GP Lecture: The Environment (T3W6 2024)

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Is space considered part of our environment?

1. Definition

An environment is the combination of all of the physical, chemical, and biological factors acting upon an organism or an ecological community. The interaction of these factors determines the form and survival of living things and of the environment itself. (*Encyclopedia Britannica)*

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2. Value and Importance

significance

Importance:

> This is our home planet. Given that there is no other habitable planet that is comparable (not at least within the next few centuries), our existence depends on it. It is the source of all that we need to sustain life and we need to conserve it to ensure the continued functioning of modern life and society as we know it.

What value does the environment have for us?

- **Ecological value**: Natural ecological systems support the natural processes that allow for life on earth. They ensure biodiversity, climate management, water management, natural resource management, and others. Currently, we are staring our very extinction in the eye because for a span of a few hundred years, we forgot nature's ecological value.

- **Economic value:** Provisioning of raw materials for products that range from our basic needs to luxury goods and services, as well as energy, all of which help make up our current modern lifestyle. Besides that, our economies are driven by industries that derive their raw materials from nature, including forestry, agriculture and pharmaceutics. For Singapore, it contributes significantly to the tourism section through the intangible benefits it brings. Recently, with the efforts to save the environment, new sectors have emerged, such as carbon trading, green technology and recycling.

- **Cultural value:** Many cultures imbue elements in their natural environment with symbolism and significance, that continues to be important today. These help shape the identity of many peoples. E.g. Grand Canyon's wild, dramatic and almost harsh beauty represents America's Wild Wild West, which the first frontiersmen conquered.

- **Aesthetic Value**:
    - We appreciate nature for the beauty of its landscape, flora and fauna with many artists inspired by it. E.g. Van Gogh's painting - 'Starry Night'.
    - When we come face to face with the wonders of nature, we feel a visceral emotional response such as awe, wonder and joy. In that moment, we are removed from the quotidian concerns of life, the mundane routine details that can be almost soul-deadening. E.g. More dramatically, for Victor Frankl, nature's beauty took him away from the cruelties of life in the concentration camps.
    - There is a beauty in knowing that we are in the midst of greatness- the immensity of nature—that we are part of something greater. That sense of connection to a larger natural order is meaningful and beautiful.
    - Research reveals how nature's beauty can heal us on many levels. University of California, Berkeley psychologist Dacher Keltner and colleagues found that people who experience awe in response to nature's beauty have less health problems, e.g. lower levels of inflammation.

- **Educational value**: Of direct relevance are subjects such as Science and Geography, where natural phenomena and the natural world are investigated and specimen are required for hands-on learning. Nature helps foster personal growth and character development through adventure experiences. Where a sense of place is derived from natural heritage, nature can bring about a sense of belonging.

- **Recreational and social value**: Nature lovers find enjoyment but others find nature an optimal setting for various leisure activities, e.g. hiking, mountain biking, beach and water activities, e.g. beach volleyball. In this, nature is varied and able to meet the needs of different groups of people, and that in itself is irreplaceable.

(Adapted from "A Child's Place in the Environment", sponsored by the California Department of Education in cooperation with Konocti Unified School District)

Reflect, Connect, Apply (to gain insights and conceptual understanding)

As an urbanite, your relationship with nature will be different from someone who lives in a rural area. Exercise perspective-taking. How would it be different and why?

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3. Environmental challenges we face

- Man-made environmental problems:
    - **Loss of Biodiversity**: E.g. Decline of coral reefs due to coral bleaching caused by warming seas. Loss of livelihood and source of food.

- **Pollution and Environmental Degradation**: E.g. air pollution in cities like New Delhi, India due to emissions from vehicles, industry, and crop burning, affecting health and causing even loss of life.

- **Public Health Risks**: Habitat destruction in tropical regions increase the risk of zoonotic diseases like Ebola and potentially cause pandemics like COVID-19.

- **Resource Scarcity and Conflict**: E.g. Competition for water resources in the Middle East The management of the Nile River, for instance, is a source of diplomatic and geopolitical disputes among Egypt, Sudan, and Ethiopia, affecting regional stability and development.

- **The worse is yet to come.**
  - Climate change has caused more extreme and unpredictable weather patterns. Attempts to **halt** or even just to **slow down** the rate of carbon emissions are half-hearted. What about **reversing** and **repairing** damage done? We face a frightening future of death, pain, suffering, loss, social harms such as economic collapse and extreme inequality.

- **What is the worst case scenario?**
  - Global warming continues unbated.
  - Existential threat to all creatures including mankind, as they faced the prospect of widespread disasters at the level of mass loss of lives and damage.

4. Who is to be blamed?

- **Egocentric ethics**: An egocentric ethic is grounded in the self. The assumption is that the individual optimizing outcomes for himself will ultimately be optiziming outcomes for society. This supports therefore the extraction of resources from nature to benefit the self (or private corporation).

- **Homocentric ethics**: A homocentric ethic is grounded in society and is based on the assumption that policies should reflect the greatest good for the greatest number of people and that, as stewards of the natural world, humans should conserve and protect nature for human benefit. A homocentric approach can be illustrated by government charged with protecting the welfare of the general public.

- **Ecocentric ethics**: An ecocentric ethic is grounded in the cosmos. The whole environment, including inanimate elements, rocks and minerals along with animate plants and animals, is assigned intrinsic value. Of primary importance is the survival of all living and non-living things as components of healthy ecosystems. Based on moral grounds, all things in the cosmos as well as humans should be considered.

  Where most adopt an egocentric or homocentric perspective, the environment will continue to be secondary to their priority which is the human benefit.

Carolyn Merchant, 'Environmental Ethics and Political Conflict: A View from California',
https://nature.berkeley.edu/departments/espm/env-hist/articles/29.pdf

Who is to be blamed? [Looking at the Stakeholders]

- **Governments**, whose agenda includes gaining/ expanding/ maintaining power, influence and resources.
    1. Colonization (historical): *e.g. Resource extraction in Central Americas by European powers, Monoculture plantations introduced to S.E.Asia. [However, it is arguably true that we can't assign blame here since there was a lack of knowledge about man's impact on the environment in that moment of history.]*
    2. Govt's activities and self-interested policies to ensure economic growth, even at the expense of environmental destruction, *e.g. Australia allows coal mines to continue, Canada pulling out of any global climate treaty that limits carbon emissions in 2012.*
    3. War, *e.g. atomic bomb in Japan, Gulf War 1*
- **Businesses, Corporations, Industries**, whose agenda focuses on profit, to do so require revenue maximization and cost minimization.
    1. Industrial Revolution (historical)
    2. Exploiting resources without care for the environment, *e.g. clearing forests resulting in loss of habitats and so the extinction of species*
    3. Manufacturing processes pollute the environment, *e.g. pollutive by-products*
    4. , *e.g. e-waste*
    5. Non-biodegradable products and waste, *e.g. plastic*
    6. Industrial accidents that result in environmental disasters, *e.g. Deep Horizon*
- **Individuals/ Consumers,** whose motivation includes: Lifestyle and mindset that demands convenience, comfort, cheap products, a materialistic lifestyle, habit. A factor for some could be limited options due to poverty.
    1. Consumerism
    2. Disposable (use & throw) culture

- **All stakeholders are implicated, due to the "Tragedy of the commons"**: many interests have access to a common resource, and it may become depleted and unusable to everyone, because no interest can stop another from over-exploiting the resource. The tragedy of the commons asserts that if everyone has unlimited access to a resource, then in the long run it may become depleted and unusable. E.g. orbital space environment should be seen as a global commons worthy of protection by the United Nations.

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5. Looking into the future

Is there still hope? *Optimists say…*

- The experts are not sounding the doomsday bell yet. Capping the rise in global temperatures to 1.5 deg is an aspirational target. A fact-finding report suggests that it will prevent some of the worst possible irreversible changes. It is still possible to achieve the corresponding carbon emissions to achieve the 1.5 deg if steps are taken in the next few years.
- Aim for negative emissions through carbon capturing
- Man's inventiveness will create technology that helps arrest environmental degradation, e.g. green technology, carbon capture technology

- Nations are pulling together, galvanized by the woke movement, the need for self-preservation, the self-interested motivation of safeguarding long-term profits, facilitated by international platforms, e.g. the Montreal Protocol saw success
- Success in cutting carbon emissions by developed countries, e.g. EU and USA. Therefore, there is hope that this will continue through the rest of the world.
- The momentum away from fossil fuel reliance is gaining speed and will see a fall in carbon emissions from fossil fuel soon, according to the International Energy Agency

But if you are a pessimist, you may think 'it's too little, too late…'

However, even if you are pessimistic, can we choose not to do anything?

Moral Responsibility of mankind

- Man is the steward of nature. He has a duty to protect and maintain nature from which he benefits so much. He is responsible for ensuring the natural heritage is passed on to the following generations to come.
- Man is the guardian by virtue of his inborn capacity. His place in the evolutionary tree of life is beyond question and his uniqueness compared to other creatures undoubtable.
- Moral imperative to right the wrongs done

While environmental conservation should be a moral imperative for everyone, not every actor and stakeholder is able to and willing to step up.

Perspective 1: **Developed countries** should step up as

1. they have always been looked to for global leadership and their influence can persuade others in the global community to come onboard,
2. Furthermore, with their wealth, they can support global efforts for conservation as well as to manage climate effects.
3. Their existing technology and their ability to further innovate give the first world a headstart.
4. The clincher is that citizens are relatively well versed in environmental issues, and green practices such as recycling are already well established.
5. In addition, an argument often put forth by developing countries is that the developed countries polluted their way to prosperity during their long history of development, and especially during colonialism (for some), so it's their responsibility.

However, challenges remain.

- The need for continued economic growth will remain as livelihoods are at stake. However, it is arguably a short-term view that focuses on immediate needs instead of long-term sustainability. In many developed countries, there therefore remains a lack of political willpower for governments to push through green policies often seen as hindrances to industrial activity and economic growth.

Perspective 2: **Developing countries** should step up.

1. Since they will suffer inordinately from climate change (as compared to the developed countries), so they must feel an especially urgent need to push forth measures to counter climate change.

moral responsibility

2. It is also undeniable that they are currently key contributors to carbon emissions as much of the heavy industries are based in the Global South.

However, challenges abound.

- The government's priority is to help its people meet their immediate basic needs first, then to allocate precious budget on green issues, so it's hard to take the green initiative in the face of their people's suffering.
- The governments lack the budget and systems to enforce regulations. They also lack the necessary technology to leapfrog older methods to employing clean production processes.
- Many of the poor use cheap but highly pollutive methods to meet their energy needs, such as using coal for heating during winter.
- A lot heavy manufacturing facilities and primary industries are now concentrated in developing countries, and this is with the governments' support to encourage growth.

Perspective 3: **International organizations** should take the lead,

1. There are and structures that have been coordinating international efforts, such as the UN, so efforts arguably should build on that.
2. of in international cooperation led by international organizations, e.g. so there is a level of trust and confidence.
3. Overwhelming consensus among a majority of nations that
4. The global community has coalesced around this issue, esp. through social media.

However, challenges exist.

- It is (esp. since national interests trumps for the governments who want to maintain popularity and support among their people).
- and it is (due to)
- Taxpayers of key donor countries may not always be willing to fund international efforts, esp. if it mainly benefits other countries.

Perspective 4: **Companies** should step up

1. There is a growing demand from customers, investors and regulators for companies to go green due to the strengthening belief that corporations should be ethical and accountable. Thus, (Environmental, Social and Governmental) reporting is becoming standard.
2. Brands can benefit from being green, as this can
3. Companies are concerned with the and not just the profits of the current accounting year, esp. if their company's product or service is dependent on limited resources.

However, obstacles remain.

- is most companies' main motive. Consequently, they aim to and so, employing green technology that adds to costs is unlikely.
- Many consumers are who don't care so much about how green the product is as they care about price. consumers care but they are a

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Perspective 5: **Non-Governmental Organizations** have a role to play.

1. There is a growing number of environmental NGOS and their clout is growing as more and more people are affected by the effects of climate change that are growing in frequency, intensity and extent. Many of them work directly with beneficiaries and they are seen as voluntary organizations with no ulterior motive, so they gain the trust of the people.
2. With social media, environmental NGOs are able to capitalize on crowd sourcing to get funds as well as attention for their cause. By going viral or galvanizing people, they can get the ear of the politician or government more easily now.

However, challenges stand in the way.

- Environmental NGOs are generally seen by the public as inconsequential and their work do not always yield clear outcomes. They therefore also usually find it hard to get a steady stream of funding adequate enough to create actions that make a significant and lasting difference on a large scale. Exceptions include and

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Perspective 6: should take action.

1. There is currently a high level of awareness about climate change as extreme weather events grow more frequent and temperatures soar.
2. Individuals now are able to translate their awareness into action. More are making purchasing decisions reflecting their green consciousness. Besides that, they are also leveraging on social media to galvanize mass support for causes they believe in and draw attention to bad practices that are adversely affecting the environment. Where there is collective action, impact is the greatest felt.

However, to create significant impact is not that straightforward.

- Individuals in some countries find they have to make real change because of the weakness of the democratic institutions, which results in the people's voice not being heard by those in power.
- The reality is that the is and
- There are certain and that may not be very green when practiced, e.g. ancestral worship that involves the burning of incense and paper products.
- Certain mindsets are hard to change. E.g. Comparing short-term vs long-term benefits, most would value the former more. Another is the bystander effect where they expect someone else to take action, so they stand and watch and wait. Some people play the blame game to deflect responsibility and the need of action. In addition, habits can be hard to change and will require significant incentives or disincentives. Modern man seems to be 'addicted' to convenience, and going green requires effort. Lots of people are also trend followers but over time, they are no longer supporters because of the effort and focus required.

Reflect, Connect, Apply (to gain insights and conceptual understanding)

There are always competing priorities. When making decisions, we seek to find acceptable tradeoffs (a balance achieved between two desirable but incompatible situations or features; a compromise).

- What kinds of tradeoffs in your lifestyle are you willing to accept or even embrace, for the sake of the environment, and why?

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6. Overarching theme of CONTROL & RESPONSIBILITY

Given the different stakeholders and the need to have collective action to halt climate change, consider:

1. Which stakeholders are involved?
2. Are they willing to take on the responsibility of carbon emissions?
3. If not, who will 'control' them?

Stakeholders

Control-Responsibility Framework

Who is responsible for the environment?

PREMISE: All stakeholders have some level of control/ power in the situation

STEP 1: Is one of the stakeholders avoiding the responsibility? (i.e. unwilling or unable)

STEP 2: Are there **limitations** to the other stakeholders' ability to control?

STEP 3: Middle Ground/ Resolution: Evaluation

Example of how to apply the C-R framework to the issue of greenwashing:

STEP 1: Why are businesses shirking responsibility to the environment?

Companies are motivated by profits and shirking their responsibility to manufacture sustainably. However, consumers are becoming more educated and environmentally conscious. This could mean making false claims about green production practices or even purposefully being vague with facts.

STEP 2: Can consumers challenge companies' pollutive ways?

Individuals attempt to exert control over businesses, but lack the power to do so.

- Limits to control include:
  - *Lack of information, Greenwashing*
- However, this is changing via:
  - *Increased awareness, Attempts to increase transparency with certifications*

STEP 3: Companies carry out CSR that cater to both their interests and the individuals'.

- People try to overcome these informational gaps through forming communities, spreading awareness via social media, and other advocacy.
- Companies then respond by producing greener products and further commitment to **Corporate Social Responsibility or good Environmental Social Governance** standards. They improve branding and appeal to their customers, which feeds into their profit motives.

greenwashing

[STEP 1] Companies have the power to go green by changing production methods and improving products but they often fail to do so. They face the ever-urgent demands of their shareholders to make a profit. Thus, their green efforts are half-hearted. Some therefore carry out 'greenwashing'-- a marketing strategy to give an ecologically responsible impression. In fact, such a cynical move serve to only promote guilt-free consumption and aggravate environmental damage. **[STEP 2]** Although consumers have attempted to challenge companies' pollutive ways, they lack accurate information due to firms' greenwashing. **[STEP 3]** *Thankfully, the growing green movement has built awareness and made information more widely available. More consumers are now voting with their feet– choosing green products, even when these come at a premium price. Some go so far as to boycott pollutive companies. With social media making it easy to galvanize the crowds for such actions, companies cannot take for granted their consumers' 'blindness' to 'hot topic' issues like the environment. Many businesses now implement incorporate social responsibility into their key performance indicators and many have green options or brands to meet the demands of the green consumer, thus doing good for the environment.*

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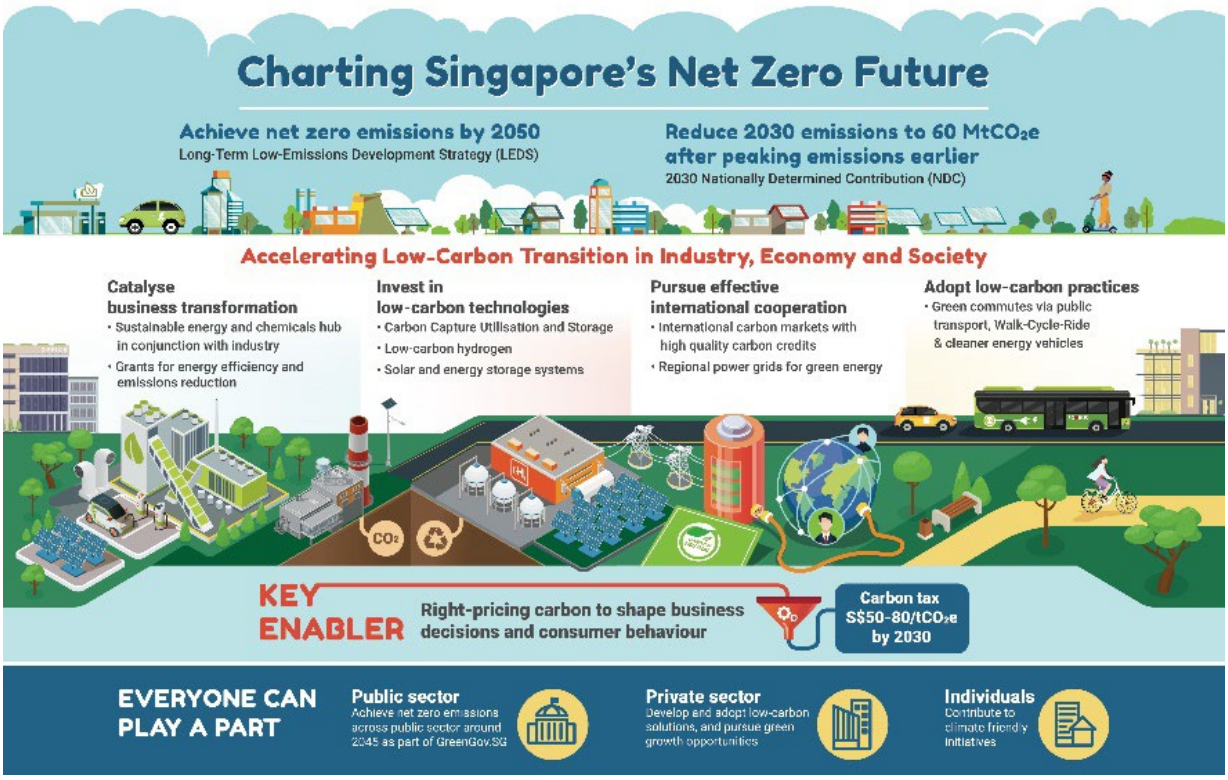
Let's look at Singapore:

Per Capita Emissions

Singapore ranked **21st** out of 155 countries/territories in terms of CO_2 emissions per capita in 2021, with the 1st having the highest per capita emissions.[2]

Limitations faced

Limited land area, low-lying island, high population density, clean-energy disadvantaged



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Technological innovations that can move the needle?

- Clean energy, e.g. solar, geothermal, nuclear power, green hydrogen
- Electric vehicles
- Food that are more ecofriendly, e.g. insects
- Carbon capture and storage
- Energy-efficient coding and 'recycled' code
- Digital means to measure environmental change in real-time for data-driven decision-making, e.g. GEMS Air (Global Environment Monitoring System for Air) and MARS (Methane Alert and Response System) used by UNEP (United Nations Environment Prog)
- Moving to a different planet?

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7. Enduring Understandings

1. Everything in the environment is **interconnected**; changes in one part of the ecosystem can have ripple effects throughout the entire system.
    - **Diversity** (in life forms and ecosystems) is crucial for the resilience and stability. Each species has a role to play in maintaining ecological **balance**.
    - Ecosystems provide essential services such as clean air, water, food, and climate regulation. **Valuing** these services is crucial for sustainable development.
    - Environmental systems are **complex** and often characterized by **uncertainty**. Embracing complexity and uncertainty is important for effective decision-making and policy development.

2. **Sustainability** is necessary to ensure that current and future generations can meet their needs, so that life can continue into the future..

3. All organisms and ecosystems, analogous to us and our societies, **evolve and adapt to changing conditions over time**. All systems need to be **resilient**; they must have the built-in capacity to recover and adapt to disturbances.

4. **Recognizing the human impact** on the environment is crucial for effective environmental management. Humans have a **moral responsibility** to protect the environment and its inhabitants, considering the well-being of future generations and the rights of other species.

5. Environmental issues transcend all boundaries. Despite the competing interests, a **macro perspective** and **collaborative efforts** among the different stakeholders and between different nations are necessary to address challenges such as climate change and biodiversity loss.

"We do not inherit the Earth from our ancestors; we borrow it from our children."
– **Native American Proverb**

PAST YEAR QUESTIONS	
Assess the view that most natural disasters are the result of human activity.	GCE 2016
'Environmental concerns and economic growth cannot co-exist.' Do you agree?	GCE 2011
How important is it to save plant and animal species which are in danger of extinction?	GCE 2013
Can the problem of plastic pollution be solved through individual actions alone?	PJC Prelim 2018
How far do you agree that zoos and wildlife reserves are the only hope when it comes to protecting endangered animals?	ACJC Prelim 2018
How far is it possible to live an environmentally sustainable lifestyle in today's world?	MJC Prelim 2017
How important is it for businesses to be socially responsible today?	TJC Promo 2014
How far should governments be held responsible for environmental problems?	DHS Prelim 2012
Discuss the view that the environment can only be saved through the efforts of developed nations.	RJC Prelim 2011
'Science is our only hope for solving all our environmental problems.' How far do you agree?	RJC Prelim 2008
Assess the view that attempts to control climate change can never be truly effective.	GCE 2017
How far is recycling the answer to the problem of waste?	GCE 2004
'The solution to all environmental problems is more regulation, not education.' Do you agree?	DHS Prelim 2017
Is there any point in caring about environmental problems in countries other than your own?	MJC Prelim 2015
Being 'green' is merely being fashionable. Discuss.	TJC JC2 JCT 2009
To what extent is your society ready to embrace environmental conservation?	DHS Prelim 2008

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For more resources