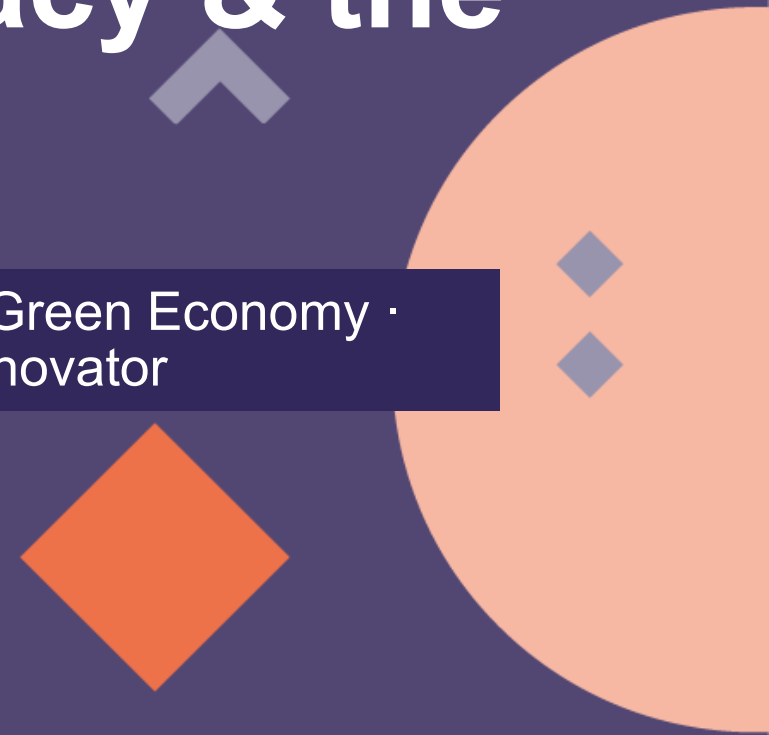




YOUTH GREEN INNOVATORS

Theme 1: Climate Literacy & the Green Economy



Understanding Climate Change · Climate Reality · The Green Economy ·
Green Innovation · The Mindset of a Green Innovator

DAY 1 AGENDA

Today's Schedule

09:00 – 09:30

Welcome, introductions & programme overview

CTU

09:30 – 11:00

Session 1 — Understanding Climate Change

Chapter 1

11:00 – 11:30

Morning Break

11:30 – 12:30

Session 2 — Climate Reality · The Green Economy

Chapters 2 & 3

12:30 – 13:30

Lunch Break

13:30 – 15:30

Session 3 — Green Innovation · Mindset of a Green Innovator

Chapters 4 & 5

15:30 – 16:00

Afternoon Break

16:00 – 16:45

Session 4 — Wrap Up

16:45 – 17:00

Closing

CTU

How This Programme Works

This manual is part of a learning system — designed to help you understand, apply, and reflect.

- Learning Manual → helps you understand key concepts
- Workbook → helps you apply ideas and reflect honestly
- Activities → give you real practice in each session
- This is not about memorising the "right answers" — it is about learning to ask better questions, test ideas, and stay curious



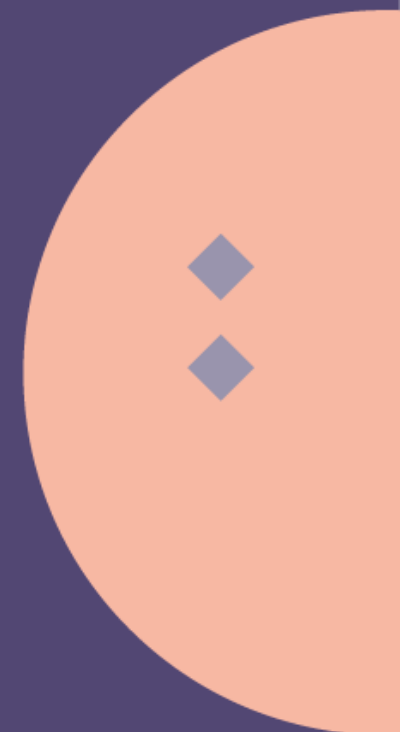


Understanding Climate Change

SESSION 1

09:30 – 11:00

Chapter 1 of the Learning Manual





What You'll Take From This Chapter

- Understand what climate change actually is — in plain, simple terms
- See how it is already affecting daily life in Viet Nam, not just far-away places
- Learn what the 'green economy' means and why it matters for your generation
- Discover the different types of green innovation — including low-tech ones
- Build the mindset and thinking tools that green innovators use



Vocabulary Check warm-up

- Open your Workbooks to the Climate Language section.
- You have 5 minutes to tick how confident you are with each term.
- Complete the sentence 'Climate change is...' in your Workbooks

The Language of Climate Change



Net Zero

Emissions released =
emissions removed



Carbon Footprint

Total GHG emissions of a
person or product



Sustainability

Using resources without
depleting them



Circular Economy

Eliminating waste through
reuse & recycling



Decarbonisation

Redesigning systems to
emit little or no CO₂



Fossil Fuels

Coal, oil & gas — ancient
carbon, burned and
released

You don't need to memorise these — understanding roughly what each one means is enough.

The Greenhouse Effect

A thin layer of gases surrounds our planet — the atmosphere. These gases act like the glass walls of a greenhouse: they let sunlight in, but slow down the heat escaping back into space.

Without this effect, the average temperature on Earth would be around minus 18°C. Life as we know it would not exist.

The greenhouse effect is not a problem by itself — it is essential. The problem is what happens when we put too many of these gases into the atmosphere.



The Greenhouse Blanket

- Think of the atmosphere as a blanket around the Earth
- A thin blanket lets heat escape — the planet stays liveable
- Pile on extra blankets, and the Earth gets warmer and warmer
- CO₂, methane, and other greenhouse gases are those extra blankets
- The blanket is not the problem — adding too many, too fast, is

CARBON & THE GREENHOUSE EFFECT

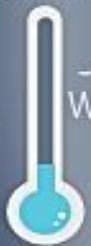
SOLAR RADIATION
(LIGHT) 340 Wm^{-2}

SOLAR RADIATION
REFLECTED BY
ATMOSPHERE, CLOUDS
& SURFACE 100 Wm^{-2}

EARTH AVERAGE
SURFACE TEMPERATURE



15°C
WITH GHGs



-18°C
WITHOUT
GHGs

SOLAR RADIATION
ABSORBED BY
ATMOSPHERE

SOLAR RADIATION
ABSORBED BY
LAND & OCEAN*

EARTH EMITS
INFRARED RADIATION
(HEAT)*

INFRARED RADIATION
EMITTED BACK DOWN TO
SURFACE

INCREASED GHGs CAUSED BY
HUMAN ACTIVITIES TRAP
MORE INFRARED RADIATION
& WARM THE PLANET

TOTAL INFRARED
RADIATION EMITTED
TO SPACE 240 Wm^{-2}

CLOUDS EMIT
INFRARED RADIATION

GHGs IN
ATMOSPHERE
ABSORB & RE-EMIT
INFRARED
RADIATION

CO₂ CH₄ NO₂ H₂O
GREENHOUSE GASES (GHGs)

* The Earth intercepts solar radiation as a 2D disc but radiates infrared radiation in all directions as a 3D sphere

Data: NASA Earth Observatory

Weather Is Not Climate



Weather

- What happens day to day
- Rain, temperature, storms
- Changes within hours or days
- "It was cold today" is a weather observation



Climate

- The long-term pattern over decades
- Averages, trends, and shifts over time
- A single cold day does not contradict global warming
- Climate change is about long-term shifts, not single events

Why does it feel slow? The climate system has a time delay — heat already stored in oceans and atmosphere means today's impacts are the result of past emissions.



Where Do Greenhouse Gas Emissions Come From?



Energy Production

Coal & gas power plants
generating electricity



Transport

Motorbikes, cars, trucks,
ships, planes



Agriculture

Livestock methane, rice
paddies, fertilisers



Deforestation

Removes the carbon sink,
releases stored carbon



Industry

Cement, steel, chemicals,
plastics production



Buildings

Heating, cooling, and
cooking at home & work

Can you provide examples to all of them? None of these are simple to fix — that is precisely why green innovation matters.

Greenhouse Gases

Carbon Dioxide Emissions

CO₂ is the most abundant greenhouse gas, mainly from burning fossil fuels and deforestation.

Methane's Heat Impact

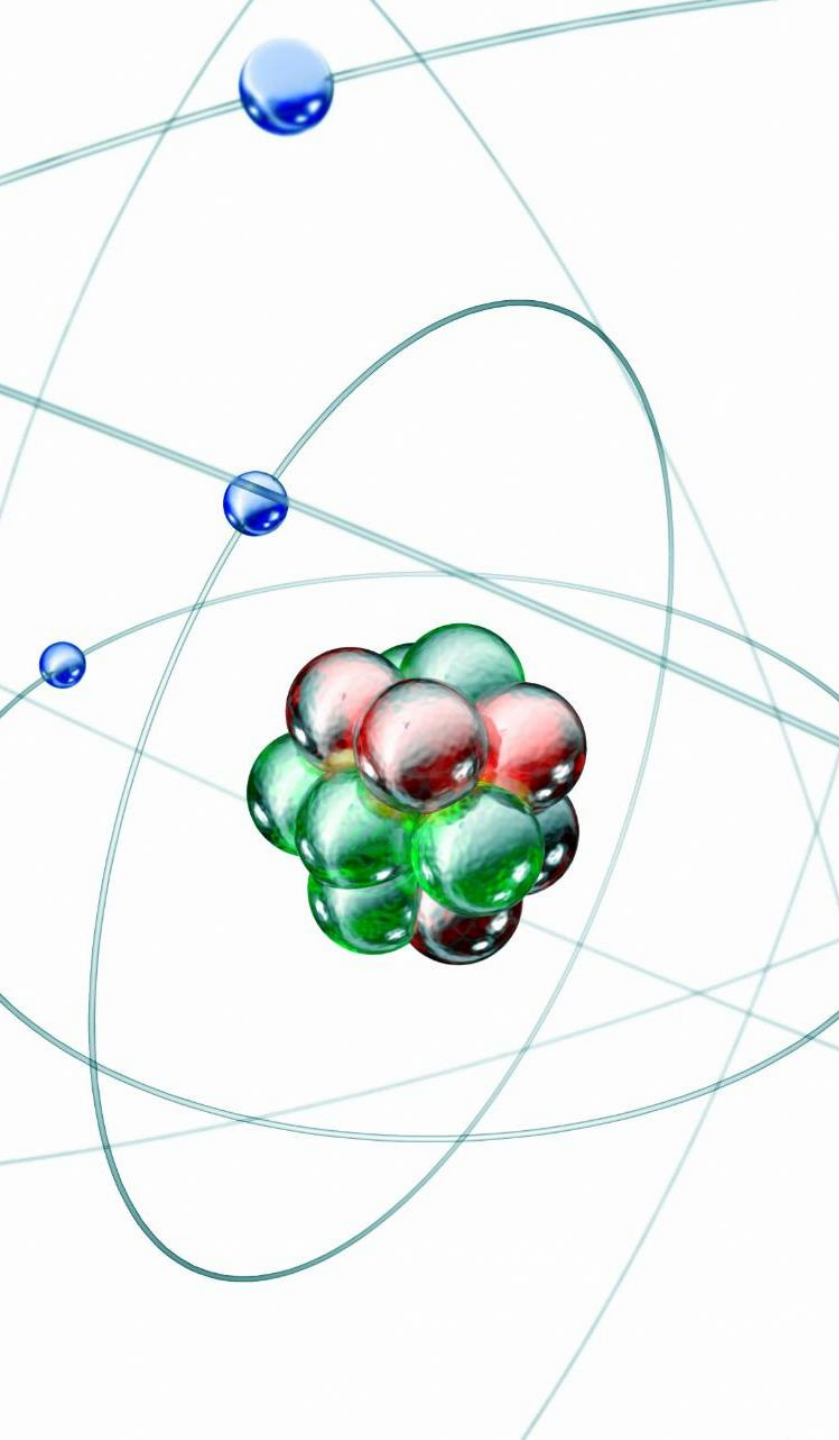
Methane traps heat more effectively over short periods, produced by livestock, rice paddies, and waste.

Nitrous Oxide Effects

Nitrous oxide, from agricultural fertilisers, has powerful and long-lasting climate effects.

Carbon Dioxide Equivalent

Emissions are measured in CO₂e to compare varied greenhouse gases' impact accurately.



How Much Carbon Does Your Day Produce?

*CO₂e (carbon dioxide equivalent) lets us compare very different activities using one common unit.
Which figure surprised you the most?*

0.014g

Sending a text message

~4g

Sending one email

200g

Sending a letter

710g

Taking a taxi for 1km

64kg

Train: London–Glasgow return
(660km)

500kg

Short-haul flight (900km)

3.5t

Long-haul flight, economy

10t

Long-haul flight, business class

The same activity can vary hugely depending on energy source and how full the vehicle is. The goal is informed choice, not guilt.

Not All Actions Are Equal

High Impact — focus here first

Flights (especially long-haul) · Daily transport choices · Diet (meat consumption)
· Household energy use

Medium Impact

Food waste · Shopping habits · Delivery & packaging choices

Lower Impact — still useful

Emails and texts · Small packaging decisions

A single long-haul flight can produce more emissions than hundreds of small daily actions combined. Green innovators think in terms of impact per effort. Focusing on impact per effort enables effective climate solutions rather than symbolic gestures.



The Natural Carbon Cycle & Carbon Sinks

Carbon moves continuously between the atmosphere, oceans, soil, plants, and animals.

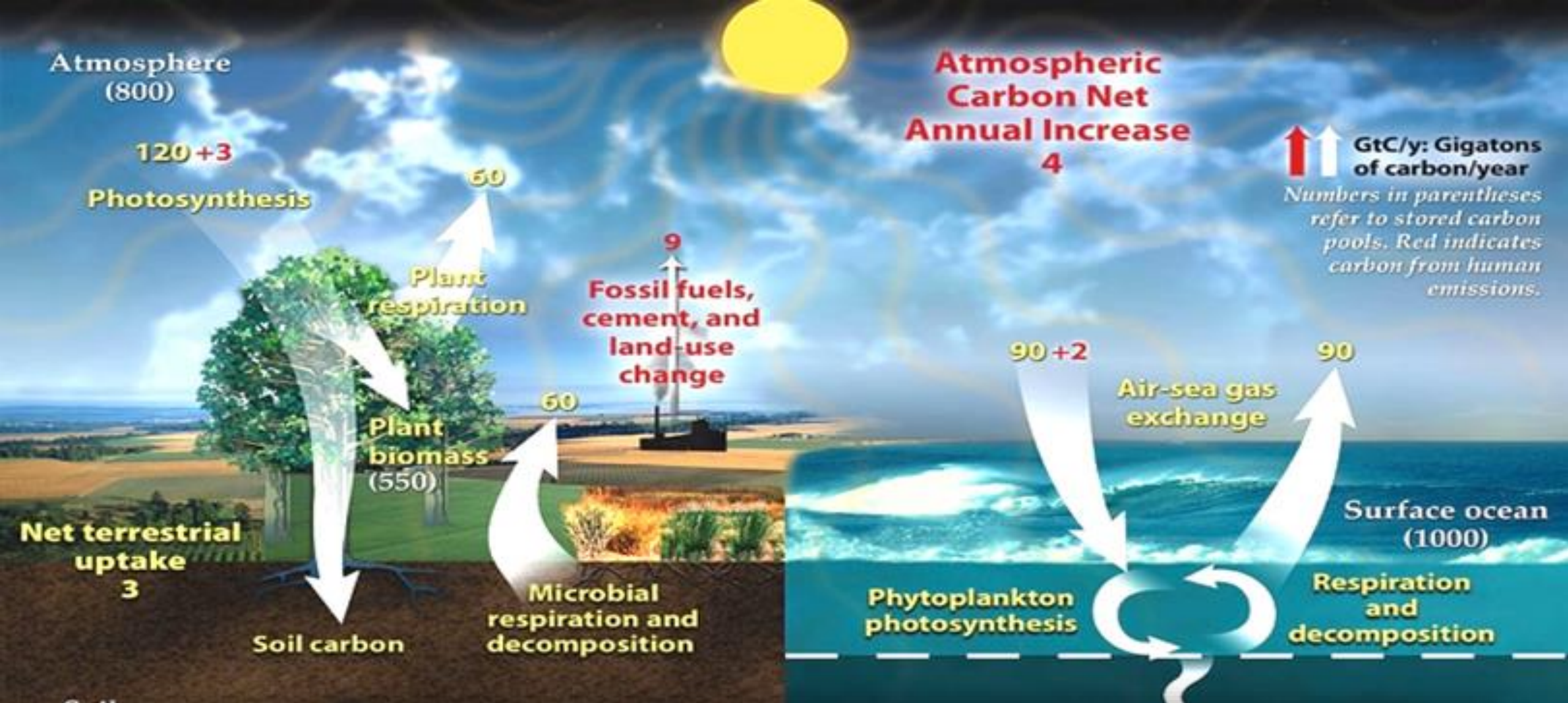
A carbon sink is any process or place that removes more CO₂ from the atmosphere than it releases.

The problem is not simply that we emit more carbon — it is that we are simultaneously destroying the sinks that would otherwise absorb it.



Three Major Carbon Sinks

- Forests — store ~45% of all land carbon
- Oceans — absorb ~25% of human CO₂ emissions yearly
- Soil — holds 3x more carbon than the atmosphere
- 50% of soil carbon has been released in the last century (FAO, 2019)



Natural Carbon Cycle



A Cup of Coffee — How Your Drink Connects to the Climate

CASE STUDY

Traditional shade-grown coffee is cultivated under a forest canopy — protecting soil, supporting wildlife, needing little chemical fertiliser.

Sun-grown coffee produces more beans per hectare — but requires cutting down the forest canopy first. Soil erodes, biodiversity collapses, and heavy fertiliser is needed to stay productive.

Shade-grown, organic, and certified 'bird-friendly' coffees cost more — but carry far lower environmental costs.

"Every purchase is a choice about which system you are supporting. That is what green innovators think about."

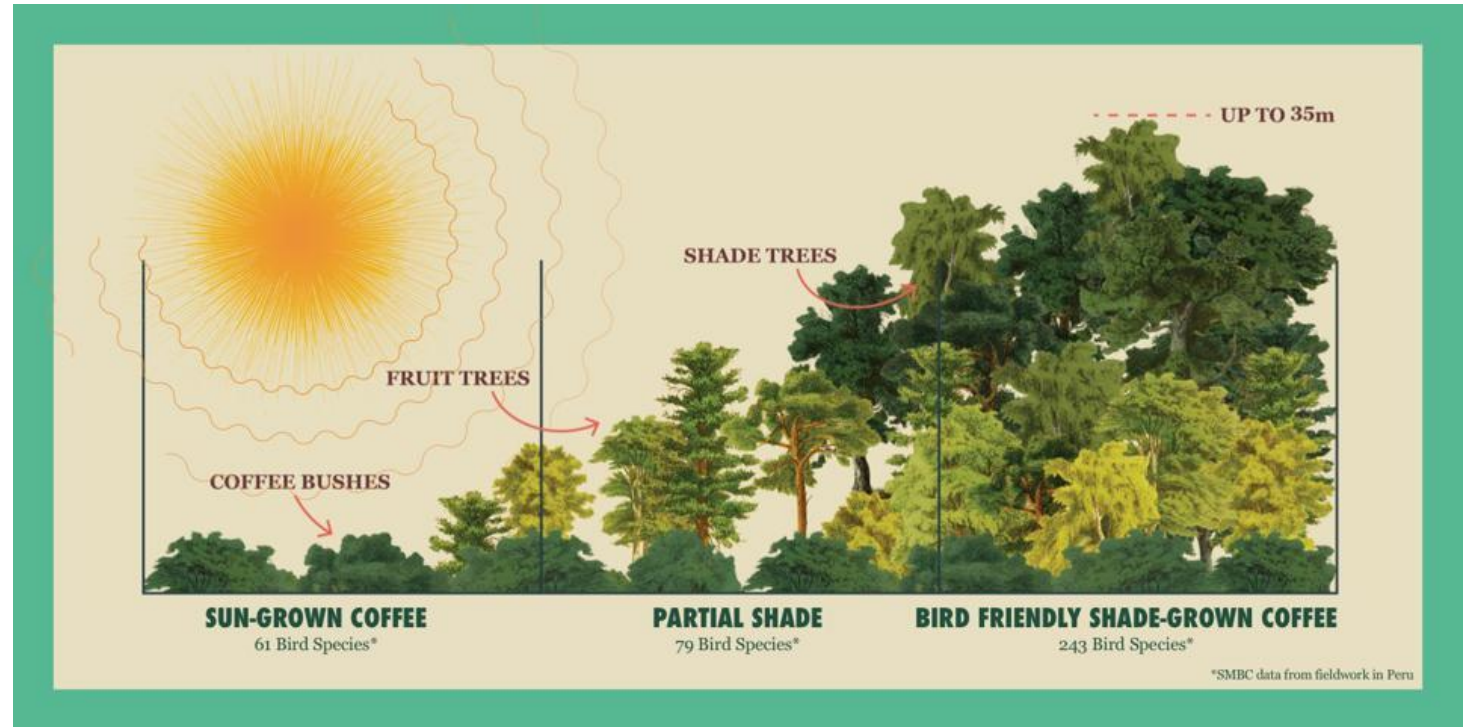
2.5M

acres of Central
American forest
cleared for sun-
grown coffee

Shade-Grown Coffee (carbon sink)

The difference between shade-grown and certified bird-friendly shade-grown coffees.

(Credit: Smithsonian Migratory Bird Center / CC0)
SMITHSONIAN
MIGRATORY BIRD CENTER
VIA A CREATIVE
COMMONS LICENSE



Why Does All This Matter?

Category	What is happening	Why it matters to people
Environmental	Sea levels rising, glaciers melting, extreme weather, coral reefs dying	Coastal communities face flooding & displacement; food chains disrupted
Social	Poorer communities are hit hardest — fewer resources to adapt or recover	Smallholder farmers & fishing communities are on the front line
Economic	Supply chains disrupted, yields declining, infrastructure damaged	Viet Nam's economy is deeply tied to agriculture, aquaculture & tourism

Climate justice: those who suffer most from climate change often contributed least to causing it.

Soil And Carbon Sinks

- Estimated that 50% of the carbon stored in soil has been released into the atmosphere in the last century due to long-term conversion of grassland and forest into cropland.
- Estimated that 1/3 of GHG emissions are from agriculture (FAO, 2019).



A sink is defined as a process or an activity that removes greenhouse gas from the atmosphere ([FAO, 2019](#))

- Therefore agriculture has potential to mitigate climate change through increasing soil carbon.
- It is predicted that soil can sequester 10% of total anthropogenic emissions of carbon in 25 years (FAO, 2019).
- Regenerative agriculture could sequester 10% of global emissions. Why don't we hear more about this as a climate solution?

<https://www.drawdown.org/solutions/food/regenerative-agriculture>

Regenerative Agriculture — Farming as a Carbon Sink



No Tillage

Disturb the soil as little as possible



Diverse Cover Crops

Feed soil microorganisms between cycles



In-Farm Fertility

Compost & manure instead of chemicals



No Synthetic Inputs

Avoid chemicals that harm soil biodiversity



Crop Rotation

Different crops in sequence maintain soil health



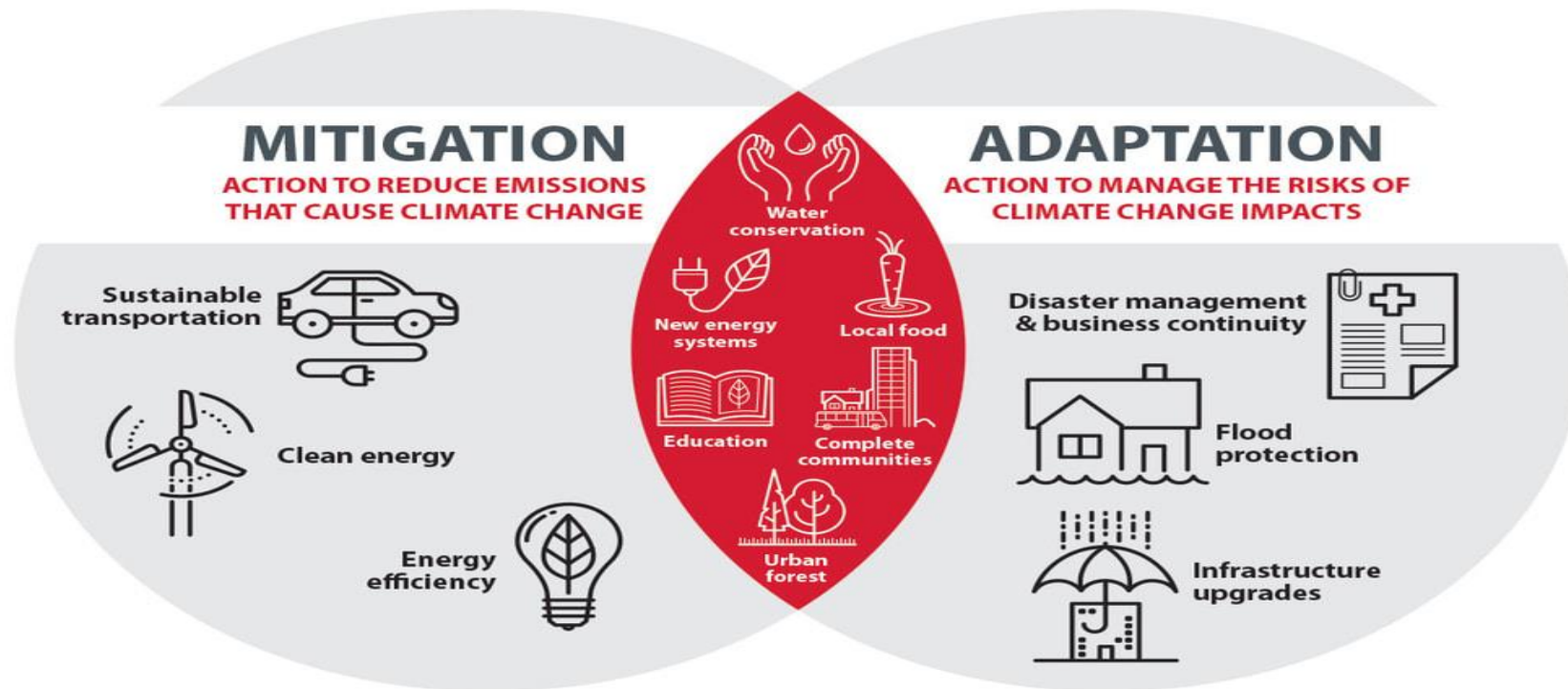
Shade-Grown Coffee

Trees sequester carbon & prevent deforestation

Improving soil health could sequester up to 10% of global emissions over 25 years — without new technology (FAO, 2019).

More about adaptation and mitigation

Building Climate Resilience



PRME Principles for Responsible
Management Education

PAUSE & REFLECT

Before Moving On



- What did you think climate change was about before today? Has anything changed?
- Which daily activity do you think creates the most emissions for you? Why?
- Who, in your community or country, is most affected by climate change right now?





KEY TAKEAWAY

Chapter 1 — Understanding Climate Change



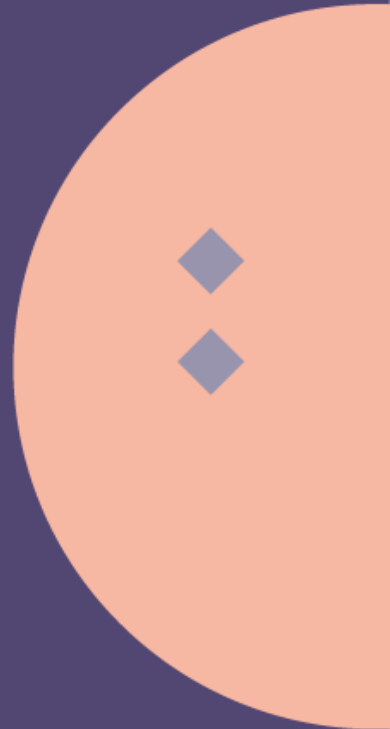
- Climate change is caused by human activity — burning fossil fuels, deforestation, and farming practices that release greenhouse gases faster than natural sinks can absorb them.
- We are simultaneously destroying the forests, soils, and oceans that would otherwise absorb them. Understanding both sides — sources and sinks — is essential.
- The language in this chapter is a tool you will use throughout this programme — you don't need to memorise definitions, just understand what they point to.



MORNING BREAK

11:00 – 11:30

Session 2 begins at 11:30 — Climate Reality & The Green Economy





Climate Reality · The Green Economy

SESSION 2

11:30 – 12:30

Chapters 2 & 3 of the Learning Manual

The Climate Reality in Viet Nam

Viet Nam is ranked among the five countries most vulnerable to climate change in the world.

- Understand how climate change is already affecting people in Viet Nam
- See real examples from farms and cities
- Learn that climate problems are caused by many connected factors
- Start thinking more carefully about "green" solutions



The Mekong Delta — Viet Nam's Rice Bowl

CASE STUDY — AN GIANG PROVINCE

Sea levels rising push saltwater further into farmland during dry season — saltwater intrusion. Rice crops that grew for generations are now failing.

The delta is also sinking — up to 2.5cm per year from groundwater extraction. Floodwaters that once carried free, nutrient-rich silt are now trapped behind upstream dams.

Farmers now spend more on fertiliser to compensate. Some have sold their land and moved to factories in Binh Duong.

Has anyone here experienced a change in flooding, rainfall, or crop patterns in their area?

This is not one farmer's bad luck. It is a systemic disruption reshaping rural livelihoods across the delta.

56%

of Viet Nam's rice is
grown in the Mekong
Delta

Ho Chi Minh City — When the City Floods

CASE STUDY — 2019 THỦ ĐỨC FLOODING

Every rainy season, flooding paralyses parts of HCMC. The city paved over wetlands and canals that once absorbed rainfall; the drainage system, built for a smaller city, can't keep up.

Climate change makes rainfall more intense — but the city's own development choices made it vulnerable in the first place.

Who has personally experienced flooding in their city or neighbourhood?

"I waited two hours. My motorbike broke down in the water. I lost a whole day of part-time work. — Student account"

\$1B+

estimated annual
economic cost of
flooding in HCMC

Beyond Flooding — Other Impacts to Know



Heat

+0.5–0.7°C
over 50
years; more
extreme
heat days



Storms

Typhoons
becoming
more
intense
when they
hit



Drought

Central
Highlands &
coast face
severe dry
seasons



Fisheries

Warming,
acidifying
oceans shift
fish
populations



Health

Heat stroke,
respiratory
illness,
dengue
expansion

Add one local example per row in your Workbooks.

The Electric Car Question — Is It Really Green?

EVs produce zero direct emissions when driven. No exhaust pipe — no pollution, right? Not quite.

If the grid is powered by coal, you're still burning coal — just at the power station instead of in the engine. ~50% of Viet Nam's electricity still comes from coal and gas.

Batteries need lithium, cobalt, and nickel — often mined under harmful conditions. Manufacturing an EV also takes more energy than a petrol car (embedded carbon).



So What's the Answer?

- EVs are part of the solution — but not automatically 'clean'
- As Viet Nam's grid gets cleaner, the same EV gets greener over time
- A petrol car never gets cleaner
- Green decisions are about choosing better, not perfect



Think About Your City or Region.

- What is the most visible climate impact where you live? Give a specific recent example.
- Who in your community is most affected by that impact — and who is least affected?
- Can you think of another 'green' solution that might have hidden costs or complications?

Open your Workbook to the Climate Impact Mapping activity.

→ *This is quiet, individual work — not what you've read, but what you've seen*



Listen to your partner climate story, capture that in your workbook.

PAUSE & REFLECT



"Listen Without Fixing"

Practise genuine listening — one of the most important skills for a green innovator — without offering advice

Listen to your partner climate story, capture that in your Workbook.

- Pair with someone you do not know well
- Each person shares for 6 minutes, then you swap
- The interviewer listens & takes notes — no advice, no own stories, few questions
- After both stories: 3 minutes of quiet reflection writing

What was it like to just listen — without fixing or advising?





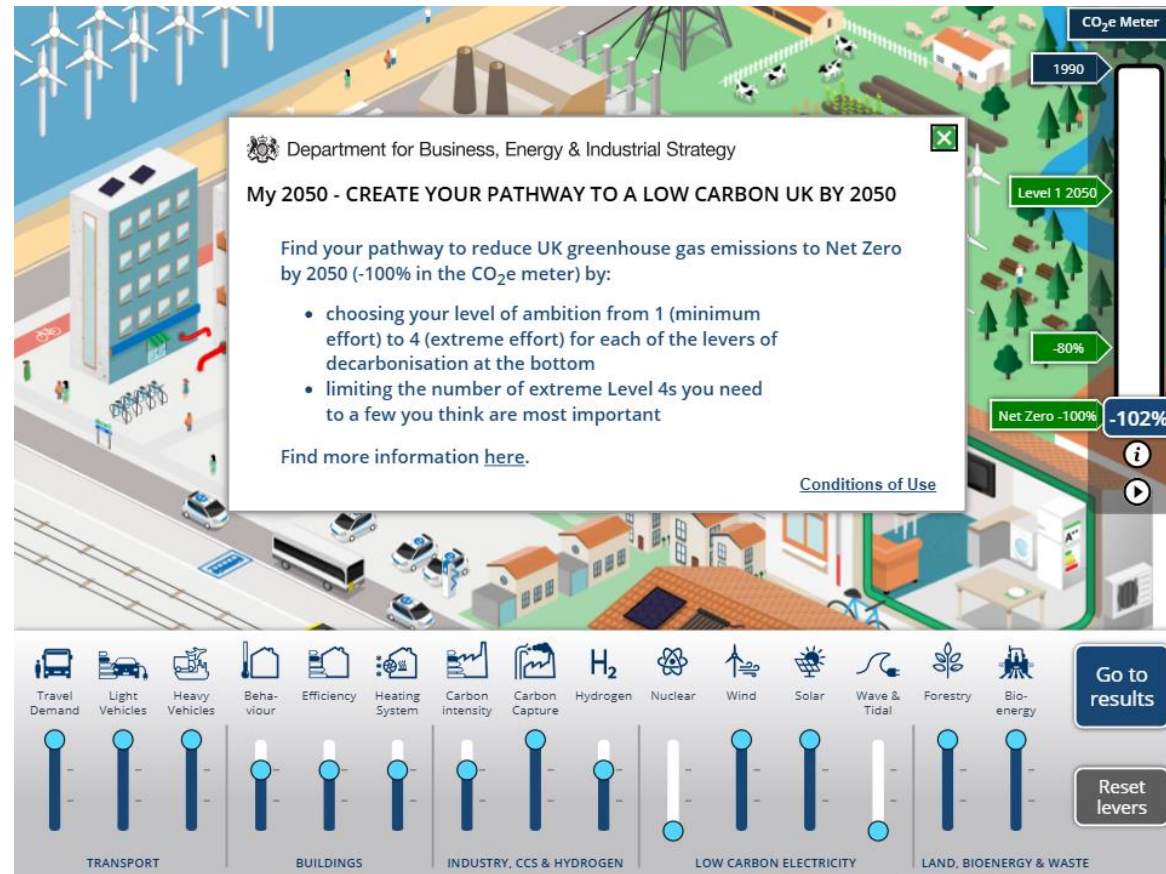
KEY TAKEAWAY

— The Climate Reality in Viet Nam



- Climate change in Viet Nam is not a future threat — it is a present disruption affecting farmers, city residents, fishers, and workers right now.
- Understanding local impact is the first step to finding local solutions.
- Understanding the full picture — not just the obvious answer — is what separates a thoughtful green innovator from someone who follows trends.

Low Carbon pathway



"Vietnam 2050 Pathways Calculator" is developed from the UK's 2050 Calculator on the basis of an energy balancing model

The Green Economy

Can a country be wealthy and environmentally responsible at the same time?

- Understand what the green economy is — and why it is about both people and the planet
- Learn the difference between traditional businesses, social enterprises, and green enterprises
- Explore the circular economy, greenwashing, net zero, carbon neutral, and offsetting
- See how Viet Nam is already shifting towards green growth and green jobs





Most people assume the green economy means banning things and slowing down growth.

- What do you think?

What Does 'Green Economy' Actually Mean?

UNEP defines it simply: a green economy produces human wellbeing and social equity while significantly reducing environmental risks and resource scarcity.

In plain language: an economy that works for people and for the planet at the same time.

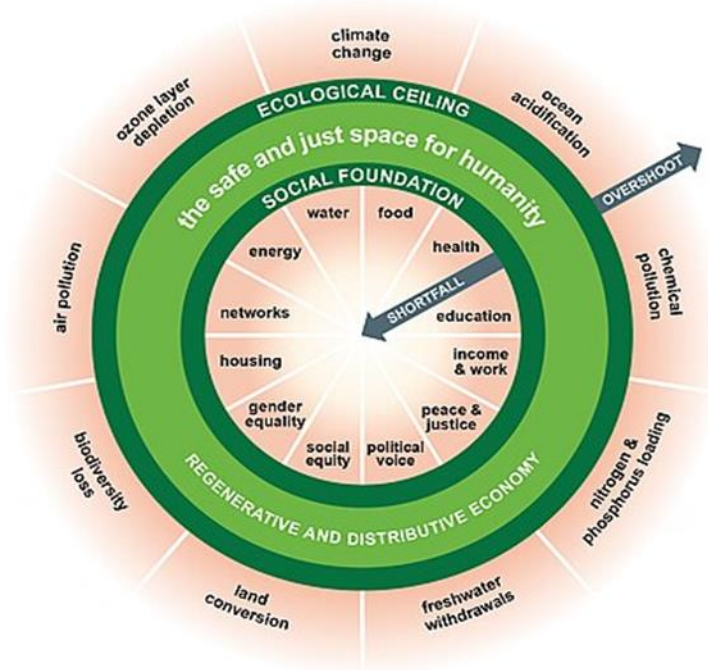
Most economies today assume natural resources are free and infinite. The green economy says: they are not. We need to account for them.



Markets Need Government

- Setting rules & standards (pollution limits)
- Providing incentives (renewable energy subsidies)
- Investing in infrastructure (transport, clean grids)
- Large-scale change needs coordinated action

Doughnut Economics — A Better Goal



Developed by Kate Raworth — how can we meet everyone's needs without damaging the planet?

Inner Ring: Social Foundation

Food, water, housing · Education, healthcare
· Income, equality

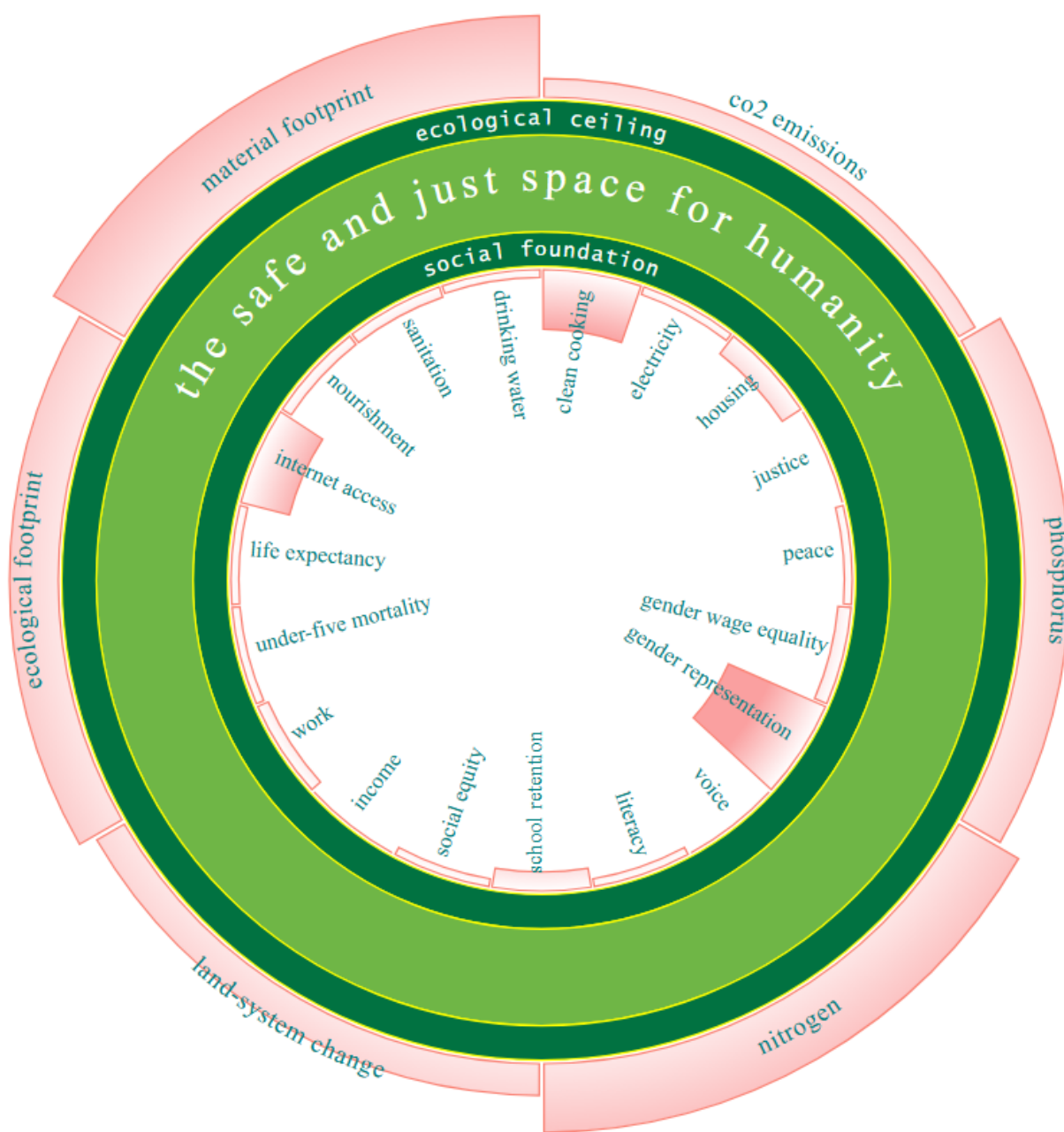
Outer Ring: Ecological Ceiling

Climate change · Biodiversity loss ·
Pollution, deforestation

The model is shaped like a doughnut

(Source <https://doughnuteconomics.org/doughnut>)

Traditional economics asks 'how do we grow GDP?' Doughnut Economics asks 'how do people thrive without overshooting limits?'



Global performance 1992 and 2015

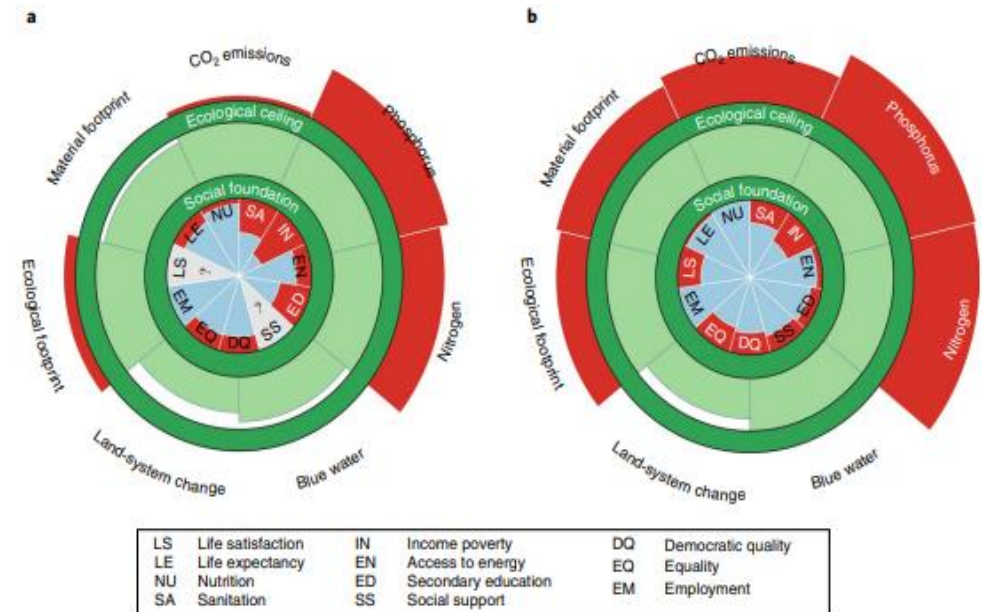


Fig. 1 | Global performance relative to the doughnut's safe and just space, on the basis of the biophysical boundaries and social thresholds measured in this study. a, 1992. b, 2015. Dark green circles show the ecological ceiling and social foundation, which encompass the doughnut of social and planetary boundaries. The blue wedges show average population-weighted social performance relative to each social threshold. The green wedges show total resource use relative to each global biophysical boundary, starting from the outer edge of the social foundation. Red wedges show shortfalls below social thresholds or overshoot beyond biophysical boundaries. Grey wedges show indicators with missing data.

Case Study: Viet Nam's Solar Revolution

2017 → 2020

In 2017, Viet Nam had almost no solar power. By 2020, it had more installed solar capacity than any other Southeast Asian country.

A government 'feed-in tariff' guaranteed electricity prices, making rooftop solar economically logical for households and businesses.

Not perfect: rapid expansion outpaced the grid, leading some provinces to curtail solar generation — a systems problem still being solved.

Has anyone seen solar panels on homes or buildings near them? Do you know why the owner installed them?

"Green economy transitions are real, possible, and imperfect — they create new challenges as they solve old ones."

#1

in installed solar
capacity,
Southeast Asia,
by 2020

Three Types of Organisation

Type	Core Goal	Real Example
Traditional Business	Maximise profit; environment/social secondary	Beverage company using single-use plastic until regulation forces change
Social Enterprise	Create measurable social impact first	Vocational centre teaching waste collectors, funded by recycling revenue
Green Enterprise	Economic value AND environmental benefit — twin, inseparable goals	Startup turning rice straw into biodegradable packaging

A traditional business sponsoring tree-planting is CSR, not a green enterprise. The two are not the same.

STUDENT EXCERCISE

Chapter 3 · The Green Economy



"Traditional, Social, or Green?"

Complete the table in your Workbooks including a local Viet Nam example for each type.

Can you think of a business in Viet Nam that is a genuine green enterprise by this definition?



Milk Tea Cup — A Circular Economy Story

CASE STUDY

Crude oil → refined into plastic pellets → moulded into cups → shipped → used for ~20 minutes → thrown away.

It takes ~450 years to decompose, breaking into microplastics that enter waterways, soil, and food chains long before that.

Circular economy asks: what if it never became waste? Vietnamese startups now collect, shred, and remould used cups into new ones.

Trace your cup lifecycle in your Workbooks.

"Redesigning the system so the 'end' of one product becomes the 'beginning' of another."

450yrs

for a single plastic
cup to
decompose



Not Everything 'Green' Is Actually Green

As sustainability grows in popularity, more products are labelled "eco-friendly" or "green" — but not all claims are meaningful. This is called greenwashing.

A company switching to paper straws while continuing large-scale plastic production makes a visible change — not necessarily a meaningful one.



Ask These Questions

- Is the claim specific or vague?
- Does it change the core system, or just packaging?
- Does it reduce harm, or only offset it?
- What is not being mentioned?

Net Zero, Carbon Neutral & Offsetting

Term	Main Idea	Priority
Offsetting	Pay or support reductions elsewhere (tree planting, renewables)	Last step
Carbon Neutral	Balance emissions with offsets/removals — doesn't always mean low emissions	Often accounting-focused
Net Zero	Cut emissions as much as possible first, then balance only what remains	Real transformation

The most credible claims focus on reducing emissions first — not just balancing them on paper.



Green Jobs — A Growing Opportunity

The green transition creates real, practical employment — not only high-tech roles.

24M

new green jobs
globally by 2030 (ILO
estimate)

4,000+

innovative startups in
Viet Nam

~300

of them focused on
green transition

6

growing sectors:
solar, agriculture,
eco-tourism, waste,
consulting, EVs

Many green jobs are practical, skilled, and local — they don't require a university degree, but do require sustainability knowledge.

Good, Better, Best — Thinking in Levels

Many environmental decisions are not simply "right" or "wrong." They exist on a spectrum.
Example: Transport.



The goal is not perfection — it is improvement. Progress comes from choosing better options consistently.



KEY TAKEAWAY

— The Green Economy



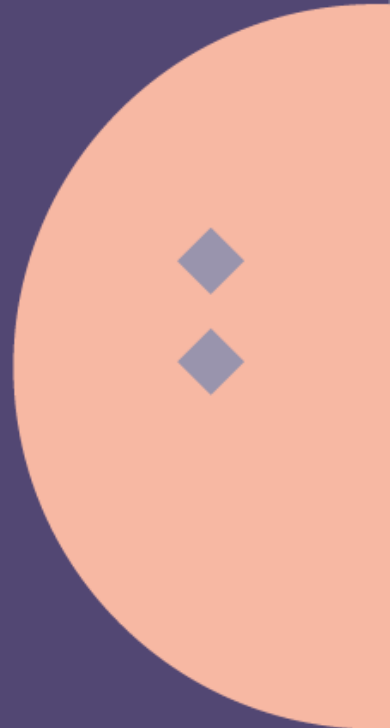
- The green economy is not about choosing between growth and the environment.
- It is about building an economy clever enough to do both — designing out waste, creating better jobs, and building systems that sustain themselves.



LUNCH BREAK

12:30 – 13:30

Session 3 begins at 13:30 — Green Innovation & The Mindset of a Green Innovator





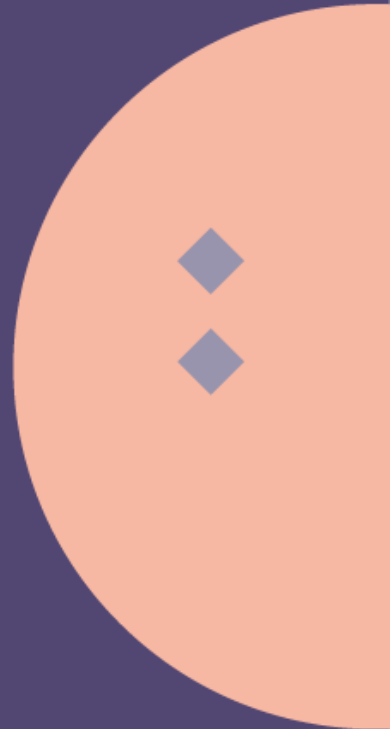
Green Innovation · Mindset of a Green Innovator



SESSION 3

13:30 – 15:30

Chapters 4 & 5 of the Learning Manual



Green Innovation



'Green innovation' sounds like it belongs in a laboratory. It doesn't.

- Understand what green innovation is — and that it can be simple or high-tech
- See real examples of green solutions in Viet Nam and everyday life
- Learn the main types of green innovation
- Start thinking about how you can create your own green solution

What It Is and Who Does It

Green innovation is simply finding new — or better — ways to solve problems that affect people and the planet. A new technology, business model, community practice, or policy.

What makes something 'green' is not the technology — it is the intention and outcome: does it reduce harm, use fewer resources, or help communities adapt?

<https://biochar-international.org/about-biochar/>



You Are Already Part of This

- Vietnamese youth start green businesses & run clean-up campaigns
- Central Youth Union runs national carbon-reduction campaigns
- Graduates work on biochar agriculture & rice straw packaging
- Young people are not the future of green innovation — they are the present

Six Types of Green Innovation



Clean Energy

Sun, wind, water,
geothermal, waste-to-energy



Circular Economy

Keeping materials in use,
designing out waste



Sustainable Agriculture

Protecting soil, water,
biodiversity & farmer income



Waste & Plastic Solutions

Capturing materials before
they become pollution



Climate Adaptation

Helping communities adapt
to changes already locked in



Nature-Based Solutions

Using healthy ecosystems to
solve challenges



STUDENT EXERCISE

Chapter 4 · Green Innovation

“Six Stations, Six Solutions”

Rotation Instructions

- Divide into six groups — Each group starts at a different station
- Spend 4 minutes at each station
- Add a local example + a problem it could solve. Build on what's already there.
- Rotate when instructed
- Keep ideas clear and short

STUDENT EXERCISE

Chapter 4 · Green Innovation

After the Rotation

- Look at all stations
- Which station had the most interesting example?
- Notice patterns across stations
- Think about connections between solutions
- What does overlap between stations tell us?

“What Problems Do We See?”

- Use post it notes provided
- Write one specific problem you have observed
- Be clear about where and who is affected
- Use a short sentence
- Place your note on the wall

Think Deeper- Group discussion

- Looking at the wall what patterns do you see?
- Are there any problems that surprise you?
- Which problems are connected?

Please vote on the 3 problems you most want to work on.
Use 3 dot stickers.

PAUSE & REFLECT



Look Back at the Six Types

- Which type is closest to a problem you personally care about?
- Can you think of a green innovation you've already encountered, even if you didn't call it that?
- If you started a green innovation project tomorrow — using only what you have right now — what would you try?

Remember to use your workbook to capture that.



People Like Us Are Already Doing This



Rice Straw Packaging

Mekong Delta

Young graduates turned burned agricultural waste into biodegradable food packaging. Failed early, iterated, found buyers. A circular economy solution born from a local problem.



Ve Chai Cooperatives

Ho Chi Minh City

Informal waste pickers organised into cooperatives with smartphones, safety gear, and direct buyers. Incomes up 30–40%. A social + green enterprise in one.



Floating Gardens

Hue & Quang Nam

Women's groups revived traditional knowledge to grow food on water hyacinth rafts during floods. No funding, no technology — only community and adaptation.

The gap between observer and innovator is smaller than most people think.



KEY TAKEAWAY

— Chapter 4 — Green Innovation



- Green innovation is not one thing — it is a family of approaches, from clean energy to circular economy to nature-based solutions.
- The most powerful innovations often combine several types.
- Many of the best ideas come from ordinary people paying close attention to local problems.



The Mindset of a Green Innovator

Knowledge alone is not enough. The world lacks people who know how to respond to information.

- Learn how to think like a green innovator — not just know information
- Understand how to look at problems as connected systems
- Learn that failure is part of learning and improving ideas
- Start thinking about ethics — who benefits, and who is affected



Seeing What Is Actually Connected

Take a plastic bag floating in a canal. The obvious response: 'someone littered — put up more bins.'

Systems thinking asks: why was there a bag to litter in the first place? Who manufactured it? Why do shops still use it? Who profits, and who loses?

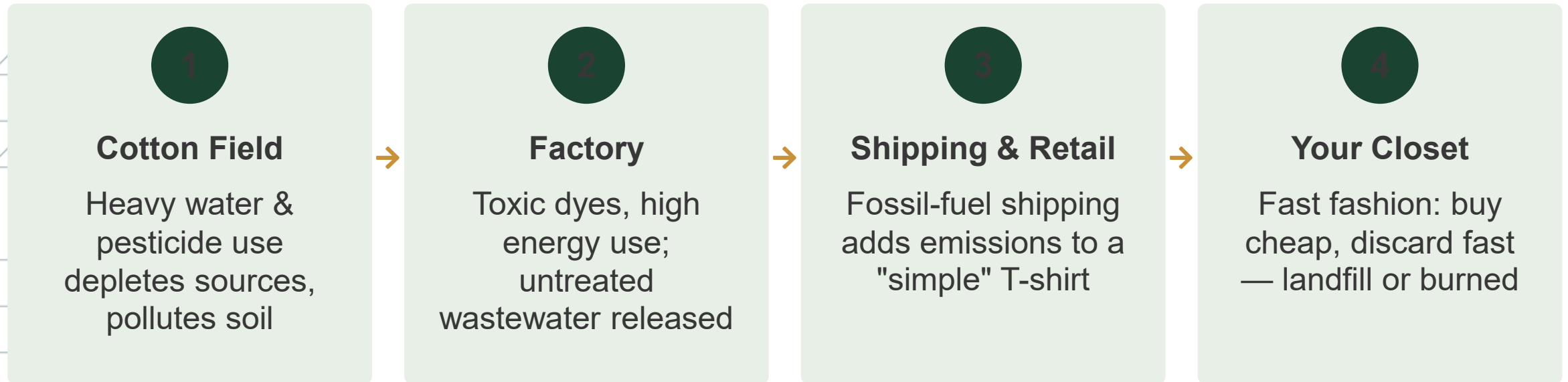
Changing individual behaviour without changing the system produces limited results.



The Insight

- A system of production, distribution & waste management
- Makes plastic the easiest, cheapest option at every stage
- Real change means redesigning the system, not just behaviour

Tracing Your T-Shirt



Leverage points: Design (recycled fabric, natural dyes) · Business Model (Áo Dài rental, second-hand swap) · Policy (universities buying only from green enterprises) · Consumer (quality over quantity)

Where in this system could a green innovator intervene? Which leverage point would create the biggest ripple?

Why People Don't Change (Even If They Care)

It's tempting to think the solution is simple: people just need more information or to care more. But real behaviour is more complex.

Even if a student knows fast fashion is harmful, cost, convenience, and social norms can all override good intentions.



Good Solutions Are...

- Not just environmentally better
- Easier, cheaper, or more 'normal' to use
- Designed to fit into real lives — not just raise awareness

The Systems Map — A Tool You Can Use Right Now

1

Write the problem in the centre

Naming it precisely reveals hidden assumptions

2

Add causes (arrows pointing in)

Causes are often multiple & interconnected

3

Add effects (arrows pointing out)

Effects often cascade into new problems

4

Identify feedback loops

Where effects loop back to become causes

5

Look for leverage points

Small interventions that shift the whole system



Plastic Waste in a University Canteen

WORKED EXAMPLE

Causes (in): cheap packaging for vendors → no plastic ban/fee → student convenience habits → no reusable alternative → vendors not incentivised.

Effects (out): bins overflow → landfill or waterways → microplastic pollution → image problem → student health concerns.

Feedback loop: more plastic → recycling contaminated → recycling rate drops → vendors assume nothing can be done → more plastic used.

"Leverage points are almost all upstream: vendor subsidies, a reusable cup deposit, a student collection scheme, a university purchasing policy."

STUDENT ACTIVITY

Chapter 5 · Mindset of a Green Innovator

Edinburgh Napier
UNIVERSITY

Centre for Business
Innovations &
Sustainable Solutions
The Business School

Mapping the Whole System

Choose one problem from the Green Problems Wall and map it together — duplicates across groups are fine.

Use your Workbook to record your thinking. Put your map on a large paper. Ask 'why does THAT happen?' 2–3 levels deep for each cause.

Post your maps on the wall. Each group has 90 seconds to name one surprising insight.

A systems map is never complete — but it always reveals more than a list does. The most valuable insight is usually the feedback loop: where an effect makes the original problem worse.

Where Can You Make the Biggest Change?

WEAK

Awareness campaigns,
asking individuals to change
behaviour
*e.g. Encourage fewer plastic
bags*

STRONGER

Changing incentives —
prices, rewards, penalties

*e.g. Charge a fee for plastic
bags*

MOST POWERFUL

Changing the system itself —
rules, infrastructure, defaults

*e.g. Ban single-use plastics
entirely*

The most effective solutions are often earlier in the system — design, policy, incentives — not at the end (waste).

A Student Team and the Composting System

DA NANG, VIET NAM

Students designed a compact composting bin for apartment residents — elegant design, clear instructions, pilot-tested successfully.

After distributing 30 bins, almost none were used after two weeks. The bins smelled, and in shared corridors, that was a serious social problem.

The team redesigned with a sealed carbon-filter lid. Uptake improved dramatically.

What assumption did the team make that turned out to be wrong?

What question should they have asked before building?

Identifying it is how you turn failure into a learning opportunity.

30→0

bins used in week
one, before the
redesign

Back to the Electric Car — Who Bears the Cost?

EV batteries need 5–10kg of cobalt each. ~70% of the world's cobalt comes from the DRC, mined under dangerous conditions, sometimes involving child labour.

Those who mine cobalt are among the world's poorest. Those who drive the EV are typically wealthy enough to afford one.



The Ethical Questions

- Is it right to pursue EVs without addressing material sourcing?
- Who should pay for cleaner mining — consumer, maker, or government?
- Solutions that shift harm elsewhere are relocations, not solutions

Embodied carbon/carbon footprint of a car



25 tonnes CO₂e
Range Rover Sport HSE

Calculation by Mike Berners-Lee
How Bad Are Bananas? (2020; p.145)

25 tonnes is not much, or?..

High emitting countries:

Australia used 15.3 tonnes of CO₂
emissions per capita

Canada 13

China 7.6

EU 7.04

Qatar 32.8

US 17

Some of the most vulnerable countries and their
emissions:

Bangladesh at 0.5 tonnes of CO₂ emissions per
capita

Brazil 2.1

Kenya 0.4

Rwanda 0.1

Solomon Islands at 0.5

Data from The World Bank (2020), CO₂ emissions (metric tonnes per capita):
<https://data.worldbank.org/indicator/EN.ATM.CO2E.PC>

Green Solutions Are Complex

Trade-offs in Green Solutions

Green technologies often involve hidden costs such as energy use and material extraction that complicate simple sustainability claims.

Critical Thinking over Cynicism

Encourages moving beyond binary good-versus-bad views to analyse sustainability impacts across entire systems thoughtfully.

Ethics and Climate Justice

Highlighting who benefits and who pays introduces ethical reflection on uneven distribution of environmental costs and benefits.

How should that affect how we design solutions?





A Fair Transition — Who Wins and Who Loses?



What Can Be Disrupted

- Coal workers may lose jobs as energy systems change
- Farmers may need to adapt to new practices
- Small businesses may face new costs



A Just Transition Means

- People affected by change are supported
- New opportunities are accessible to all
- No group is left behind

*A solution is not fully sustainable if it improves the environment but harms vulnerable communities.
Remember Doughnut Economics principles.*

Innovation Is Not Only High-Tech



Mangrove Replanting

Ca Mau women
using traditional
knowledge



Organic Fertiliser

An Giang
farmers
switching from
chemical inputs



Tool-Sharing Library

Hanoi
neighbourhood
rotating rarely-
used items



Clothing Swaps

HCMC student
collective
reducing textile
waste



Reusable Baskets

Market
vendors
returning to
woven baskets

*What these share is not technology — it is awareness, organisation, and willingness to change a habit.
What is a simple, low-tech thing someone in your community already does that helps the environment —
even if nobody calls it innovation?*

PAUSE & REFLECT

Before Moving to the Reflection Log



- Which of the four mindset qualities feels most natural to you? Give one example from your own life.

Systems Thinking

Understanding interconnectedness helps innovators address complex environmental challenges holistically.

Learning from Failure

Embracing failure as a learning tool fosters resilience and continuous improvement in green innovation.

Ethical Awareness

Prioritizing ethics guides innovators to create solutions that are socially and environmentally responsible.

Low-Tech Creativity

Using simple, accessible technologies sparks innovative solutions that are sustainable and practical

- Which feels hardest — and why?





KEY TAKEAWAY

— Chapter 5 — The Mindset of a Green Innovator



A green innovator:

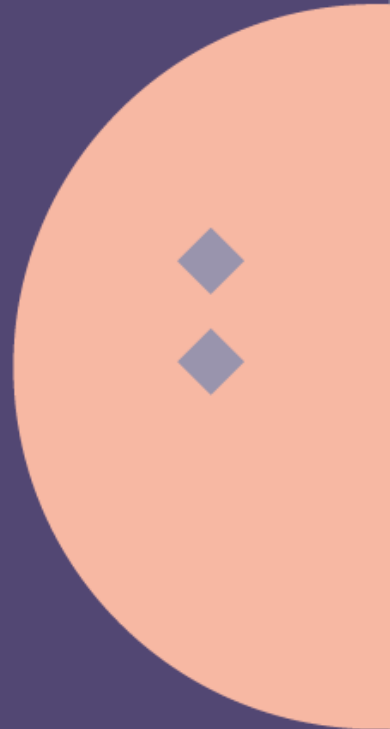
- Thinks in systems — tracing problems to their roots, not just their symptoms.
- Learns from failure — treating wrong assumptions as information, not defeat.
- Acts with ethics — asking 'who benefits?' and 'who pays?' for every proposed solution.
- Knows that innovation starts small — often with observation, community, and common sense



AFTERNOON BREAK

15:30 – 16:00

Session 4 begins at 16:00 — Wrap Up



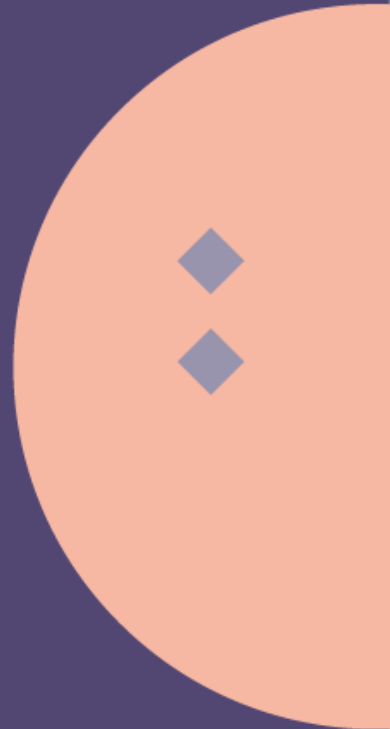


Wrap Up

SESSION 4

16:00 – 16:45

Review · Reflection · Looking Forward





Everything We Covered Today

1

Understanding Climate Change

Greenhouse effect · emissions sources · carbon sinks · CO₂e · climate language

2

Climate Reality in Viet Nam

Mekong Delta · HCMC flooding · heat, storms, drought · the EV question

3

The Green Economy

UNEP definition · Doughnut Economics · 3 org types · circular economy · greenwashing · green jobs

4

Green Innovation

Six types · clean energy · circular · agriculture · waste · adaptation · nature-based

5

Mindset of a Green Innovator

Systems thinking · systems map · learning from failure · ethics & climate justice



STUDENT EXERCISE

End of Day

Guided Reflection Log

Find a quiet space. This is private writing — no one will read it unless you choose to share.

Write honestly even if it's hard to articulate. Short answers are fine. The goal is to consolidate what today meant for you.

When ready, come back for the day's closing.

→ *If stuck: start with what surprised you most today. One sentence is enough.*



KEY TAKEAWAY

Day 1 — Five Messages to Carry Forward



- Climate change is a system problem — caused by how we produce energy, grow food, build cities, and consume goods.
- The green economy is not about sacrifice — it is about designing smarter systems that work for both people and the planet.
- Green innovation is diverse — from biogas digesters and rice straw packaging to floating gardens and clothing swaps.
- Mindset matters — systems thinking, learning from failure, and ethical responsibility are habits that develop through practice.
- Your choices connect to global systems — a cup of coffee, a plastic cup, a T-shirt, an electric car, each is a thread in a larger web.

What Does It Take to Be a Green Innovator?



**See the whole
system**



**Learn from
failure**



**Ask who
bears the cost**



**Start small
& local**



**Stay
curious**

*These are not personality traits you either have or don't — they are habits that develop with practice.
This programme is designed to give you that practice.*

GROUP ACTIVITY

Closing · Day 1



"One Problem, One Hope"

- Stand in a circle if the space allows
- Each person says two sentences — no more:
- "The problem I care most about is..."
- "One thing I want to understand or try is..."
- No elaboration, no applause between speakers — just listening.

→ *Facilitator will reflect back 2–3 themes heard across the room before closing*





LOOKING AHEAD

Today you mapped problems — real, local ones.

Tomorrow, you begin building the skills to actually do something about them.

- Idea generation & opportunity mapping
- User research & problem definition
- Prototyping & testing green solutions
- Building your green innovator toolkit

Come back tomorrow ready to test an idea.

FURTHER READING

Resources to Explore

VN Tiếng Việt

Cục Biến đổi khí hậu
dcc.gov.vn

Sản xuất & Tiêu dùng Bền vững
scp.gov.vn

Dấu chân carbon
vuphong.vn/carbon-footprint

English

Project Drawdown Explorer
drawdown.org/explorer

Our World in Data
ourworldindata.org

Global Carbon Atlas
globalcarbonatlas.org

En-Roads Climate Simulator
climateinteractive.org/en-roads

Science Based Targets
sciencebasedtargets.org



Thank You! Cám ơn!

Youth Green Innovators · Theme 1 · Climate Literacy & the Green Economy

See you tomorrow.