

NANYANG
TECHNOLOGICAL
UNIVERSITY
SINGAPORE

C0006 Sustainability: Society, Economy & Environment

Week 1: Introduction to Course

Why Everyone Should Know About Sustainability

Presented by Dr Anna Lagerstroem, Asian School of the Environment





Overview

- Why sustainability?
- The complexity of sustainability
- Interdisciplinarity
- The three perspectives

Why Sustainability?



Sustainability: From Fringe to Front Lines

- Paris agreement, COP26 climate summit
- IPCC reports
- UN Sustainable Development Goals
- Singapore Green Plan
- NTU Sustainability Office
- NTU to be carbon neutral by 2035, reduce energy, water use and waste by 50 per cent by March 2026 (from 2011 baseline levels)

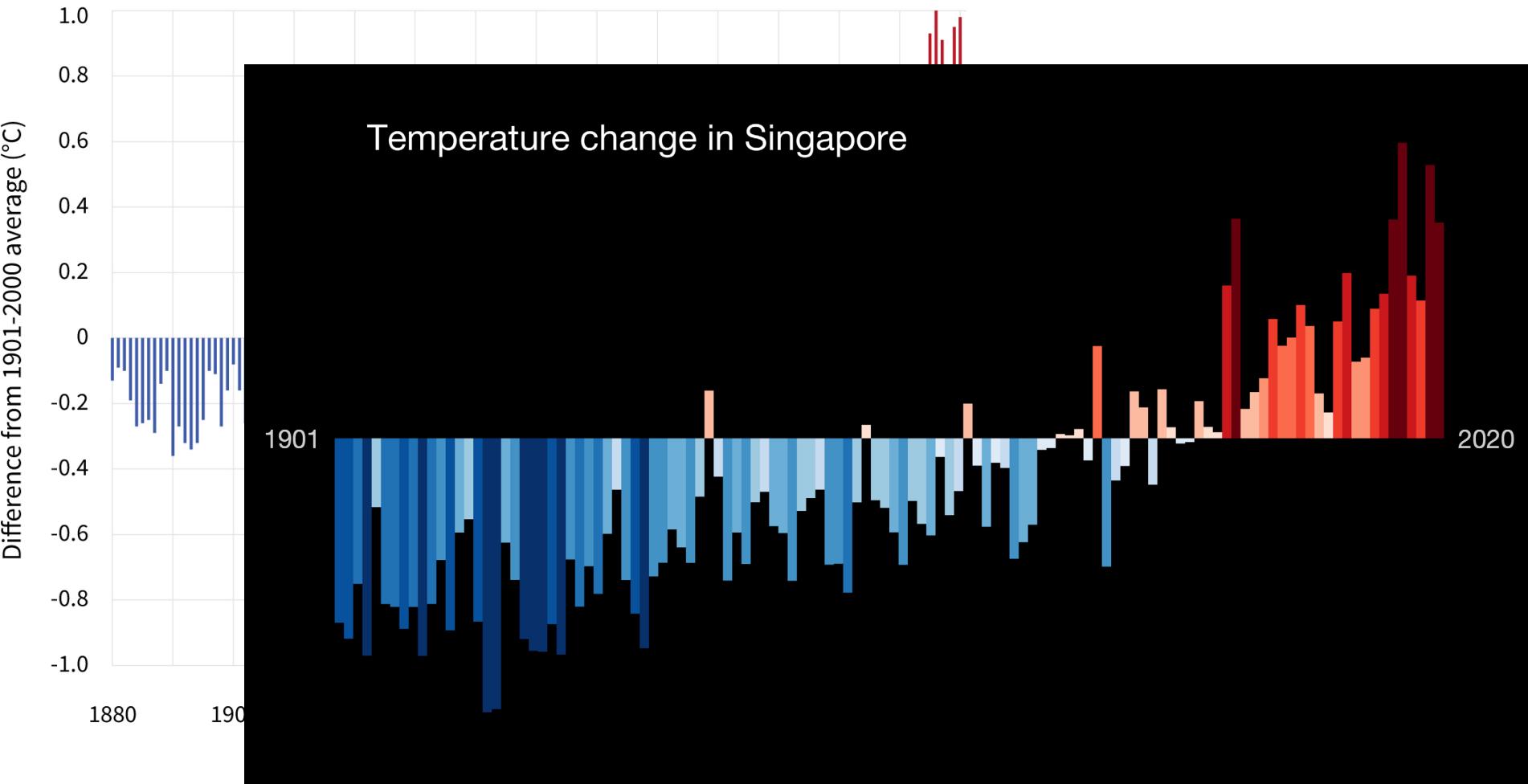
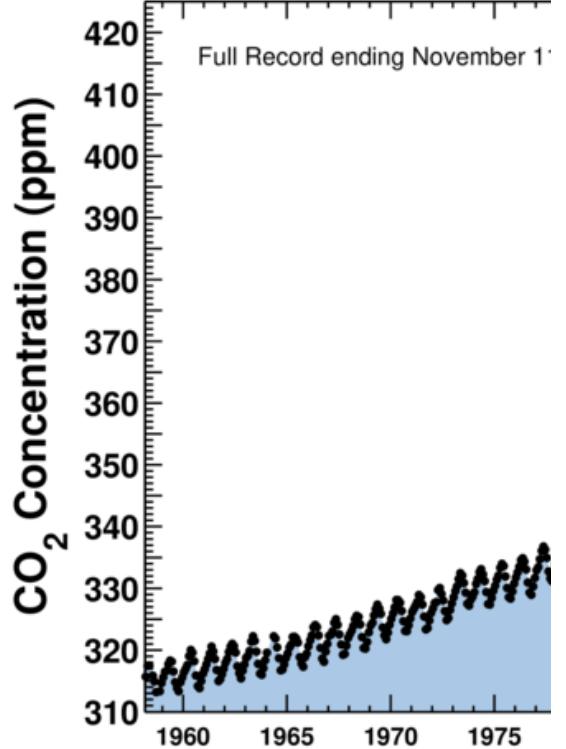


A Warmer World

November 11, 2021

Carbon dioxide concen

GLOBAL AVERAGE SURFACE TEMPERATURE



Why Sustainability?

Unsustainable lifestyle striking back at:

- Nature, biodiversity, natural resources
- Human societies, livelihoods, peace, security
- Economic stability, risks



Sustainable Development Goals

Established to:

- End poverty
- Protect the planet
- Promote peace and prosperity
 - Action in one area will affect outcomes in others.
 - Development must balance social, economic and environmental sustainability.

**SUSTAINABLE
DEVELOPMENT
GOALS**



This Course

- Interdisciplinary teams: Collaboration across disciplines is a key part of the course.
- Analyse sustainability topics from the perspective of society, economy and the environment.
- Draw on each other's disciplinary knowledge, expertise and interests to create a nuanced picture of sustainable development topics.



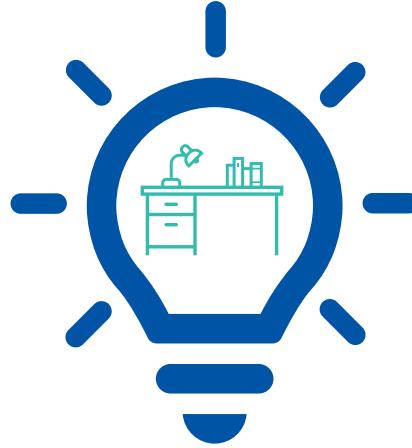
The Complexity of Sustainable Development

- Long range of interconnected but unique problems
- Multiple causes, hard to define “the problem”
- No generalisable solution, no right or wrong, rather better or worse
- Solutions tend to ramify throughout the system
- Solutions can take a long time to evaluate

Preserving wildlife in Singapore also means living with it, will you do both?

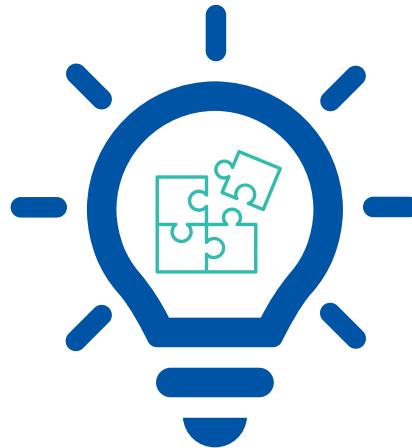


Interdisciplinary Approach to a Complex Problem



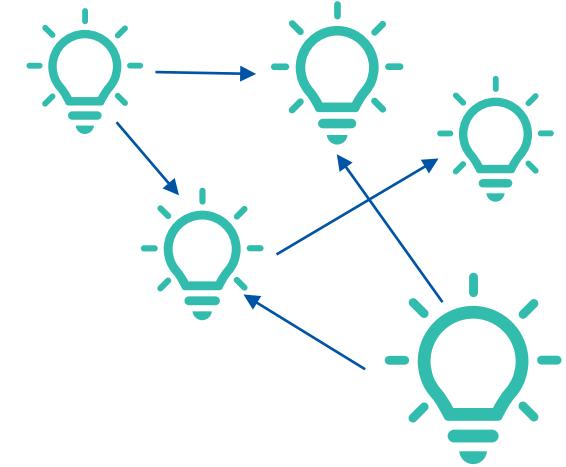
Multidisciplinarity

additive knowledge of
different disciplines



Interdisciplinarity

integration and synthesis
of different disciplines



Transdisciplinarity

across, between, and
beyond disciplines

The Three Perspectives



Society



Economy



Environment

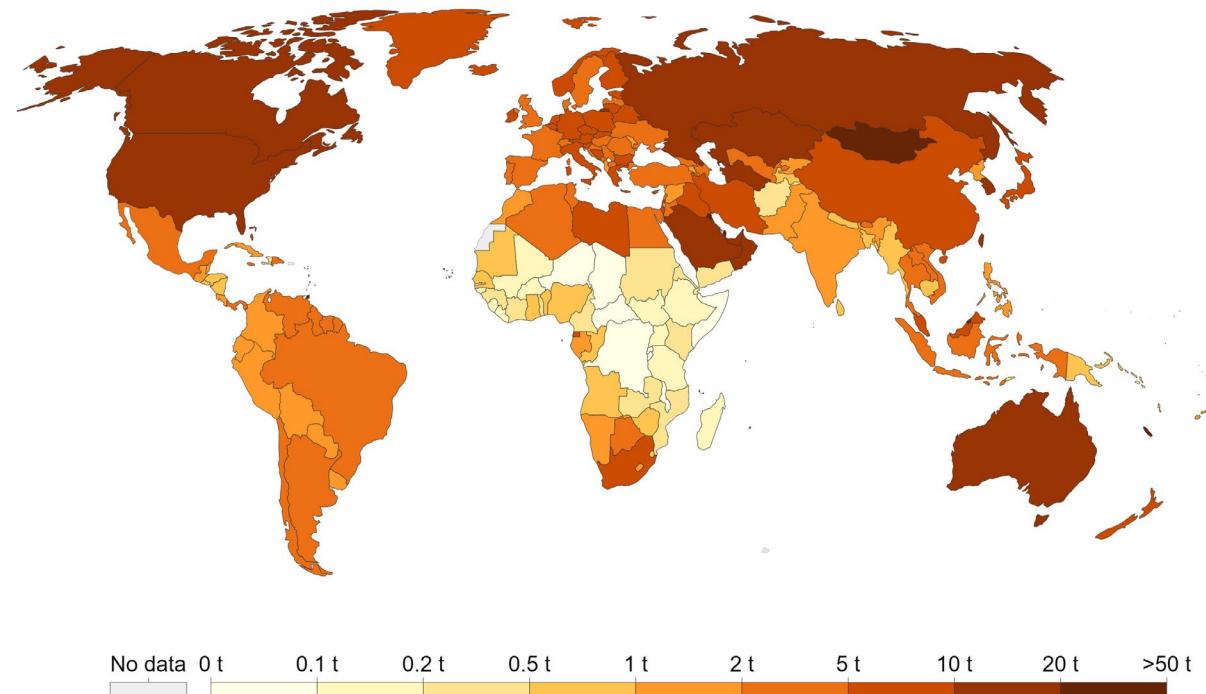
The Society Perspective, examples

- Environmental justice and unequal distribution of e.g. climate change effects
- Understanding human behaviour to implement changes for sustainability
- Risk of political conflict or humanitarian crises due to climate change or environmental degradation

Per capita CO₂ emissions, 2020

Carbon dioxide (CO₂) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.

Our World
in Data



Source: Our World in Data based on the Global Carbon Project
Note: CO₂ emissions are measured on a production basis, meaning they do not adjust for emissions embedded in traded goods.

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY

The Society Perspective: Singapore

- Additional 200 hectares of nature parks for citizens (and wildlife) to enjoy
- Planting one million trees across the island—CO₂ absorption, shade and cooler temperature
- Programmes to reduce human-wildlife conflicts





**“ONLY
ACCOUNTANTS
CAN SAVE THE
WORLD!
*Through Peace, Goodwill
and Reconciliations*”**

Quote by Peter Bakker, president of the World Business Council for Sustainable Development, at a Sustainability Forum in 2012.

The Economic Perspective, examples

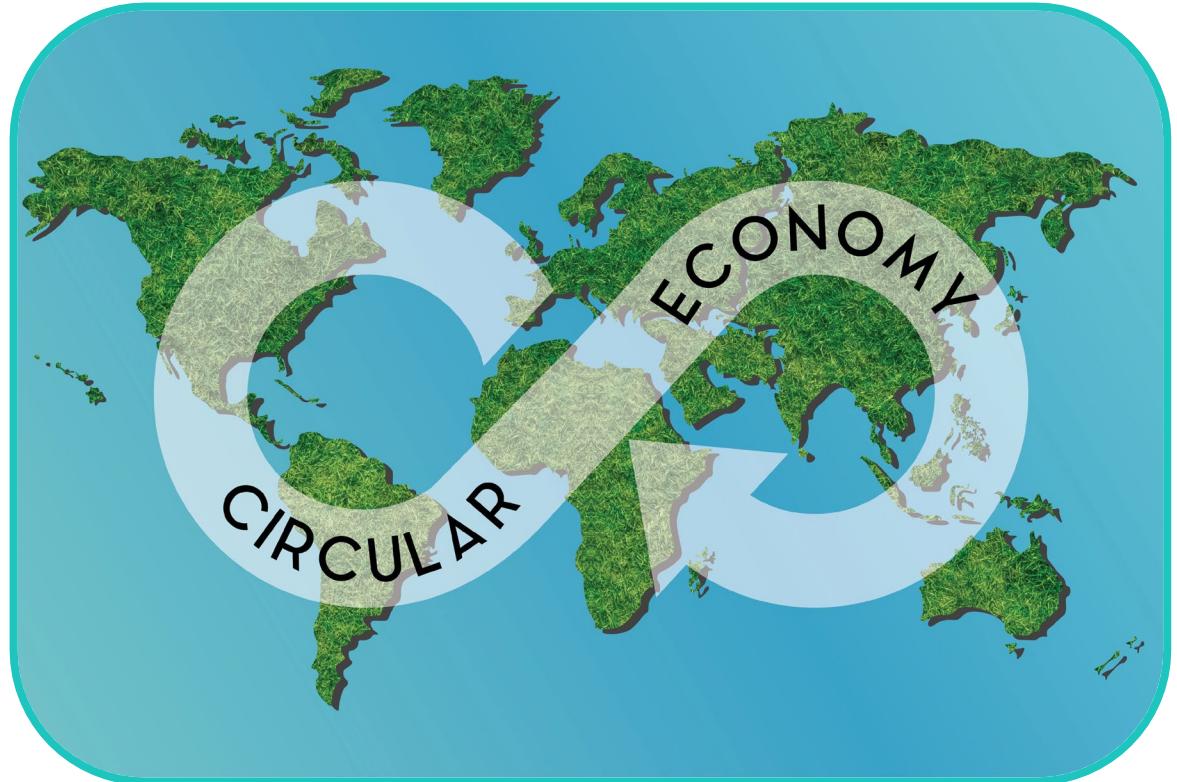
- Needed: Sustainability accountants, for sustainable capital investments
- Integration of financial decision making and sustainability work
- Stating potential social and environmental impact on profits
- Effect on valuation, investment?

The Economic Perspective: Circular Economy

Three basic principles:

1. Eliminate waste and pollution
2. Circulate products and materials
3. Regenerate nature

"In a properly built circular economy, one should rather focus on avoiding the recycling stage at all costs. It may sound straightforward, but preventing waste from being created in the first place is the only realistic strategy." (World Economic Forum)



The Economic Perspective: Circular Economy

You are required to watch this supplementary video, by visiting the external link to abide by copyright protection requirements. You would have completed the lesson after watching the video.

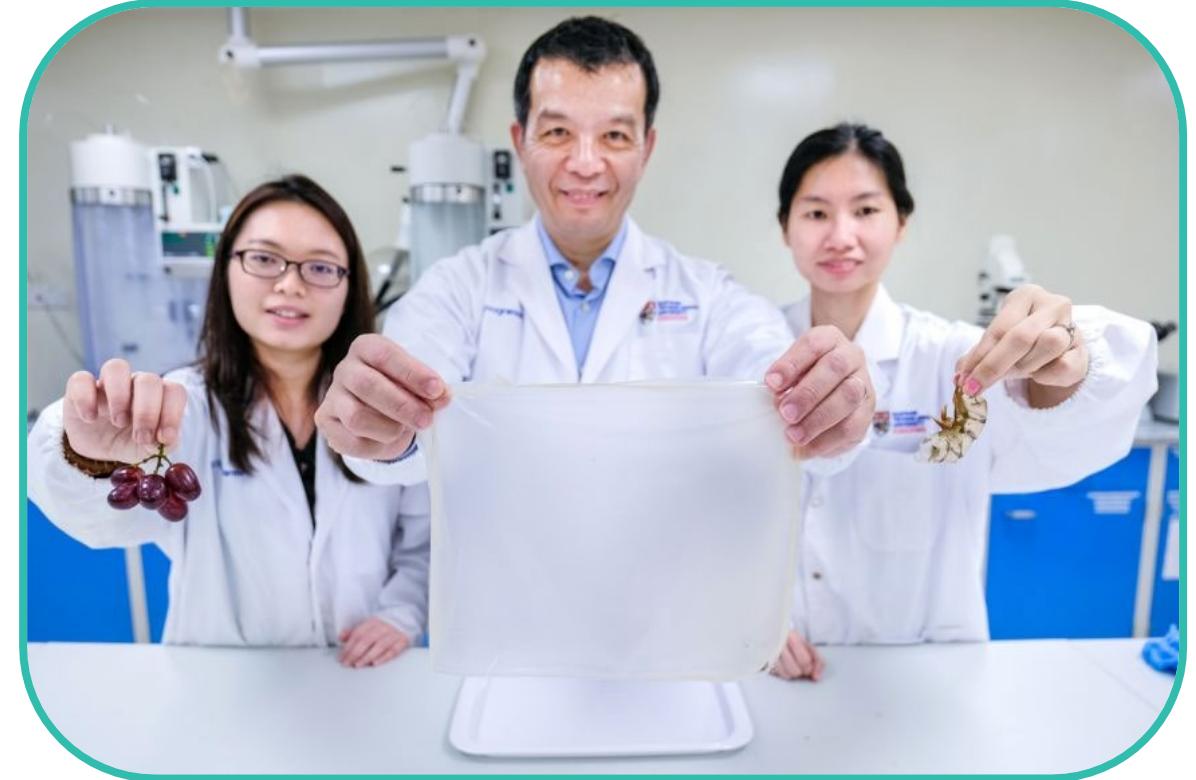
<https://www.youtube.com/watch?v=zCRKvDyyHmI>

(If required: Please complete any other additional learning activities within the course site.)



Green Economy in Singapore

- Enterprise Sustainability Programme
- Carbon tax
- Home-grown innovation



The Environmental Perspective, examples

- Laws of nature govern processes of climate change and environmental degradation
- Intrinsic value of nature
- Human dependence on natural resources
- Natural climate solutions, for example, mangrove forests protect against storms and flooding
- Tree planting



Environmental Perspective: Singapore

- More green spaces
- Education and appreciation for local wildlife
- Limit pollution of water
- Conservation initiatives
- And much more!



No part of this video shall be filmed, recorded, downloaded, reproduced, distributed, republished or transmitted in any form or by any means without written approval from the University.