the Singapore WAY

TEACHER GUIDE

# Green Strategy

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**Chapter 12: Singapore's Green Strategy – Sustainability as a National Priority**

# 1. Introduction to the Case

## Why This Case Matters

In a time when most nations struggle to balance economic development with climate action, Singapore offers a **rare model of eco-urbanism**: one where green policy is not a side project but a **strategic pillar of national growth**.

Despite its compact size and lack of natural resources, Singapore has:

- Built award-winning eco-cities
- Implemented a national carbon tax
- Protected over 40% of its land with green cover
- Turned water security into climate resilience (e.g. Marina Barrage, NEWater)
- Set long-term **Net Zero by 2050** goals with a clear roadmap

This case explores how Singapore made sustainability **both systemic and symbolic**.

## What Students Will Learn

- How to embed sustainability **across ministries, industries, and communities**
- How Singapore uses **urban design, innovation, and behavioral science** to green its systems
- How trade-offs are handled between **development and biodiversity**, or **carbon targets and competitiveness**
- Why **long-term thinking, trust, and state capacity** matter in the green transition

## Global Relevance

While Singapore is unique, its lessons matter globally:

- Cities worldwide face **urban heat, rising seas, and energy pressure**
- Many nations are struggling to **finance climate adaptation**
- Top-down systems often miss **grassroots innovation**—or vice versa
- Public trust is key when citizens are asked to sacrifice or adapt

This case asks students to **bridge green ambition with social reality**.

## Framing Questions to Use in Class

- Can green growth be more than a slogan—can it actually work?
- What trade-offs do eco-cities demand—and who pays for them?
- Is sustainability mostly a **design challenge** or a **political will challenge**?
- Can small nations lead big climate transitions?
- How does a state make citizens feel part of—not punished by—climate policy?

## Singapore's Sustainability Toolkit at a Glance

| Tool / Strategy | Purpose |
|---|---|
| **Green Plan 2030** | Multi-ministry roadmap for a sustainable economy and society |
| **Tuas Nexus and NEWater** | Integrated waste-to-energy and water reclamation plants |
| **City in a Garden** vision | Urban greening with biodiversity integration (e.g. Park Connectors, Tree Planting Day) |
| **Carbon Tax (2019–)** | Market-based approach to reducing emissions |
| **Public Communication Campaigns** | Citizen engagement, climate education, behavioural nudges |

Singapore's story challenges students to see climate strategy as **nation-building**—not just environmentalism.

# 2. Pre-Class Preparation

This case works best when students come in with a basic understanding of:

- **Urban sustainability frameworks**
- **Policy trade-offs** in dense, fast-growing cities
- Their own city's or country's approach to environmental planning

This section helps them make connections between **global climate priorities and Singapore's unique eco-governance strategy**.

## Required Reading

- **Chapter 12 of *The Singapore Way*** by Maher Kaddoura
  Focus on:
  - The evolution of the **Green Plan and Net Zero strategy**
  - Case examples: Marina Barrage, NEWater, Tuas Nexus, and Park Connector Network
  - How green priorities are aligned across ministries and messaging
  - How economic competitiveness and climate goals are balanced

## Optional Videos or Visual Explainers

| Resource | Why It's Useful |
|---|---|
| *Singapore Green Plan 2030: Explained* – CNA | Breaks down multi-agency strategy for transport, waste, energy, and education |
| *How Tuas Powers Water, Waste, and Energy Together* | Shows circular economy infrastructure in action |
| *Marina Barrage as Climate Infrastructure* – PUB | Explains how flood control meets recreation, water storage, and symbolism |
| *The City in a Garden Vision* – NParks SG | Visualizes how nature is woven into dense urban life |

## Reflection Prompts for Students

Ask students to reflect on or journal about:

1. **What is the most sustainable space or project in your city or campus?**
2. **What's one environmental challenge your country is avoiding or failing to act on?**
3. **Is sustainability in your context mostly talk, or visible action?** Why?
4. **What sacrifices should governments make—and ask citizens to make—for real climate resilience?**
5. **Can you name a national symbol or public system in your country that represents green values?**

## Optional Pre-Class Exercise: Green Audit Snapshot

Have students audit their city or neighbourhood on these:

| Category | How Green Is It? (1–5) | Example or Observation |
|---|---|---|
| Public transport use | | |
| Waste separation or circularity | | |
| Urban biodiversity | | |
| Water conservation | | |
| Green public space | | |

This primes students to compare **their context with Singapore's innovations**, and explore **design-for-resilience logic**.

## Instructor Setup Checklist

| | Task |
|---|---|
| | Have a visual of the Green Plan 2030 sectors or targets ready |
| | Prepare case-specific visuals (e.g., Tuas Nexus diagram, park connector map) |
| | Pick 1 short video (5–7 mins) to open with inspiration or context |
| | Prepare warm-up question: "What's the greenest thing your country has done—and the greenest lie it tells?" |

Pre-class preparation ensures students arrive ready to explore **not just how Singapore went green—but how they might help their own cities go further.**

# 3. Session Plan

This session blends **systems thinking, case analysis, and creative green design**. Whether students are policy-focused, engineering-minded, or civically engaged, they'll leave with a deeper sense of what makes sustainability work at scale—and how to move from **intentions to infrastructure**.

## Session Duration Options

| Length | Format |
|---|---|
| 60 min | Core case dialogue + quick green audit challenge |
| 90 min | Full discussion + design lab + policy ethics debate |
| 120 min | Comprehensive session: case + stakeholder simulation + resilience design lab |

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## Learning Objectives

By the end of this session, students will be able to:

- Describe how Singapore integrates **sustainability into national strategy**
- Analyse green infrastructure, innovation, and behavioural policies
- Identify tensions between **growth, equity, and ecology**
- Compare Singapore's model with their own context
- Propose realistic sustainability solutions for cities or systems

## Suggested 90-Minute Session Plan

| Time | Segment | Purpose |
|---|---|---|
| 0–10 min | Warm-up Prompt: "The Greenest Lie/Myth I Know Is…" | Surface assumptions, scepticism, humour |
| 10–30 min | Case Walkthrough: Housing, Energy, Water, Nature | Anchor in core case concepts |
| 30–50 min | Guided Dialogue: "Designing Green at Scale" | Explore values, systems, and trade-offs |
| 50–70 min | Group Lab: Eco-System Redesign (choose water, transport, or public housing) | Apply learning to students' own contexts |
| 70–85 min | Green Trade-Offs Debate: "Growth vs. Green – Can You Have Both?" | Bring out tensions and ethical questions |
| 85–90 min | Reflection: "One Green Fix My City Needs Today" | Individual takeaway or pledge |

## Sample Discussion Questions

- Is Singapore's green strategy **realistic, replicable, or rare**?
- What happens when **climate goals conflict with affordability or equity**?
- What trade-offs are justified in the name of resilience or decarbonization?
- Who gets to define "green"? Is it scientists, planners, citizens, or corporations?
- Is true sustainability possible **without discomfort**?

## Optional Role-Based Simulation (for 120-min format)

**Scenario:** A coastal city must choose how to invest $1 billion in climate resilience.

**Roles:**

- Ministry of Environment
- Business Chamber / Developers
- Young Climate Advocates
- Urban Planners / Engineers
- Low-Income Residents Coalition
- Tourism and Cultural Heritage Sector

**Task:** Build a balanced plan. Everyone must support it by consensus.

This session allows students to not only **evaluate Singapore's model**, but to ask:

"What would it look like to build a system that values life—not just growth?"

# 4. Case Facilitation Tools

These tools help you **visualize complex systems**, surface trade-offs, and anchor the conversation in **tangible, transferable design logic**.

## A. Singapore's Green Timeline (1965–2050)

Use or create a visual slide showing the evolution of Singapore's sustainability commitment:

| Year | Milestone |
|---|---|
| 1967 | Garden City vision launched |
| 2003 | NEWater launched |
| 2008 | Marina Barrage opens (flood control, water storage, recreation) |
| 2019 | Carbon tax introduced (first in Southeast Asia) |
| 2021 | Singapore Green Plan 2030 launched |
| 2050 | Net Zero target set |

**Use this timeline to highlight:**

- Long-term commitment across political cycles
- Infrastructure as climate resilience
- Strategic use of symbolism (e.g. Gardens by the Bay)

## B. "City in a Garden" Vision Map

Visualize how **urban nature** is integrated through:

- Park Connector Network
- Skyrise greenery and vertical farms
- Tree planting programs (one million new trees by 2030)
- Conservation of nature reserves in an ultra-dense city

**Prompt:**

"What would this look like in your city? What space would you rewild?"

## C. Green Trade-Offs Matrix

A chart to guide ethical or systems-level discussion:

| Policy Choice | Benefit | Trade-Off or Risk |
|---|---|---|
| Carbon Tax | Market discipline on emissions | Higher costs passed to consumers |
| Coastal Resilience Works | Protects future generations | Massive upfront investment |
| Urban Tree Density Targets | Heat island mitigation | Maintenance and land use costs |
| Circular Water Systems | Water security | Energy-intensive infrastructure |

**Prompt:**

"Which trade-off would your society tolerate—or resist? Why?"

## D. Behavioural Design Toolkit

Showcase Singapore's use of **"soft power" for sustainability**:

- Green Labels and Green Mark Buildings
- "One Less Plastic" campaigns
- Eco-champions in schools and HDB estates
- Walk-cycle-ride mobility campaigns

**Ask:**

"How do you design behaviour without forcing compliance?"

## E. Eco-Policy Pitch Template

For class labs or design sprints, give students a one-page grid:

| Target Problem | Your Green Solution |
|---|---|
| Urban heat stress | |
| Waste and food systems | |
| Rising sea levels | |
| Citizen apathy | |
| Energy dependency | |

Add columns for:

- Stakeholders involved
- Equity risks
- One bold slogan for public engagement

These tools help students move beyond “green talk” into **policy imagination, system mapping, and values-based decision-making.**

# 5. Group Activities & Teaching Tactics

These activities allow students to **simulate policy-making, design green infrastructure**, and navigate the **tensions between growth, equity, and sustainability**. Choose based on your session length and learning goals.

## Activity 1: Eco-System Redesign Lab

**Task:**
Students choose one city system (e.g., water, housing, transport, or waste) and redesign it for sustainability.

**Guidelines:**

- Make it climate-resilient
- Ensure equity and accessibility
- Consider behaviour change and education
- Use examples from Singapore (e.g., NEWater, Green Mark, Park Connector Network)

**Deliverable:** 3-slide pitch or whiteboard sketch with:

- System before and after
- Key design choices
- Tagline or public campaign slogan

## Activity 2: Climate Trade-Offs Debate

**Prompt:**

"Should economic growth be slowed down to achieve carbon neutrality?"

**Teams:**

- Pro-Growth Planners
- Green Transition Advocates
- Climate Justice Activists
- Citizens and Businesses Coalition

**Debrief:**

- What trade-offs were hardest to justify?
- How do values shift depending on role?

## Activity 3: Resilience Simulation – The Coastal City Challenge

**Scenario:**
A major city has 20 years before sea-level rise overwhelms its coast.
Your team must propose a $1B investment plan.

**Roles:**

- Environmental engineers
- Public housing residents
- Politicians up for re-election
- Youth climate activists
- Financial controllers

**Constraints:**

- At least 3 sectors must benefit
- A symbolic or public engagement component must be included

## Activity 4: "My Neighbourhood, Reimagined"

**Task:**
Using a printed map, whiteboard, or drawing, redesign your local block with:

- Nature-based cooling
- Renewable energy
- Public transport nodes
- Social inclusion (e.g. elderly, low-income, kids)

**Bonus:** Add a flag or symbol that represents your neighbourhood's green future.

## Activity 5: Policy Sprint – "From Idea to Impact"

**Prompt:**
Students have 25 minutes to propose a **mini green policy** that could be passed in their country this year.

**Examples:**

- Plastic ban
- Rooftop garden incentives
- Tree-planting tied to tax deductions
- Bike-first school zones

**Deliverables:**

- Policy name + hook
- 1 metric for success
- 1 likely opponent and how to win them over

These group experiences help students build from the case—and think like designers of **realistic, scalable, and ethically grounded** green futures.

# 6. Assignments and Post-Class Engagement

These assignments help students apply the case's insights through **policy analysis, design thinking, personal storytelling, or real-world problem-solving**.

## Assignment 1: Policy Essay – "Sustainability That Works"

**Length:** 1,200–1,500 words
**Prompt:**
Choose one sustainability challenge in your country or city (e.g., water scarcity, food waste, air pollution). Analyze it through a systems lens, and design a Singapore-inspired solution.

**Include:**

- A breakdown of current system gaps or failures
- Comparison with 1–2 strategies from Singapore
- Proposal for policy, design, or behavioural shift
- Feasibility analysis and stakeholder risks

## Assignment 2: Green Infrastructure Redesign

**Format:** Slide deck, infographic, or report
**Prompt:**
Choose a real place (campus, block, building, or transit route) and redesign it for climate resilience and community benefit.

**Must include:**

- Current condition or problem
- Proposed changes (diagrams encouraged!)
- Nature-based or energy-efficient features
- A public campaign name or visual slogan

**Bonus:** Use Singapore's "City in a Garden" or "Green Plan 2030" concepts as inspiration.

## Assignment 3: Climate Storytelling – "The Greener Future I Want to Live In"

**Format:** 500–800 word narrative, audio reflection, or visual photo essay
**Prompt:**
Imagine it's the year 2035. Your city has become one of the greenest on Earth. Describe:

- A typical day
- The systems that make it work
- The values you see in action
- What changed between now and then—and how people feel about it

## Assignment 4: Comparative Case Study

**Format:** 1,000–1,300 words or dual-slide comparison
**Prompt:**
Compare Singapore's green strategy to another eco-city or urban policy (e.g., Copenhagen, Kigali, Seoul, San Francisco).

**Consider:**

- Green infrastructure and governance
- Public engagement models
- Technology use vs. nature-based solutions
- How culture, scale, or politics shape outcomes

## Post-Class Engagement Ideas

| Activity | Purpose |
|---|---|
| "Green Audit" Field Walk | Observe and analyse a real-world space for environmental gaps and design potential |
| Climate Voice Circle | Share 3-minute stories about personal green choices, hopes, or climate grief |
| Social Media Challenge | Create a "GreenFix" campaign post: 1 change, 1 stat, 1 call to action |
| Local Government Submission | Write a letter, pitch, or memo proposing your idea to a city or campus office |
| Experimental Week Challenge | Students try a real habit change (e.g., zero-waste, car-free) and reflect on systems that support or block it |

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These assignments encourage **critical thinking, design for equity, and imaginative civic leadership**—helping students become architects of the futures they want to live in.

# 7. Assessment and Feedback Tools

This section offers a variety of evaluation tools to assess student work for **depth, creativity, realism, systems thinking, and values-based analysis**.

## A. Essay Rubric – "Sustainability That Works"

| Criteria | Excellent (5 pts) | Good (3–4 pts) | Needs Work (1–2 pts) |
|---|---|---|---|
| Systems Insight | Shows deep understanding of eco-systems design and trade-offs | Understands context, some gaps | Focuses on symptoms, not systems |
| Use of Case Ideas | Strong connection to Singapore's strategy and infrastructure | Mentions case but lightly applied | Case not integrated into analysis |
| Feasibility and Innovation | Bold but realistic solution with clear path | Practical idea, needs more clarity | Vague or idealistic with limited grounding |
| Equity and Impact Awareness | Includes who benefits, who's at risk | Some stakeholder awareness | Ignores complexity of public impact |
| Writing and Structure | Clear, compelling, and organized | Mostly clear with some structure issues | Hard to follow or underdeveloped |

**Total: ____ / 25**

## B. Design Redesign Rubric – Green Infrastructure Project

| Criteria | Excellent (5 pts) | Good (3–4 pts) | Needs Work (1–2 pts) |
|---|---|---|---|
| Visual or Structural Clarity | Design is compelling, clear, and explained | Mostly understandable | Incoherent or poorly presented |
| Integration of Nature or Energy | Strong green or nature-based logic | Some eco-elements, needs more integration | Greenwashed or overly tech-based |
| Link to Social Equity | Thoughtful inclusion of multiple user groups | Includes some community consideration | Ignores who is left out |
| Alignment to Case | Reflects "City in a Garden" or related logic | General eco-awareness, weak case link | Case ideas missing or misapplied |

**Total: ____ / 20**

## C. Storytelling Rubric – "The Greener Future I Want"

| Criteria | Excellent (5 pts) | Good (3–4 pts) | Needs Work (1–2 pts) |
|---|---|---|---|
| Imagination and Detail | Vivid future described with believable systems | Future is plausible, but needs detail | Conceptual or lacking sensory elements |
| Case Linkage | Touches on 1–2 ideas from Singapore model | Implied link to sustainability systems | Personal only; no structural insight |
| Emotional Impact | Reflects hope, urgency, or agency | Evokes some feeling | Flat tone or abstract |
| Civic or Systems Awareness | Considers how policy, people, or design align | Touches lightly on infrastructure | Focuses only on individual behaviour |

**Total: ____ / 20**

## Quick Feedback Prompts (Exit Slips or Peer Feedback)

Use these to spark student-to-student or self-reflection:

- "One bold green idea I want to try after this case is…"
- "The hardest trade-off I faced in this simulation/design was…"
- "The part of Singapore's strategy I most admire—or most question—is…"
- "Sustainability means ___ when we talk about it in real life."

# 8. Instructor Notes and Commentary

This section offers guidance to help you **facilitate bold, constructive, and grounded conversations** about climate policy, green transitions, and public trust—without slipping into idealism or cynicism.

## Core Framing Insight: Sustainability Is Systems Work

Help students shift from:

- "Sustainability = recycling or tree planting"
  → to
- "Sustainability = how cities design energy, water, space, and equity across time"

Singapore's model is useful because it blends:

- Infrastructure + culture
- Policy + participation
- Long-term vision + short-term incentives

## Common Student Responses & How to Navigate Them

| Response | Facilitation Tip |
|---|---|
| "This is too ideal. My country could never do this." | Ask: What *principle* is transferable even if the system isn't? |
| "Singapore has a strong government—we don't." | Prompt discussion on public trust, political will, and cross-sector coordination |
| "These projects are expensive—who pays?" | Introduce climate finance models, cost of inaction, and intergenerational responsibility |
| "Greenwashing is everywhere." | Acknowledge the scepticism. Then ask: What does *real* sustainability look like in your life or city? |

## Teaching Approaches to Consider

| Tactic | Use When... |
|---|---|
| **Compare & Contrast Mapping** | Students need to localize lessons from Singapore |
| **Role-Play Simulation** | Class needs to see stakeholder conflict in design |
| **"What If?" Design Prompts** | You want to spark visionary thinking without facts-first paralysis |
| **Silent Gallery Walk** | Ideal for photo essays, redesign posters, or reflection walls |

## Anchor Quote to Open or Close With

**"Sustainability is not about sacrifice—it's about redesigning the world so that thriving doesn't destroy the future."**
– Adapted from Donella Meadows + contemporary climate educators

Use this to reframe:

- Climate conversations as civic leadership
- Sustainability as creative constraint—not moral panic

## Recommended Pairings with Other Chapters

- **Chapter 10**: Public Trust & Governance – sustainability as a trust-building process
- **Chapter 11**: Identity & Multiculturalism – green space as civic belonging
- **Chapter 3**: Systems Design Thinking – how Singapore does cross-agency alignment

# 9. Additional Resources

These resources will deepen students' understanding of **climate governance, sustainable urban design, eco-innovation**, and global best practices in environmental leadership.

## Recommended Readings & Reports

| Title | Source | Why It's Useful |
|---|---|---|
| *Singapore Green Plan 2030: Full Report* | Ministry of Sustainability and the Environment | Policy-rich document covering energy, transport, education, and finance |
| *City in Nature: Urban Biodiversity Masterplan* | NParks Singapore | Explains how ecological systems are woven into dense cities |
| *Carbon Tax Case Study: Singapore* | World Bank / IMF | Reviews design, implementation, and public response to market-based emissions strategy |
| *Green Finance and Resilience in ASEAN* | UNDP / MAS | Regional focus on sustainable investing and urban adaptation tools |
| *Nature-Based Solutions for Climate Adaptation* | IUCN / UNEP | Design guide and global case studies for low-carbon, resilient cities |

## Video & Documentary Resources

| Title | Platform | Focus |
|---|---|---|
| *Singapore's Green Transition* | CNA Documentary | Broad overview of sustainability systems in Singapore |
| *How Tuas Powers a Circular City* | YouTube / EcoBusiness | Breaks down one of the world's most advanced closed-loop infrastructure projects |
| *Designing for Urban Resilience* | TEDx / WRI | Thought leaders on climate-safe cities and social equity |
| *The Future We Build* | National Geographic / Arup | Visual stories from climate-forward cities around the world |
| *Gardens by the Bay: More Than Beauty* | Discovery Channel | Explores the purpose and engineering behind Singapore's green landmarks |

## Online Tools & Portals

- https://www.greenplan.gov.sg – Official Singapore strategy dashboard
- https://data.gov.sg – National open datasets (energy, environment, water, transport)
- https://www.c40knowledgehub.org – Climate action tools from 96 world cities
- https://resilientcitiesnetwork.org – Urban climate and disaster preparedness resources
- https://www.wri.org – Global climate planning tools and city diagnostics

## Suggested Global Case Comparisons

| City / Country | Why Compare? |
|---|---|
| **Copenhagen, Denmark** | Climate-positive urban design, public trust, mobility integration |
| **Seoul, South Korea** | Urban river restoration, green belt integration, smart eco-tech |
| **Kigali, Rwanda** | Inclusive green city planning, innovation in waste and mobility |
| **Curitiba, Brazil** | Transit-led environmental innovation in the Global South |
| **Amsterdam, Netherlands** | Circular economy focus and participatory climate governance |