG 15

School Content	Potential SDG Alignment
Food, nutrition, chronic disease, neurodegeneration	SDG 3
BEST MSc, SLS-CiPo, SMART	SDG 4
Green biotechnology, shared research facilities	SDG 9 / SDG 12
Citizen science, workshops, educational outreach	SDG 4 / SDG 11 / SDG 17

6.3 Quick Win 3: Develop Three Flagship ESG Case Studies

The School should start with three cases that are easy to explain, evidence-based, and strategically relevant.

Proposed Case	Rationale
Biodiversity, coral conservation, and environmental education	Covers both Environmental and Social dimensions; combines research, education, and public engagement
Sustainable agriculture and plant resilience research	Directly links to food security, climate adaptation, and sustainable agriculture
BEST MSc, SMART, and SLS-CiPo student development	Supports SDG education, research training, employability, and student engagement

Each case can be developed into a one-page ESG case study for use in future reports, presentations, or website content.

6.4 Quick Win 4: Collect Basic Laboratory ESG Data

This is the most important operational improvement. A short laboratory ESG questionnaire should be sent to relevant laboratories or facility managers.

- Does the lab generate chemical waste?
- Does the lab generate biological waste?
- Does the lab involve animal research?
- Does the lab involve viruses, microorganisms, or cell culture?
- Have all relevant lab users completed safety training?
- Are training completion records available?
- Is there SDS or hazardous chemical inventory management?
- Does the lab use ultra-low temperature freezers, fume hoods, incubators, or other energy-intensive equipment?
- Is there a waste classification and disposal process?
- Have there been any incidents or near misses in the past reporting period?

6.5 Quick Win 5: Establish a Light ESG Data Ownership Mechanism

At this stage, the School does not need a complex ESG committee. A light data ownership model would be sufficient.

Role	Responsibility
ESG Coordinator	Collect materials, maintain the ESG evidence database, coordinate updates
Research Data Owner	Research projects, publications, research impact, SDG mapping
Teaching and Student Data Owner	Student numbers, programmes, employment / further study data, training records
Lab and Facility Data Owner	Lab safety, waste, equipment, facilities, and operational ESG data

7. Information Required for the Next Stage

7.1 Highest Priority Information

Information Needed	Suggested Source
Laboratory waste disposal process and annual records	Lab managers, technical staff, University safety office
Biosafety levels and Virus Lab management procedures	Lab heads, safety officer, facility manager
Ethics approval processes for animal research, human samples, stem cells, and gene editing	Faculty members, School administration, University ethics office
Laboratory safety training coverage rate	Teaching office, safety officer, e-learning system
Annual participation data for SMART, DREAM, and SLS-CiPo	Programme coordinators, teaching office
Number of outreach activities and participants	Outreach leads, School communications office
BEST MSc student numbers, curriculum structure, and graduate outcomes	Programme director, programme office
Student employment rate, further study rate, and career destinations	School administration, career support office

7.2 Medium Priority Information

Information Needed	Use
Gender ratio and international student ratio	DEI disclosure

Information Needed	Use
Shared equipment usage rate	Research infrastructure governance
Number of ultra-low temperature freezers, fume hoods, and major energy-intensive instruments	Green lab assessment
Annual safety inspection records	Risk management and governance
Research integrity or research ethics training records	Governance
Data storage, genomic data, and AI tool use policies	Data governance

8. Conclusion

The CUHK School of Life Sciences already has a strong ESG-relevant foundation, especially in sustainable agriculture, biodiversity conservation, public health, food and nutrition, student research training, public engagement, and research infrastructure.

The main challenge is not the absence of ESG-related work. Rather, the School currently lacks three enabling mechanisms:

- 1.First, a structure to organise existing practices into a coherent ESG framework;
- 2.Second, measurable, traceable, and verifiable data;
- 3.Third, School-level data owners and an annual update mechanism.

Build an ESG evidence database, complete SDG mapping, collect basic laboratory ESG data, and develop three flagship ESG case studies before moving into the full ESG framework and indicator design stage.

CUHK SCHOOL OF LIFE SCIENCES

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