# Managing Sustainability

BMA6105

## MODULE OVERVIEW

# Module Overview

- Key learning outcomes
- Structure
- Supporting Materials

# Learning outcomes

On successful completion, you will be able to demonstrate:

- Evaluation of existing ideas and practices and suggestions of different ways forward
- Detailed knowledge of the globally agreed goals for the future of global society
- Critical engagement with the linkages between environmental, social and economic injustices and business practice
- Critical review of good and best practice in relation to sustainable business leadership and management
- An ability to explain and make theoretically informed judgements about sustainability as a contested concept

# Structure

| Week | Dates | Topic |
|---|---|---|
| 1 | 10/10 – 14/10 | **The Origins of Sustainability** |
| 2 | 17/10 - 21/10 | **The Societal Role of Business** |
| 3 | 24/10 – 28/20 | **Understanding the Circular Economy** |
| 4 | 31/10 – 4/11 | **What are Sustainable Business Models?** |
| 5 | 7/11 – 11/11 | **Carbon: The Drive to Net-Zero** |
| 6 | 14/11 – 18/11 | **Environmental Management Strategies**<br>Guest Lecture: Dr Julian Greaves (BSU Sustainability Manager) |
| 7 | 21/11 – 25/11 | **Working with suppliers: Sustainable Supply Chains** |

# Structure (contd)

| | | | |
|---|---|---|---|
| 8 | 28/11 – 2/12 | **Engaging customers: Sustainable Consumption** | |
| 9 | 5/12 – 9/12 | **Alliances, Partnerships and Stakeholders** | Friday 9th Dec (Noon) ASSIGNMENT 1. Individual consultancy report. |
| 10 | 12/12 – 16/12 | **Accessing Green Finance** | |
| 11 | 9/01 – 13/01 | **Implementing sustainable strategies: SMEs to MNCs** | |
| 12 | 16/01 – 20/01 | **The Role of Government** | |
| 13 | 23/01 – 27/01 | **Module Review.** | Friday 27th Jan (Noon) ASSIGNMENT 2. Personal Reflections. |

# Supporting Materials

- There is no core textbook for this module
- There is a wide range of useful readings, these are listed in the Learning Resources and Module Resources folders
- I will post the most recommended readings for each week into the teaching folder for that week


# WEEK 1

# THE ORIGINS OF SUSTAINABILTY

**Managing Sustainability**

**BMA6105**

# Learning Outcomes

- The origins of sustainability thinking:
  - Spaceship Earth (Boulding)
  - Limits to Growth (Meadows)
  - Present and Future Generations (Brundtland)
  - A Steady State Economy (Daly)

- Recent developments
  - The concept of carrying capacity (the ecological footprint)
  - The Sustainable Development Goals (SDGs)

# Early origins of sustainability

- The salinisation of cropland – circa 3000BC
  - Ecology-society balance – overshoot and collapse
- German forester Hans Carl von Carlowitz (1713)
  - first use of the term ‘sustainability’ referring to rotation in felling of forests
- Utilitarian philosopher John Stuart Mill (1848)
  - ‘the coming stationary state’
    - reflections on the end goal of economic growth

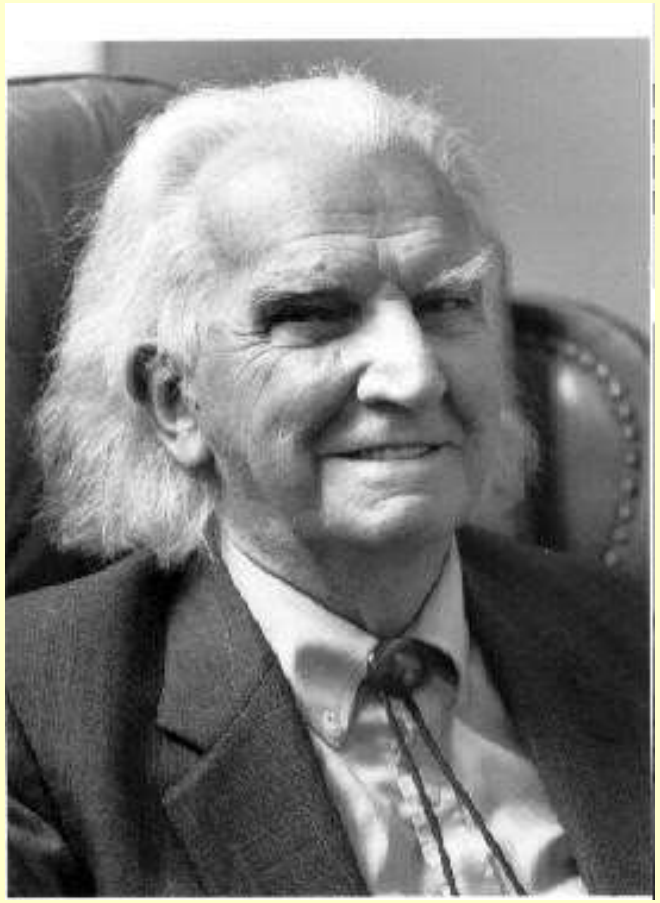
# Emergence of a geo-political 'ecological consciousness'

- Appearance of green NGOs:
  - Friends of the Earth (1969)
  - Greenpeace (1971)

- The Rio Summit (1992)
  - 157 Heads of State
  - Largest ever gathering of political leaders outside the United Nations
  - Led to the 'Rio Declaration on Environment and Development'
    - Affirmed 27 principles covering human health, wellbeing and safeguarding of the natural environment

# Kenneth Boulding: Spaceship Earth

- Challenge to ‘linear’ economy thinking
- Early recognition of ‘limits to growth’



## COWBOY ECONOMY

- Resources seem limitless
- Waste seems insignificant
- Small scale relative to wider environment
- No barriers to growth
- Constant human change in an ‘open system’
- Linear processes

## SPACEMAN ECONOMY

- Limited resource stock
- Need careful management of waste
- Need to plan for long term survival in ‘closed system’
- Only solar energy is a constant input from outside
- Circular processes

# Boulding's two rules for managing Spaceship Earth

- Rule 1
  - Maintain the onboard stock of capital as high as possible
    - you do not know how long they will last, or
    - whether substitutes can be found

- Rule 2
  - Maximise output per unit throughput
    - when you use up a unit of a stock, such as energy, you should try to get the maximum possible benefit from that unit
    - prioritise efficient use of your limited resources

Boulding, K. 1966. 'The Economics of the Coming Spaceship Earth'. In: Jarrett, H., Ed., *Environmental Quality in a Growing Economy*, Resources for the Future, Baltimore, 3-14

# ‘The Limits to Growth’ debate
# Meadows *et al* (1972)

- A critical development in understanding the sustainability challenge was the development of global systems thinking
- The Meadows team developed an integrated global model based on concepts of stocks, flows and feedback loops linking the economy and the environment
- Modelling was based on an understanding of natural ecosystem processes such as carrying capacity, growth and overshoot
- Developed the ‘World 3’ model of the global human-earth system

(Meadows, D.H., Meadows, D.L., Randers, J. and Behrens III, W.W., 1972. *The Limits to Growth*, Club of Rome)

# ‘Beyond the Limits’ Meadows *et al* (1992)

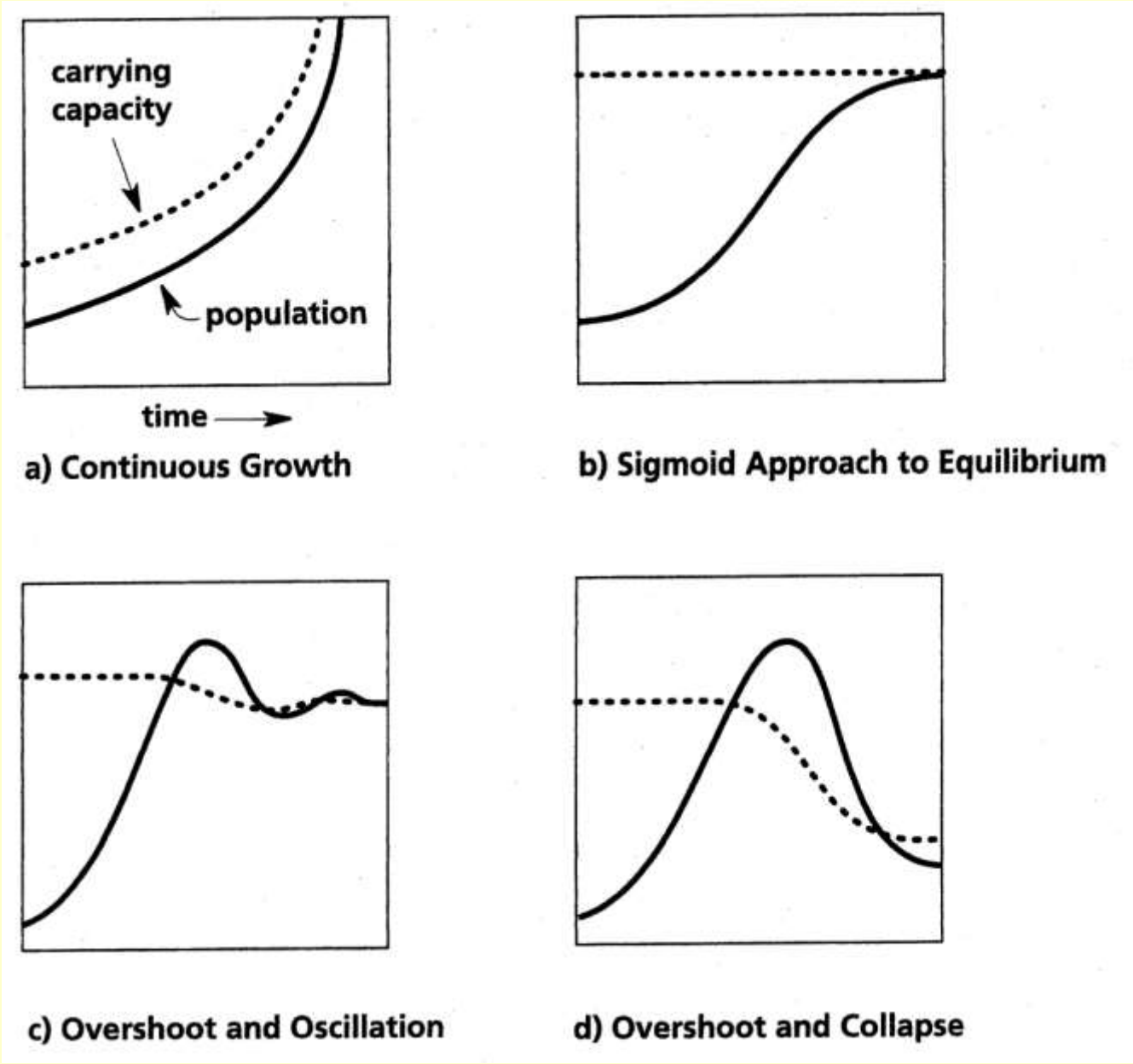
- Suggested four possible system relationships between the human population and global carrying capacity over time

a. Continuous growth

b. Sigmoid equilibrium

c. Overshoot & oscillation

d. Overshoot & collapse

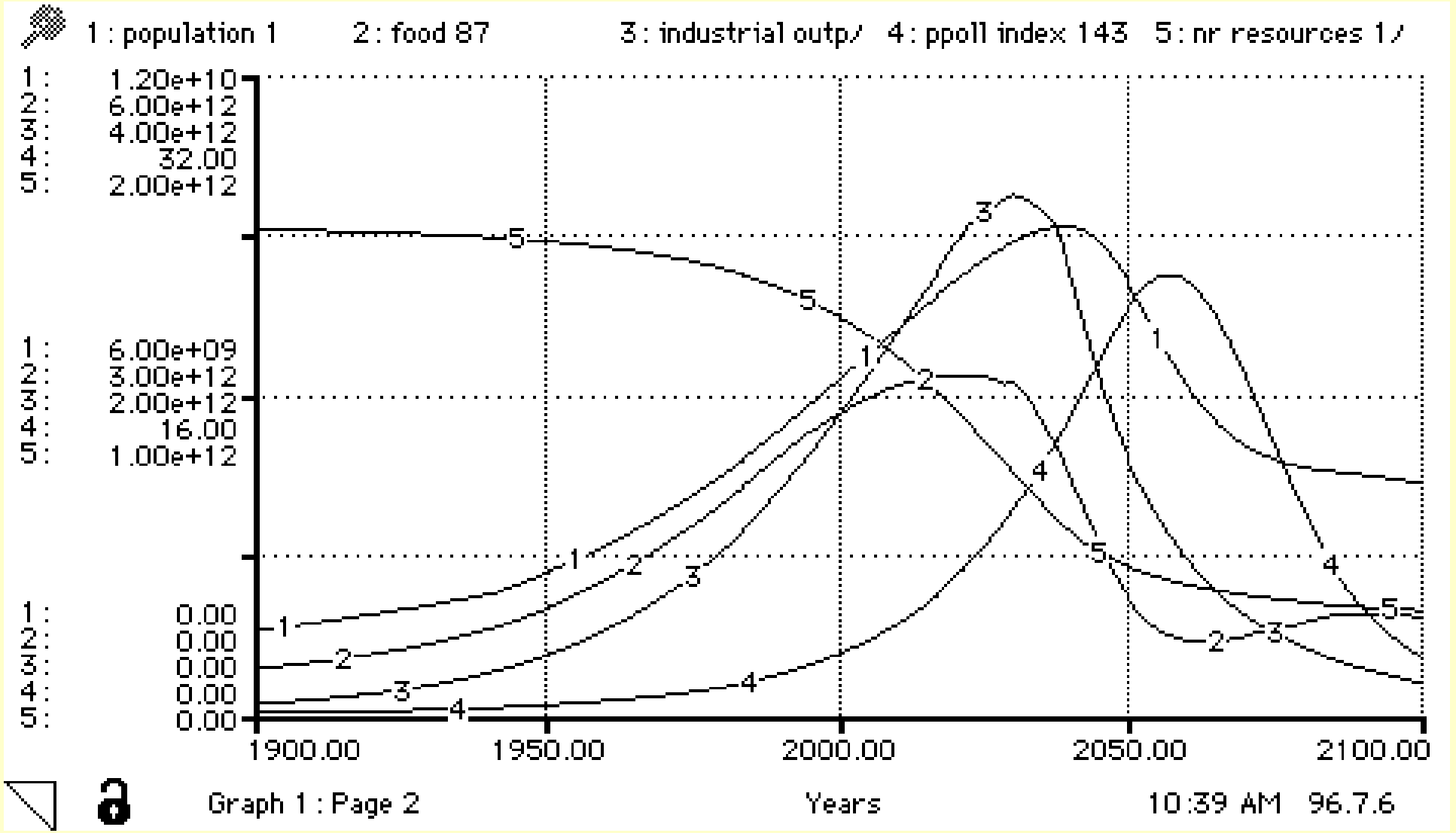



Meadows, D.H., Meadows, D.L. and Randers, J., 1992. *Beyond the limits: global collapse or a sustainable future*. Earthscan

# The ‘Limits to Growth’: World 3 Run

‘Overshoot and collapse’ projection

1. Population
2. Food
3. Industrial output
4. Pollution
5. Natural Resources



# The ‘technological optimists’ response

- Economist Herbert Simon argued against the limits to growth model based on his ‘technological optimist’ position
  - human ingenuity and innovation would find ways to overcome resource limits
- The famous Erlich-Simon wager
  - Simon challenged ecologist Paul Erlich to a bet that the cost of raw materials like tin would go down over the next 10 years - not up – despite a growing world economy and population using up more and more of these resources
  - Erlich agreed, and picked five common metals (inc. copper, nickel and tin)

  **Outcome:** Simon won – the price of these commodities did go down

- In total, the price of the chosen metals almost halved over 10 years

# The Simon-Erlich debate (2): Erlich's return bet

- Erlich acknowledged that the financial cost of his chosen commodities had indeed gone down over 10 years
- He also argued that important life support functions – green space, forest cover, water quality - had also decreased over this period
- He offer a second bet to Simon that the quality of these 'life support functions' would continue to go down, despite rising incomes and lower material costs in the economy
- Simon refused this bet.

# The Brundtland Commission (1987)

- The clearest definition offered for the concept of sustainable development comes from the 1987 Brundtland Commission report, ‘Our common Future’
  - (named after the Prime Minister of Norway, Gro Harlem Brundtland, who chaired the Commission)

‘Sustainable development is development that meets the needs of present without compromising the ability of future generations to meet their own needs’

(Brundtland, G.H., 1987. What is sustainable development? *Our common future*, *8*(9)., p.2)

# The Brundtland Commission
# 'Strong' sustainability

- Strong sustainability argues that future generations will want to enjoy same quality of natural environment, or 'natural capital', as we do
- This means that there should be no loss in the quality and quantity of the natural environment (green space, water quality, rare species etc)
  - If we use part of the natural environment – e.g. cut down trees for timber – we need to ensure that at least equivalent number of trees are planted for the next generation
- Strong sustainability also argues that some parts of the natural environment are irreplaceable (eg old or ancient growth forests) and these are non-substitutable with different types of man-made capital (more iphones, roads, or buildings)

# The Brundtland Commission
# 'Weak' sustainability

- Weak sustainability argues for the ability to *trade off* between types of capital (particularly 'man-made' and 'natural') to increase outcomes in terms of human welfare
  - Future generations may receive more man-made capital (buildings, roads) and less natural capital (green space, rare species)
  - The aim of weak sustainability is to ensure that the sum of natural and man-made capital taken together does not decline
  - A major challenge from this perspective is to determine the relative value of man-made and natural capital
    - Strong sustainability proponents argue this cannot, and maybe should not, be done

# Resolving the strong v. weak sustainability debate?

- The debate between strong and weak sustainability concerns the relative importance of man-made and natural capital
- We need both of these forms of productive capital to flourish
- The economic system is designed to produce more and more man-made capital, often at the expense of natural capital
- A central issue is where or when we may need to place limits on reductions or changes to the quality of natural capital
  - The concern around controlling carbon emissions and trying to limit the extent of climate change is one clear example

# The Steady State Economy (Herman Daly)

- Views the ideal state of the socio-economic system as a ‘steady state’, operating within the limits of the planetary biosphere
- Ultimately aims for a steady and constantly replenishing level of global capital and population, utilising a constant solar energy input

“The entire evolution of the biosphere has occurred around a fixed point — the constant solar-energy budget. Modern man is the only species to have broken the solar-income budget constraint, and this has thrown him out of equilibrium with the rest of the biosphere. Natural cycles have become overloaded, and new materials have been produced for which no natural cycles exist. Not only is geological capital being depleted, but the basic life-support services of nature are impaired in their functioning by too large a throughput from the human sector.” (Daly, H. 1991. *Steady State Economics, 2nd Edition, p. 23)*

# The Ecological Footprint (Wackernagel and Rees)

- Attempts to measure the 'supply and demand' of all goods and services coming from the natural environment
- The footprint calculates the total demand and supply of 'global hectares' (a standardised unit of measurement for different types of land and water resource)

- Demand
  - The demand sums up the resources and services used by human populations to meet their needs from the environment: food, fibre, shelter, energy, and waste management (absorbing carbon, consuming wastes)

- Supply
  - The supply sums up the productivity or 'biocapacity' provided by all the natural resources within the borders of a country (such as fields, forests, lakes and pastures, producing food and fibre and absorbing wastes)

Wackernagel, M. and Rees, W.E. 1996. *Our Ecological Footprint: Reducing Human Impact on the Earth*, New Society Publishers

# Components of the Ecological Footprint

Demand/Supply:

Human needs are met through the supply of:

- Timber & paper
- Carbon management
- Land food & fibre
- Living space
- Sea food & fibre

# The size of national ecological footprints

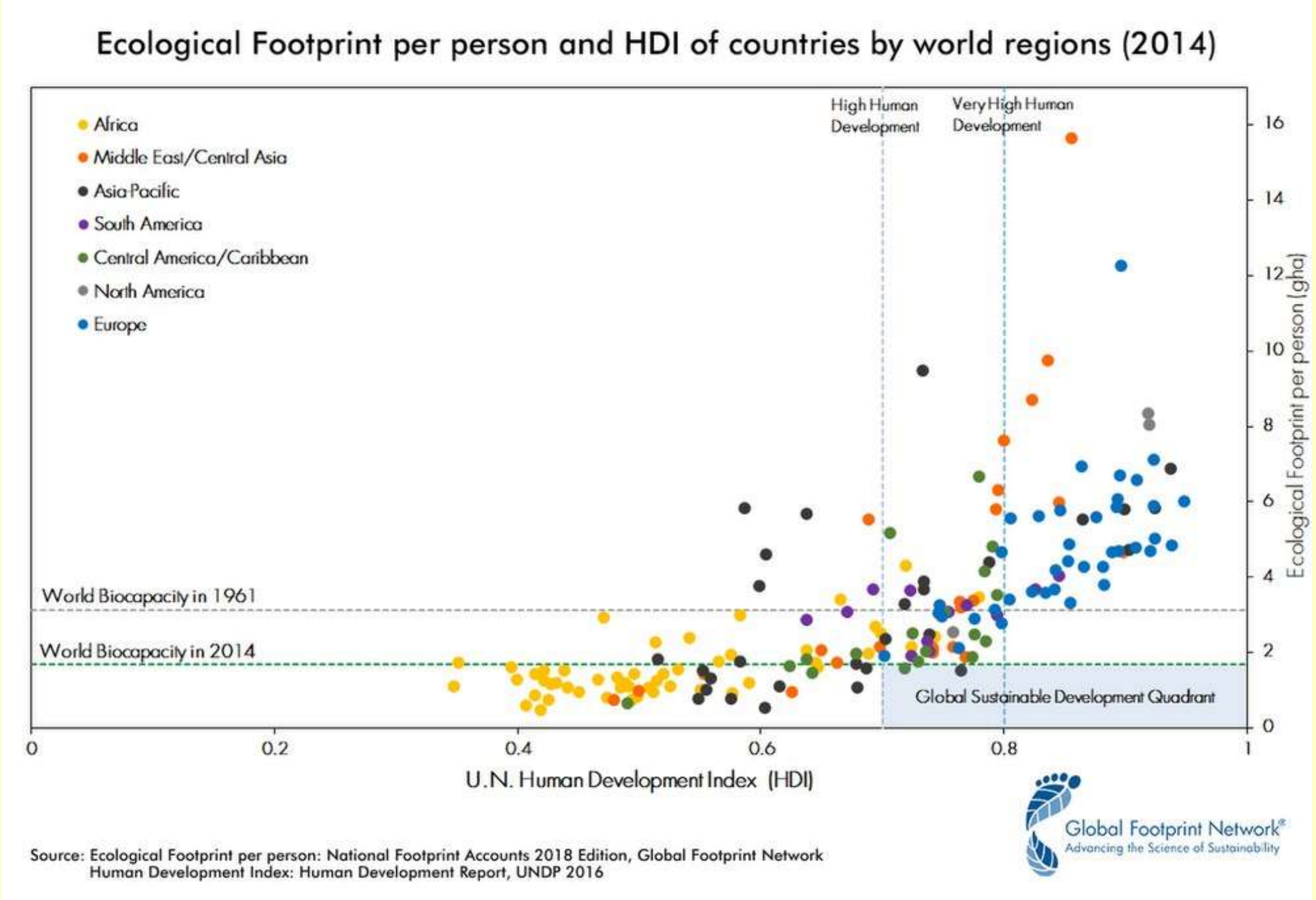
- Measures the total area required to provide the current demand for natural resources and services for each country, based on average per capita consumption

- Conclusions
  - Most rich countries are in ***ecological deficit***
  - This means the global biosphere is being depleted more quickly than it can regenerate
  - As a result, natural capital is being consumed, when we should only be consuming the income (available surplus) from that capital

# The Human Development Index (HDI) and the Ecological Footprint

The HDI is a measure of quality of life using three measures, averaged for each country:

- life expectancy
- years of education achieved
- income level



# The Sustainable Development Goals

- Launched in 2015, United Nations priority areas for 2030

# The Sustainable Development Goals

## SDG12 Targets: Responsible Consumption and Production

12.1: Implement the 10-year sustainable consumption and production framework

12.2: Sustainable management and use of natural resources

12.3: Halve global per capita food waste

12.4: Responsible management of chemicals and waste

12.5: Substantially reduce waste generation

12.6: Encourage companies to adopt sustainable practices and sustainability reporting

12.7: Promote sustainable public procurement practices

12.8: Promote universal understanding of sustainable lifestyles

12.a: Support developing countries' scientific and technological capacity for sustainable consumption and production

12.b: Develop and implement tools to monitor sustainable tourism

12.c: Remove market distortions that encourage wasteful consumption



# Summary

- The concept of Spaceship Earth emphasises that life on earth takes place within a circular, ‘closed’ system, which needs careful, long-term management
- Strong and weak sustainability is a debate around how far we can trade off between the benefits gained from increasing man-made capital and the benefits lost from reducing natural capital
- A steady-state economy is one view of the possible end goal for the economic system, maintaining a constant level of welfare and industrial output in balance with natural systems and solar energy
- The calculation of human ‘ecological footprints’ indicates that we are now consuming the natural environment more quickly than it is able to replenish itself
- The Sustainable Development Goals identify 17 priority targets to achieve by 2030 that will bring economy-society-nature relationships into a better balance