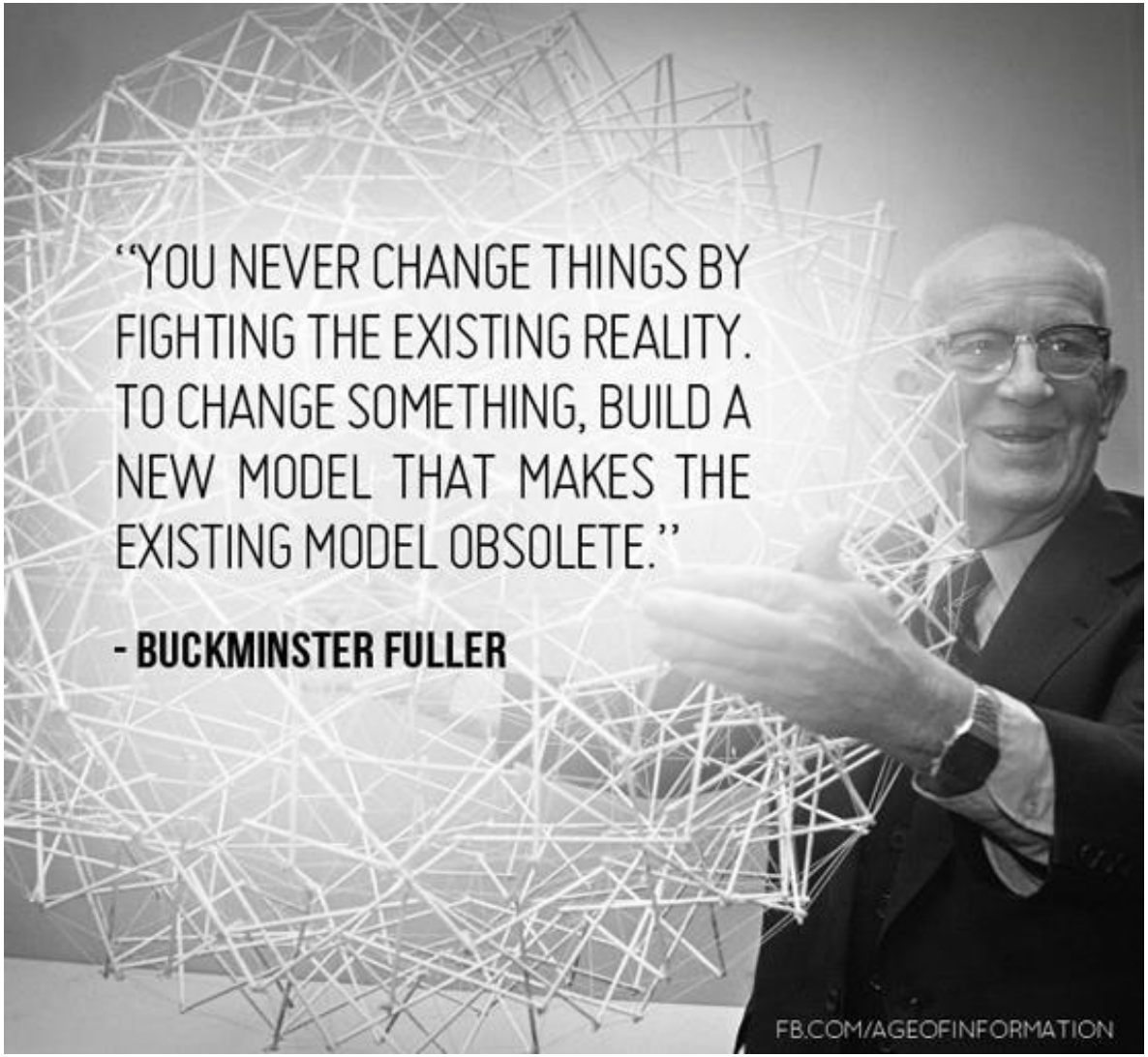
Farming at a crossroads

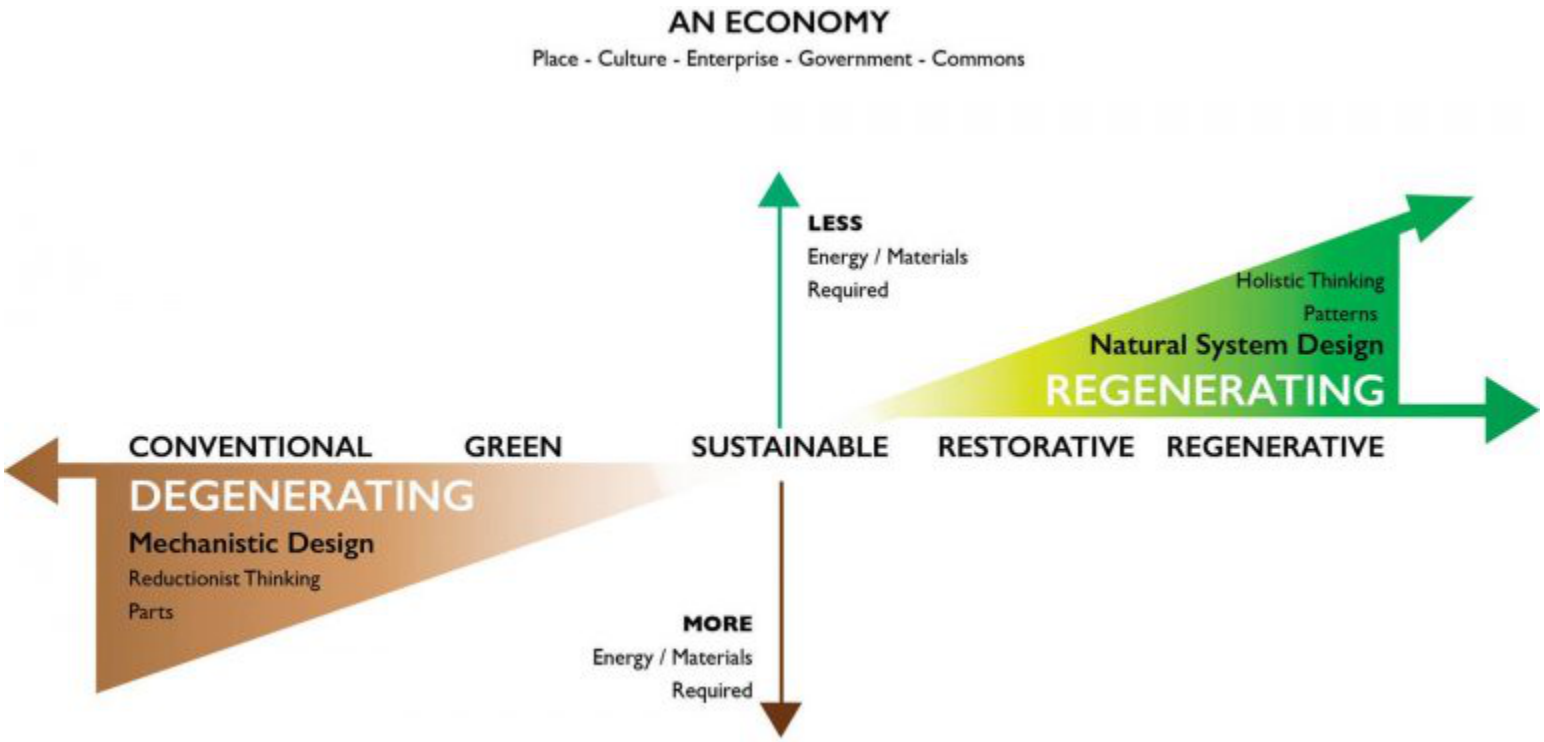
Why we need permaculture

New models required



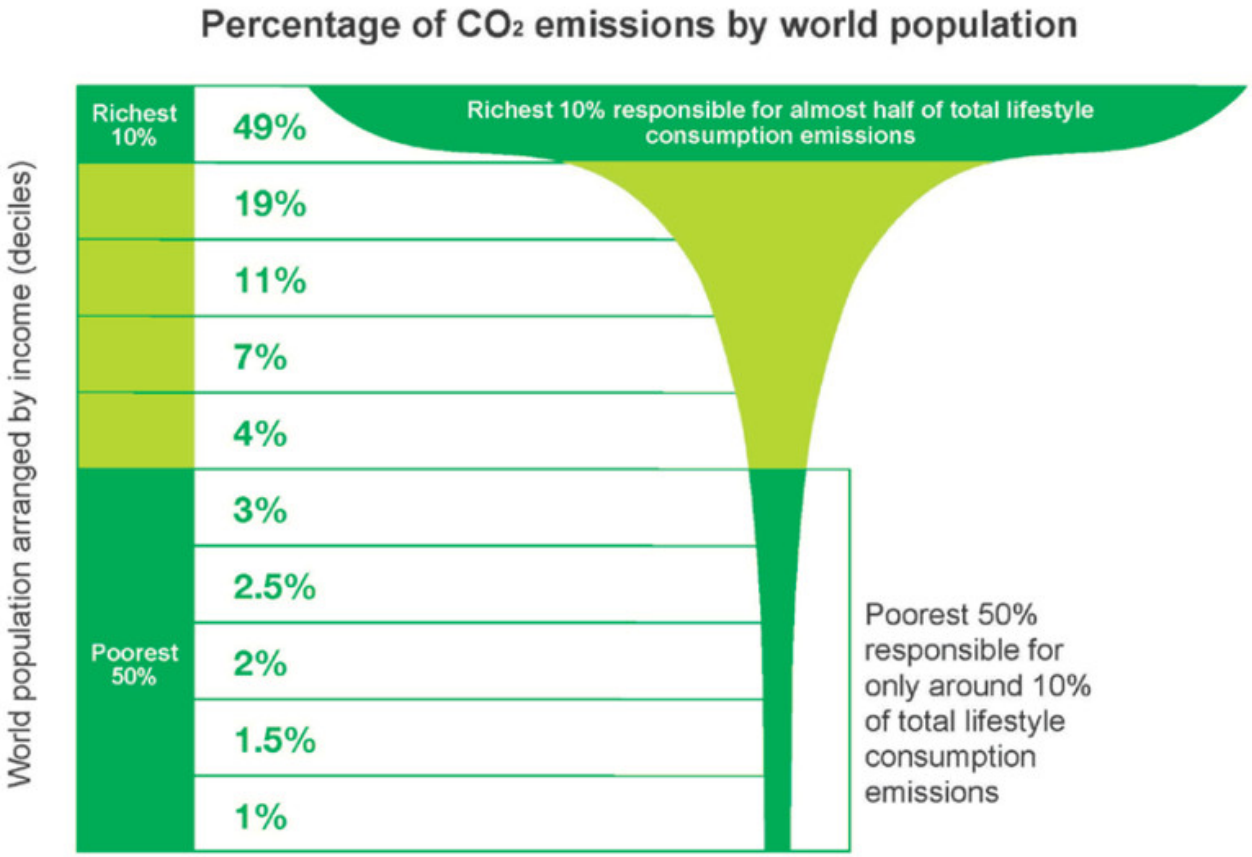

Permaculture
Intelligent systems which meet human needs
whilst enhancing biodiversity. Its nature's way

Permaculture is regeneration



Too many people?

Figure 1: Global income deciles and associated lifestyle consumption emissions



Soil

Third of Earth's soil is acutely degraded due to agriculture

Fertile soil is being lost at rate of 24bn tonnes a year through intensive farming as demand for food increases, says UN-backed study

Jonathan Watts

Tuesday 12 September 2017 18.18 BST

Soil erosion in Maasai heartlands, Tanzania, is due to climate change and land management decisions. Photograph: Carey Marks/Plymouth University

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

UNCTAD

TRADE AND ENVIRONMENT REVIEW 2013

WAKE UP BEFORE IT IS TOO LATE

MAKE AGRICULTURE TRULY SUSTAINABLE NOW FOR FOOD SECURITY IN A CHANGING CLIMATE

EMBARGO
The contents of this Report must not be quoted or summarized in the print, broadcast or electronic media before
18 September 2013, 17:00 hours GMT

UNITED NATIONS

UNCTAD review 2013

- Developing and developed countries alike need a paradigm shift in agricultural development: from a "green revolution" to a "truly ecological intensification" approach. This implies a rapid and significant shift from conventional, monoculture-based and high external-input-dependent industrial production towards mosaics of sustainable, regenerative production systems that also considerably improve the productivity of small-scale farmers

Holistic approach

- We need to see a move from a linear to a holistic approach in agricultural management, which recognizes that a farmer is not only a producer of agricultural goods, but also a manager of an agro-ecological system that provides quite a number of public goods and services (e.g. water, soil, landscape, energy, biodiversity, and recreation)

Shift to agro ecology

- They recommend a rapid and significant shift away from “conventional, monoculture-based… industrial production” of food that depends heavily on external inputs such as fertilizer, agro-chemicals, and concentrate feed. Instead, the goal should be “mosaics of sustainable regenerative production systems that also considerably improve the productivity of small-scale farmers and foster rural development”.

Climate resilience

- Monocultures need higher inputs to maintain their systems
- Much more vulnerable to pest attack and climatic variation
- Price fluctuations for produce

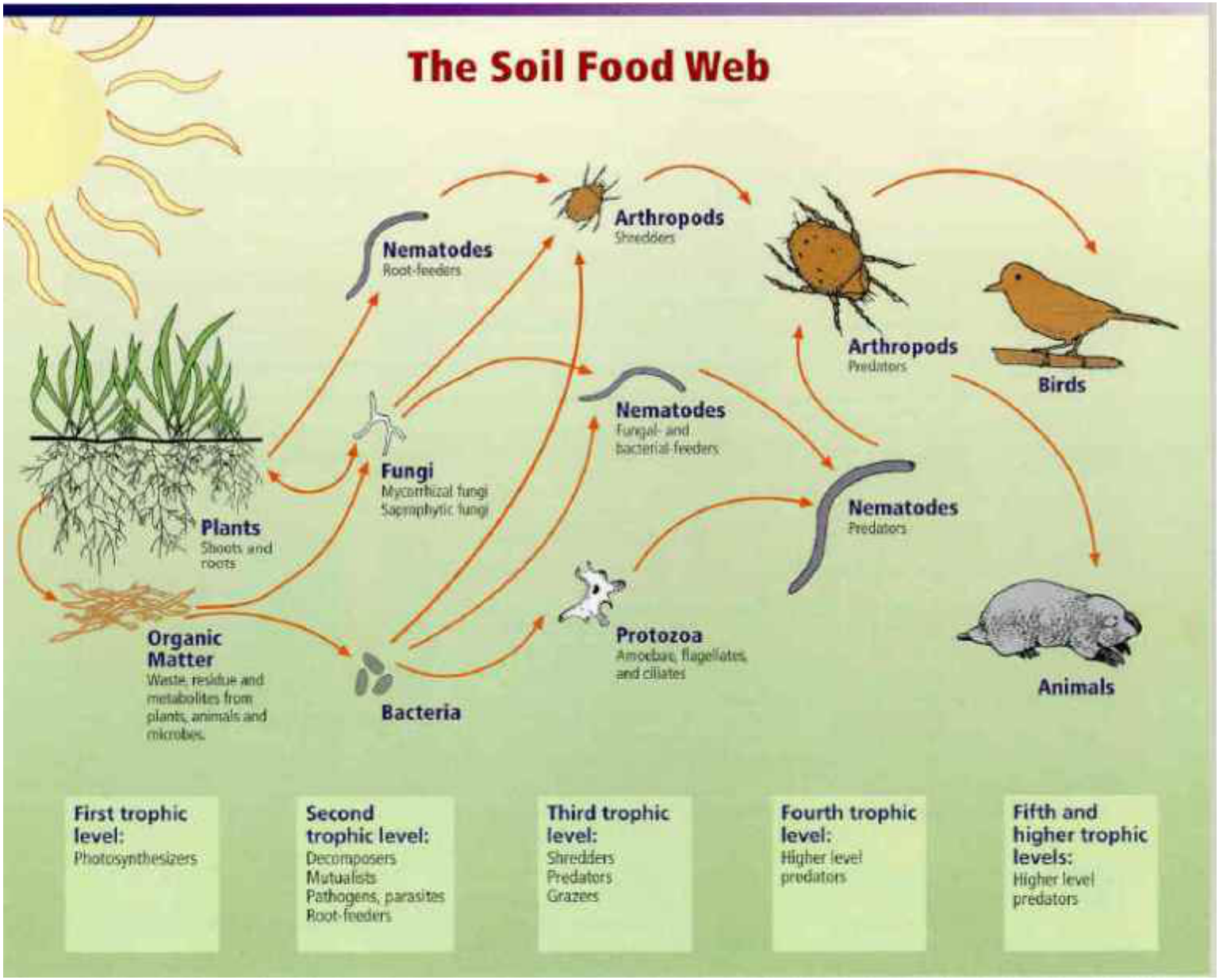
- Polycultures – mimic nature and self regulate pests and predators by building ecosystems
- Diversity of yields over longer time periods
- More stable prices and yields over time

Tropical forest system

Monoculture

- This never occurs in a natural system
- Required large amounts of fossil fuel derived energy to maintain the system
- Low resilience to pest attack and irregular weather patterns
- Comes at extremely high cost to nature and biodiversity

The Soil Food Web



First trophic level:
Photosynthesizers

Second trophic level:
Decomposers
Mutualists
Pathogens, parasites
Root-feeders

Third trophic level:
Shredders
Predators
Grazers

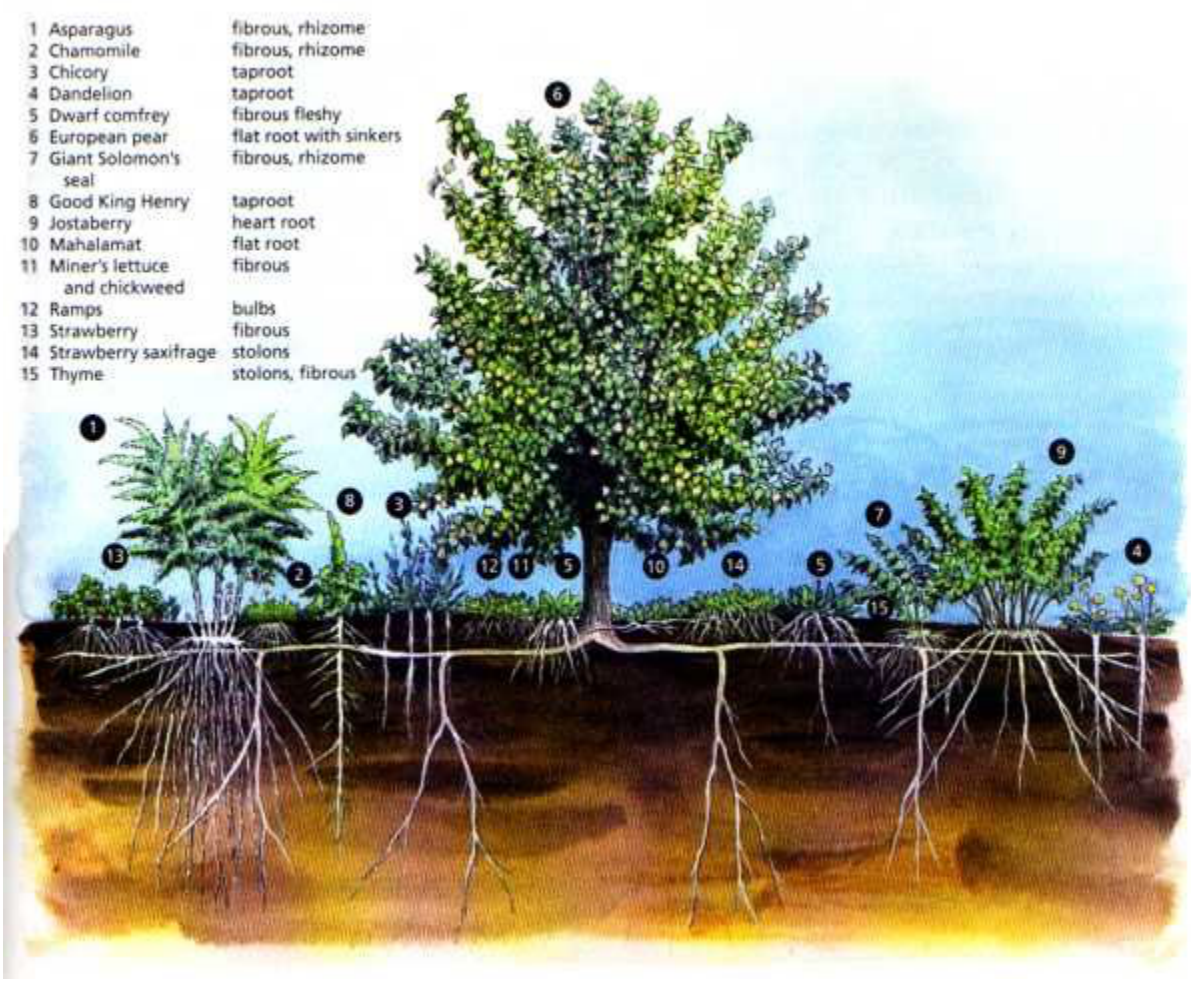
Fourth trophic level:
Higher level predators

Fifth and higher trophic levels:
Higher level predators

Ecological systems

Pyramid of Numbers:

Shows the relative number of individual organisms at each trophic level.


1 Asparagus fibrous, rhizome
2 Chamomile fibrous, rhizome
3 Chicory taproot
4 Dandelion taproot
5 Dwarf comfrey fibrous fleshy
6 European pear flat root with sinkers
7 Giant Solomon's seal fibrous, rhizome
8 Good King Henry taproot
9 Jostaberry heart root
10 Mahalamat flat root
11 Miner's lettuce and chickweed fibrous
12 Ramps bulbs
13 Strawberry fibrous
14 Strawberry saxifrage stolons
15 Thyme stolons, fibrous

Banana guild example

New planted banana guild

PDC graduates working on a community plot

How big?

Guild matures – harvest water and nutrient

Permaculture

- Works with the soil food web to maintain fertility and stability of soils
- Mimics complex poly cultures found in nature, plants compliment each other rather than compete, as different plants take up different nutrients and offer different ecological niches
- Powered by design above external fossil fuel inputs