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WEATHER • 3 MIN READ

The Eiffel Tower is closed to tourists due to searing heat. Here's why it's happening

UPDATED JUL 2, 2025

By Laura Paddison, Andrew Freedman

Hong Kong Breaks 35 Temperature Records in 2024, Hottest Year in City's History

BY MARTINA IGINI | ASIA | JAN 14TH 2025 | 5 MINS

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Extreme heat is closing schools, widening learning gaps worldwide

By Reuters

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Study Buddy (Challenger): 242 million children's schooling disrupted by climate shocks in 2024, says Unicef

This page is for students who want to take their reading comprehension to the next level with difficult vocabulary and questions to test their info skills.

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by Young Post | Published: 6:15am, 24 Feb, 2025

Greening the Future: The Role of Nature-based Solutions In Achieving Sustainability Goals In Education

Learning & Teaching Expo 2025

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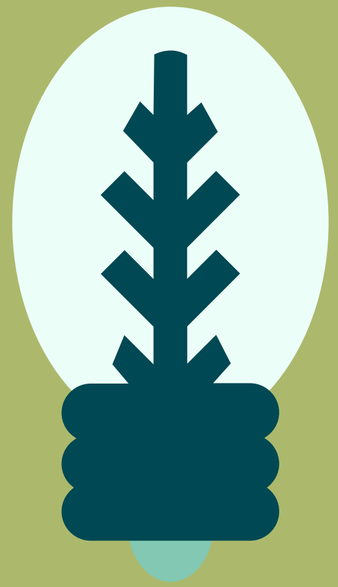
Agenda



OVERVIEW

01. Global context and challenges
02. What are Nature-based Solutions (NbS)
03. Benefits of GRGW
04. Barriers/misconceptions of GRGW
05. International Case Studies
06. Integrating GRGW into the Curriculum

Global Context – Education & Sustainability

- The world faces unprecedented **environmental degradation and the impacts of climate change.**

1.5°C	80%
Global Temperature Rise Target	Urban Population by 2050

- Current world population-**8.2 billion**
- **Urban greening- the way forward**
- UNESCO emphasizes that **“learning is key to finding solutions and creating a more sustainable world.”**

What are Nature-based Solutions (NbS)

Nature-based Solutions (NbS)

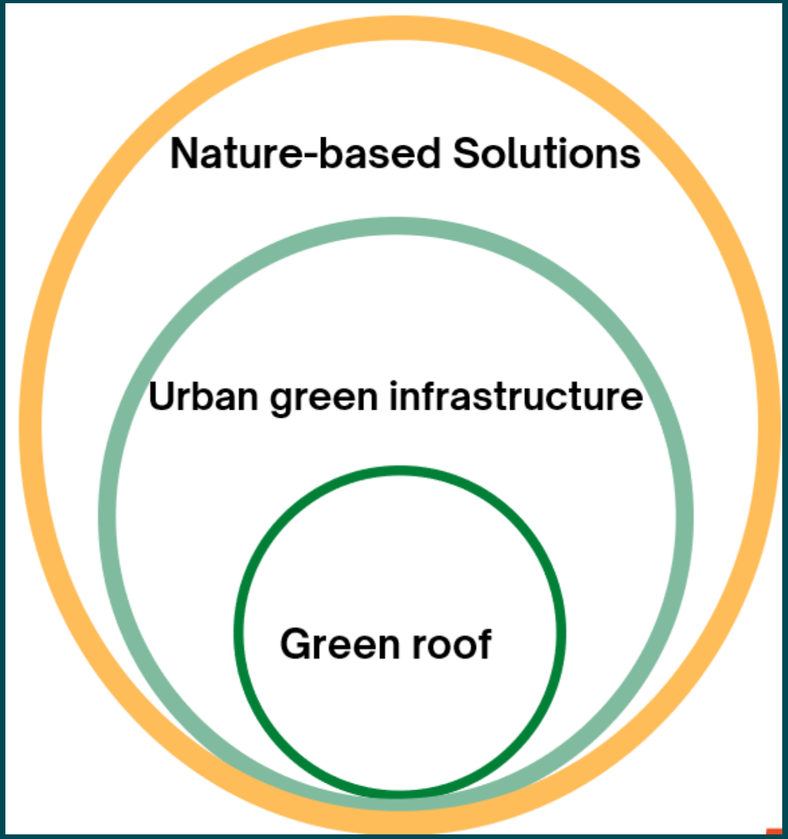
- Sustainable use of nature.
- Tackle societal and environmental challenges (Eggermont et al., 2015).

Green Infrastructure

- Conservation of biodiversity
- Building ecosystem services
- Maximization of ecosystem potential (Breuste, 2020).

Green roof and Green wall systems (GRGW)

- Typology of urban green infrastructure



Examples of GRGW systems for schools

Green Roofs: Vegetated rooftops (extensive or intensive) that shade the building, provide garden space and habitat

Green Walls: Climbing plants or modular wall gardens that insulate buildings and bring nature to vertical spaces

Benefits of GRGW

Benefits of GRGW

Climate Change Mitigation & Adaptation

- Regulate building temperature → lower energy use and emissions
- Reduce urban heat island effect
- Improve stormwater retention (up to 65% reduction in runoff)

Air & Water Quality Improvement

- Absorb pollutants before they enter storm drains and waterways
- Reduce smog; enhance air quality, especially critical in urban schools

Conventional bare roofs vs Green roofs during rainfall

Benefits of GRGW

Cleaner Air, Better Health

- **Reduces asthma triggers in polluted urban environments**
- **Complements efforts like electric school buses**

Mental Health & Nature Exposure

- Green space reduces anxiety, depression, ADHD symptoms
- PaRx (Canada) shows benefits of prescribing nature exposure

Energy Efficiency & Cost Savings

- Less demand on HVAC systems = lower energy bills

Longer Roof Lifespan

- Green roofs last ~40 years, double that of standard roofs

Biodiversity & Building Value

- Support local flora and fauna; enhance school's ecological footprint

Benefits of GRGW

Educational & Social Benefits

Outdoor Learning Spaces

- Support cross-disciplinary learning: science, art, nutrition, and climate
- Ideal for after-school and ESD programs

Hands-on Engagement

- Increases curiosity, cooperation, and real-world problem solving
- Promotes stewardship and sustainability values from early age

Barriers/misconceptions of GRGW

- Roof leakages and structural defects
- Design difficulties

Common Concerns & Solutions

Cost

Focus on lifecycle cost-benefit (energy savings, roof longevity, well-being gains)

Structural Load

Engineering assessments crucial. Extensive roofs & lightweight walls are often feasible with retrofits. Prioritize new builds

Maintenance

Plan from the start! Integrate into school groundskeeping. Use low-maintenance designs/plants

Typhoon Resilience

Specific design standards & plant selection. Proven feasible in HK/region

Waterproofing

Critical during installation. Use reputable contractors with green roof experience. Robust warranties

Successful Models & International Case Studies

1. Solana School, Spain (Green Roofs & Façades)

- Implemented multiple NBS through the EU-funded project “myBUILDINGisGREEN”.
- They installed green roofs, green façades, permeable paving, and rainwater harvesting.
- Their aim was to cool classrooms and reduce water runoff.

Result

1. Significantly lower indoor temperatures in summer
2. Shade in playgrounds
3. Improved water retention around the school.

Successful Models & International Case Studies

1. Løren Elementary School in Oslo

·With 750 students
·Prioritizes environmental responsibility
·The goal was to maintain biodiversity while harnessing solar power,
·Ensuring a functional and eco-friendly learning environment.

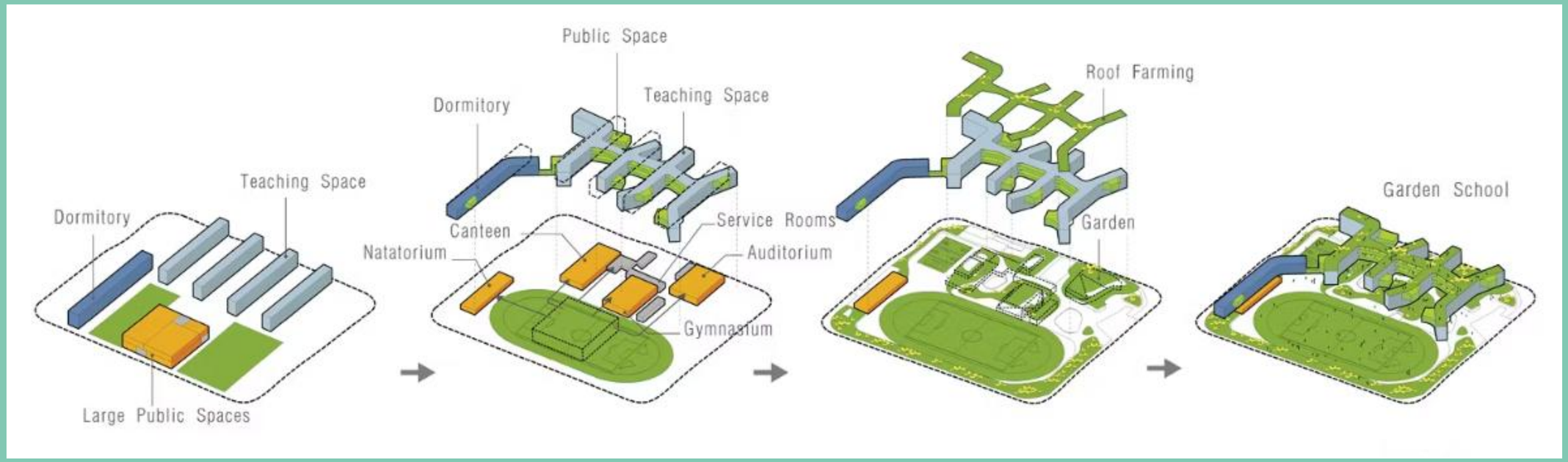
Result
Demonstrated high energy yields

Successful Models & International Case Studies

The Marcel Sembat High School, Sotteville-lès-Rouen, France

- Designed as a rehabilitation and extension
- Used workshop spaces to give a new visual identity to the institution.

Successful Models & International Case Studies



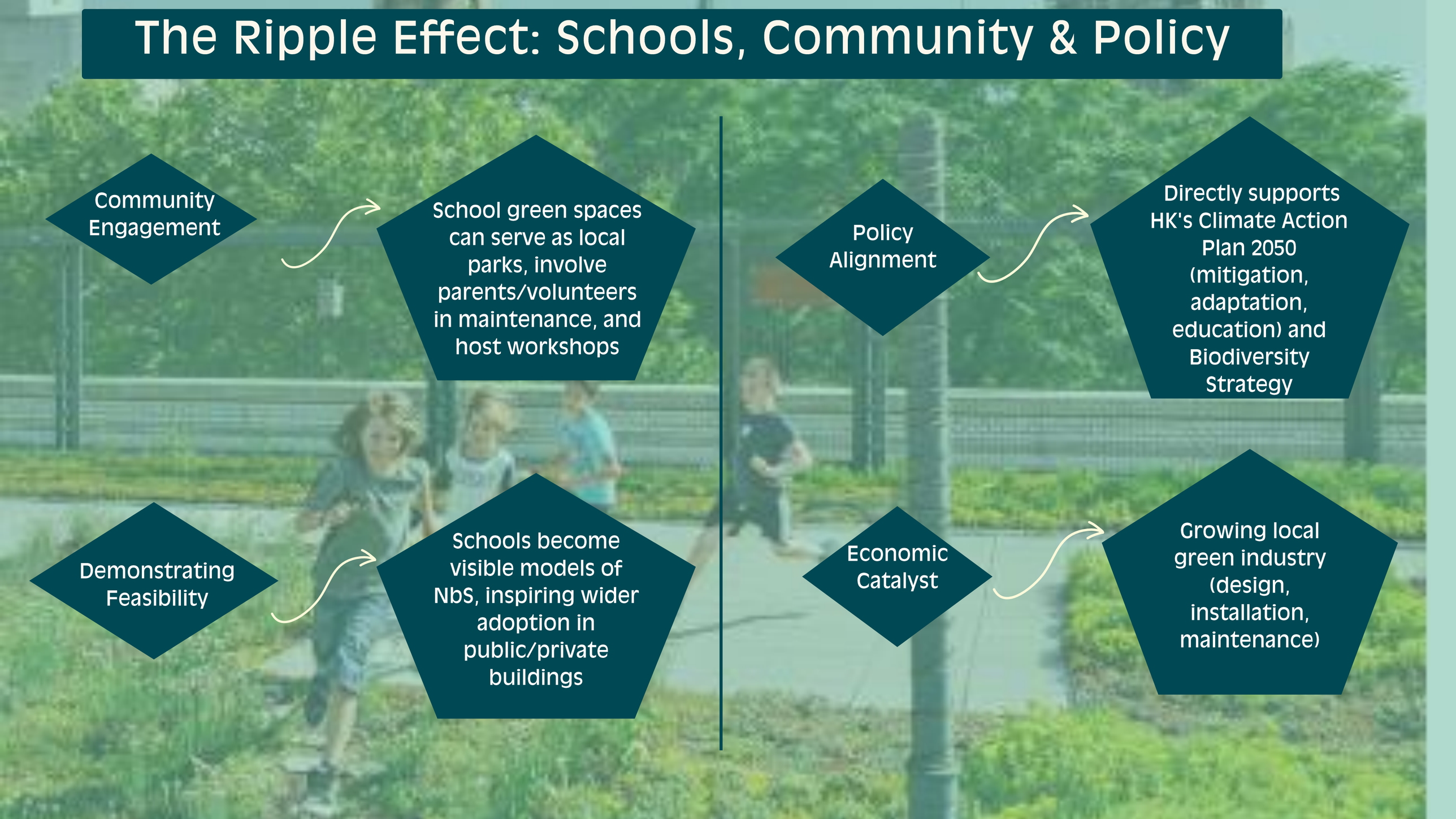
Garden School, Beijing, China

GRGW as a Pedagogical Powerhouse

Beyond the Abstract: Making sustainability tangible and experiential

Kindergarten/Nursery	Touch soil, leaves, and flowers; listen to wind in plants; smell herbs
Primary (Hu + Sc)	Plant life cycles, weather monitoring, insect habitats, art inspired by nature
Secondary	Data analysis (temp, humidity, energy), ecosystem services calculations, water cycle studies, design & technology projects
Undergrad	Research projects (biodiversity surveys, thermal performance, social perceptions), policy analysis
Developing Key Competencies	Critical thinking, problem-solving, systems thinking, collaboration, empathy

The Ripple Effect: Schools, Community & Policy



Community Engagement

School green spaces can serve as local parks, involve parents/volunteers in maintenance, and host workshops

Demonstrating Feasibility

Schools become visible models of NbS, inspiring wider adoption in public/private buildings

Policy Alignment

Directly supports HK's Climate Action Plan 2050 (mitigation, adaptation, education) and Biodiversity Strategy

Economic Catalyst

Growing local green industry (design, installation, maintenance)

What will integrating GRGW into Schools Hong Kong mean?

- Fewer behavior referrals
- Better teacher retention
- Lower absenteeism
- Improved test scores
- Low suicide rates (32 cases in 2023; aged 6 to 17)

Browning & Determan (2024). 6th-grade Math students at the Green Street Academy

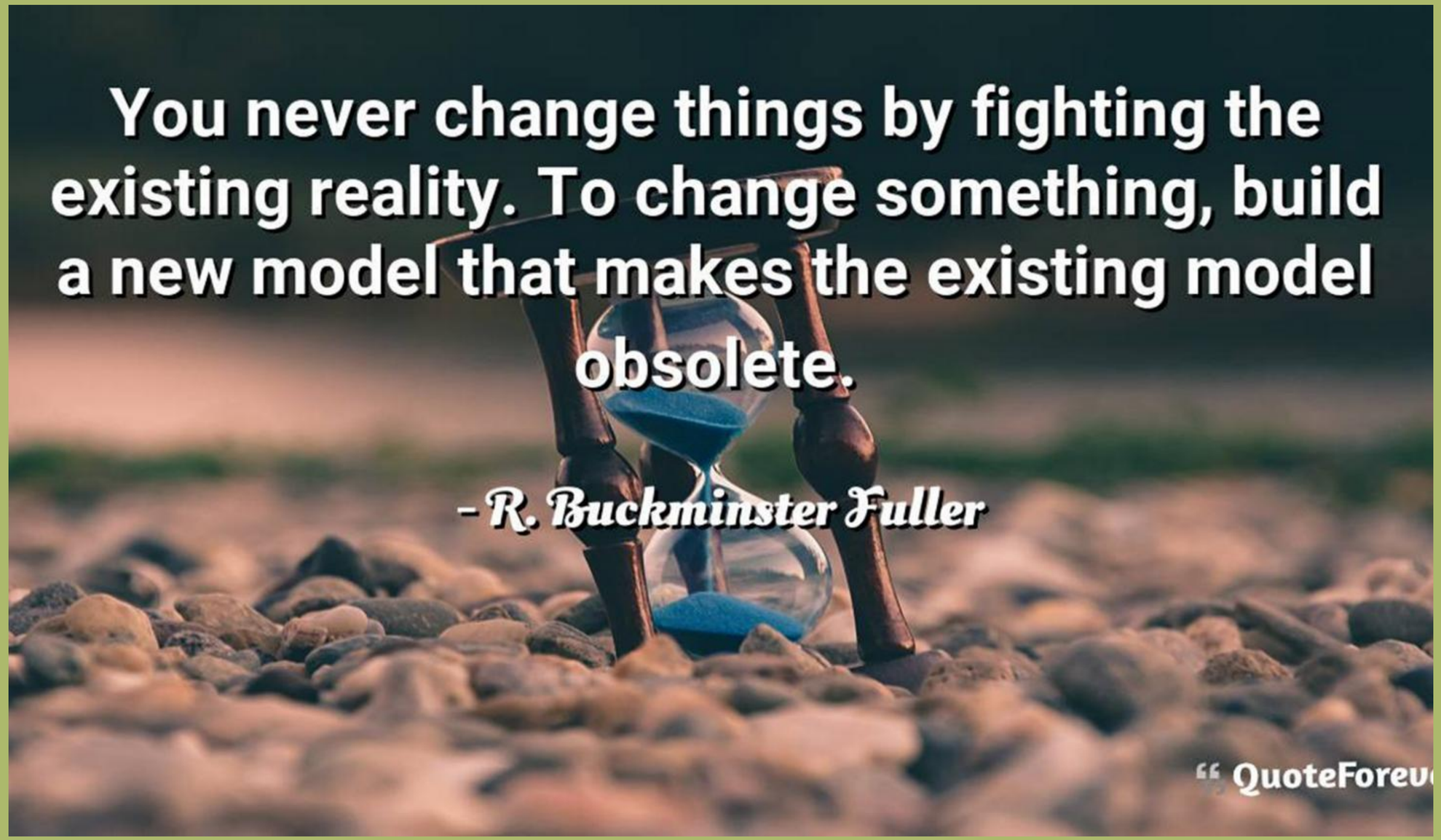
Conclusion & Vision

GRGW are powerful, multi-functional tools. Integrating them into Hong Kong's schools is:

- A direct response to climate and environmental challenges
- A catalyst for transformative, experiential education
- An investment in student and community health and well-being
- A tangible demonstration of sustainability values in action

When we install GRGW in our schools, we don't just cool buildings and clean air; we cultivate the minds and hearts of the generation who will steward Hong Kong's future.

— Author



Thank you for your attention!

QUESTIONS?