Review of Session 1
The challenges of unsustainable change and growth

An introduction to natural systems (of climate, natural resources, water and energy) and human-based systems (social, economic, cultural and political), and the scientific and other evidence for the causes, interactions, effects and impacts of their changes.

Key Objectives

To understand the scientific and other evidence for the causes, interactions, effects and impacts of changes to natural systems (of climate, natural resources, water and energy) and human-based systems (social, economic, cultural and political).

To learn the value of holistic, systems thinking that recognises their dependence on natural systems and the dynamic, and sometimes unpredictable, way systems interact.

To explore the basic science behind issues such as the loss of biodiversity, climate change, resource depletion and economic growth.

2 **The transition to sustainable development**

An introduction to the characteristics of sustainable development. An exploration, with examples, of how personal, community and global action can meet these challenges of unsustainable changes and growth.

Key Objectives

- To understand the characteristics of sustainable development, especially at a personal and community level.
- To learn the value of long-term, future-based thinking that recognises sufficiency, resilience, diversity, global impacts, local action, cooperation, justice and well-being.
- To learn about the contested elements of development, based on different scientific evidence, worldviews, values and needs.
- To clarify one's own values and visions about personal, community and global transition to sustainable development.

1 Sustainable Development

Activity

Systems Thinking – What is your vision of a sustainable world, community, town, school?

Film

Green Economy and Sustainable Development: Bringing Back the Social, 10 mins.

1 Sustainable Development

Improving the quality of life while living within the earth's carrying capacities.
UNEP/WWF (1991)

"…development that meets the needs of the present without compromising the ability of future generations to meet their own needs"
Brundtland Report, Rio Earth Summit (1992)

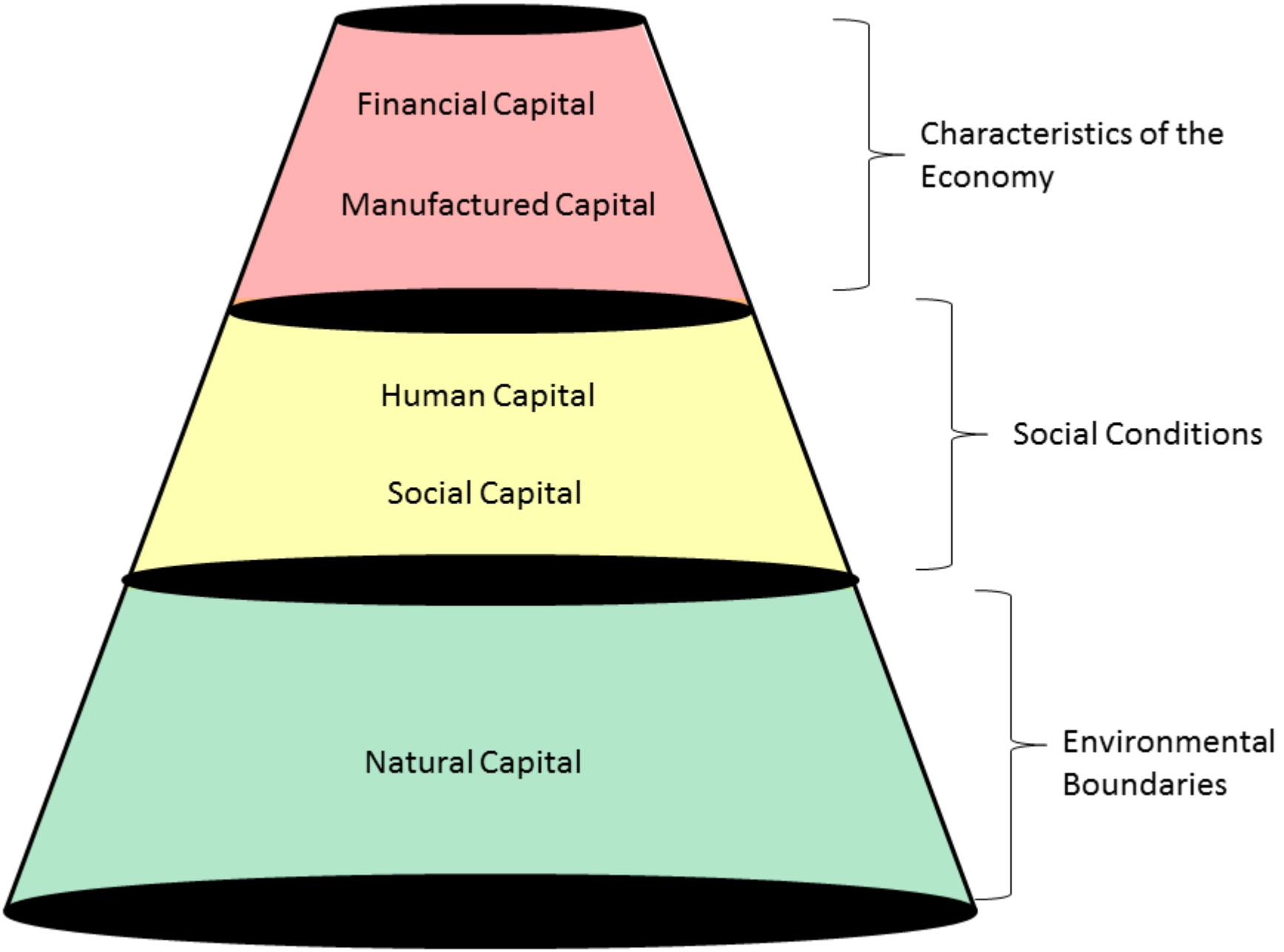
"A dynamic process which enables all people to realise their potential and to improve their quality of life in ways that simultaneously protect and enhance the Earth‟s life support systems"
Forum for the Future (2008)

"..... leaving the world a better place than you found it, taking no more than you need, trying not to harm life or the environment and making amends if you do"
Paul Hawken (2004)

Venn diagrams

Environment	Planet	Ecology	Natural Capital
Society	People	Equity	Human Capital Social Capital
Economy	Profit	Economy	Manufactured Capital Financial Capital

+ Culture + Politics = Ethical dimension


Financial Capital
Manufactured Capital
Human Capital
Social Capital
Natural Capital
Characteristics of the Economy
Social Conditions
Environmental Boundaries

Financial Capital

Reflects the true value of all other capitals

Manufactured Capital

Produced with minimum natural capital and maximum human capital

Human Capital

Good health

Good relations, participation and learning

Good lifestyle and livelihood

Social Capital

Good governance and justice

Communities shared nature-centred values

Institutions that care for people and the planet

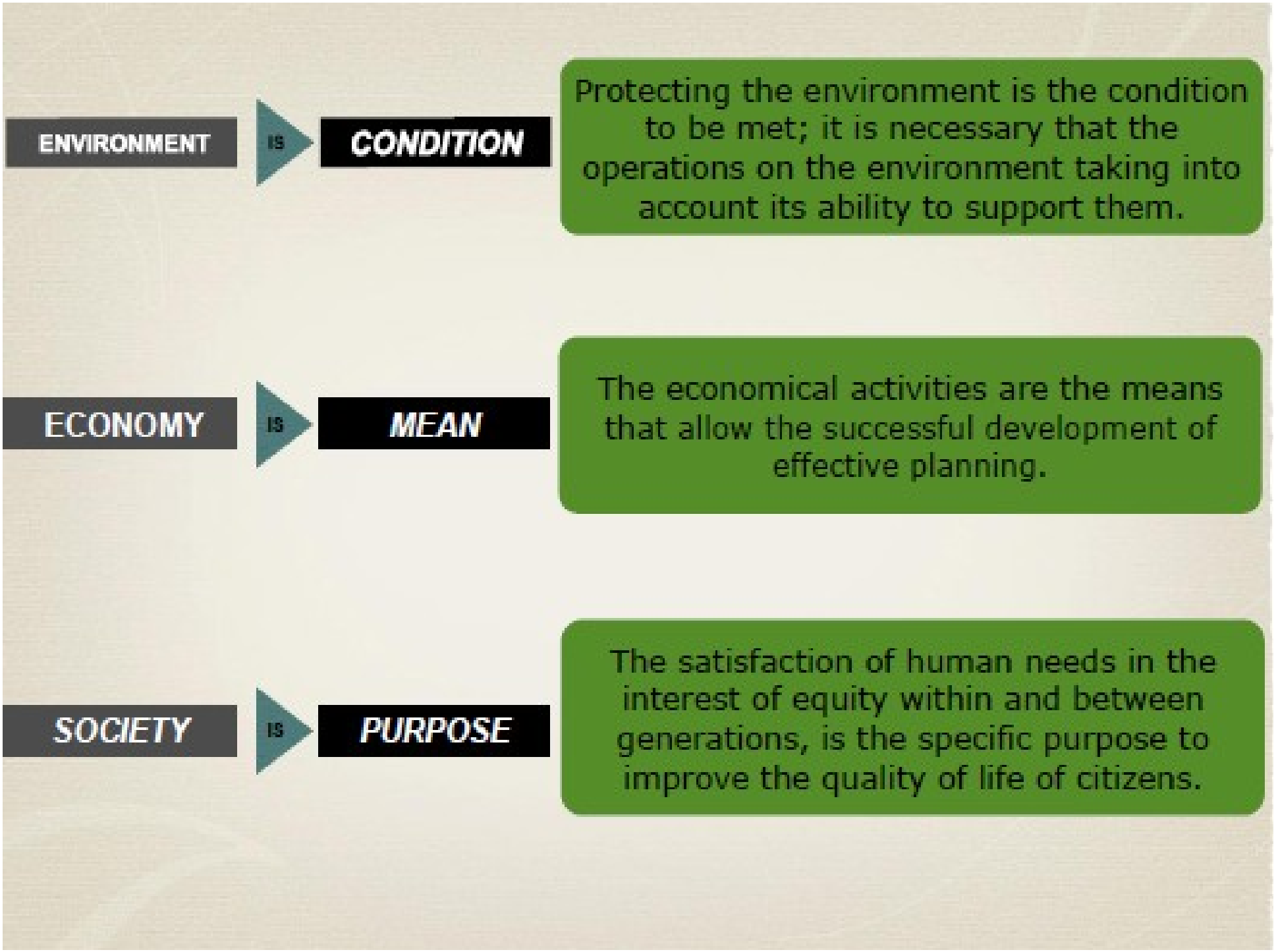
Safe, supportive homes and communities

Natural Capital

Not exceed Earth's carrying capacity

Not harm natural systems

Biodiversity protected or enhanced


ENVIRONMENT
IS
CONDITION
Protecting the environment is the condition to be met; it is necessary that the operations on the environment taking into account its ability to support them.
ECONOMY
IS
MEAN
The economical activities are the means that allow the successful development of effective planning.
SOCIETY
IS
PURPOSE
The satisfaction of human needs in the interest of equity within and between generations, is the specific purpose to improve the quality of life of citizens.

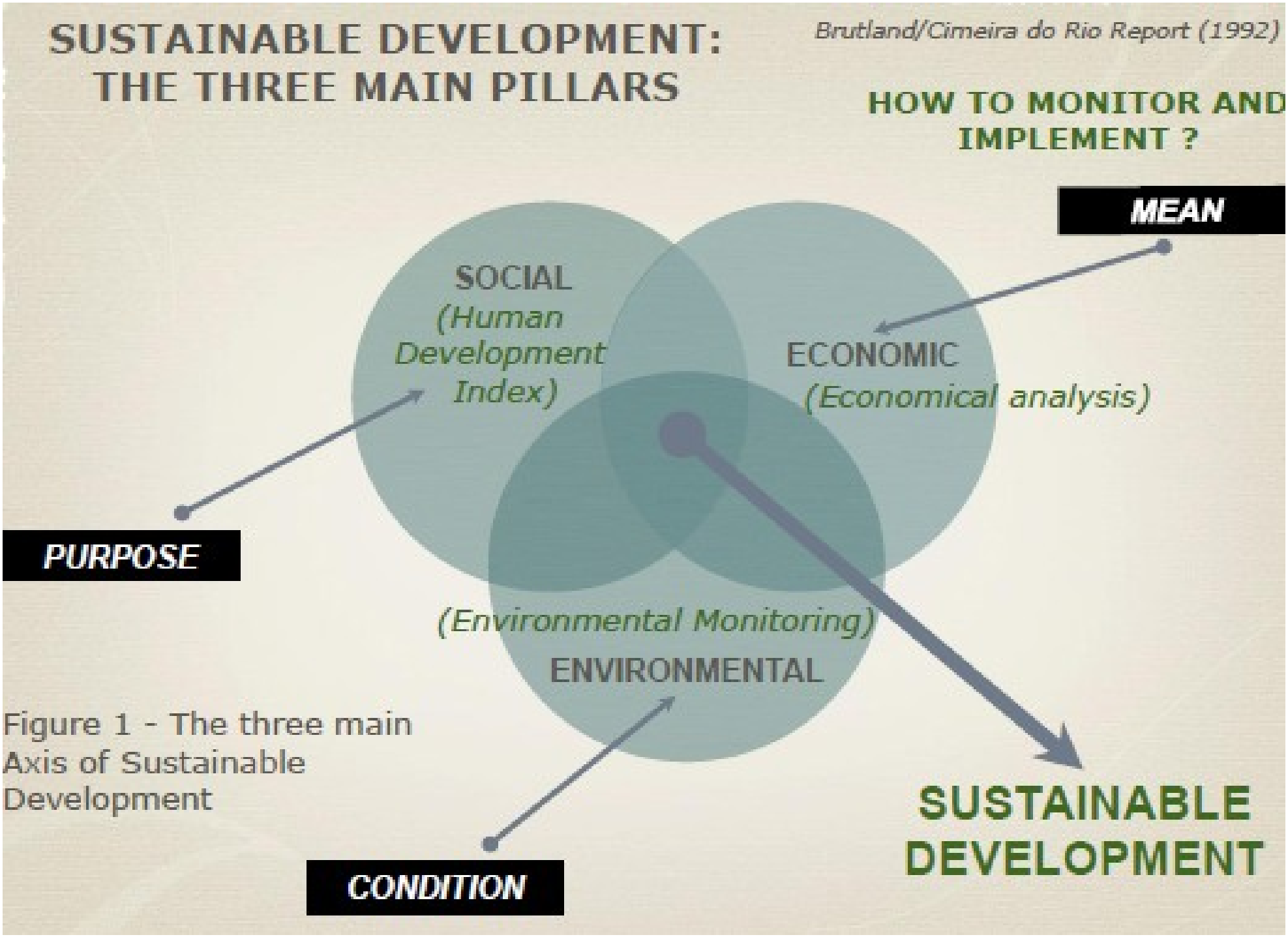
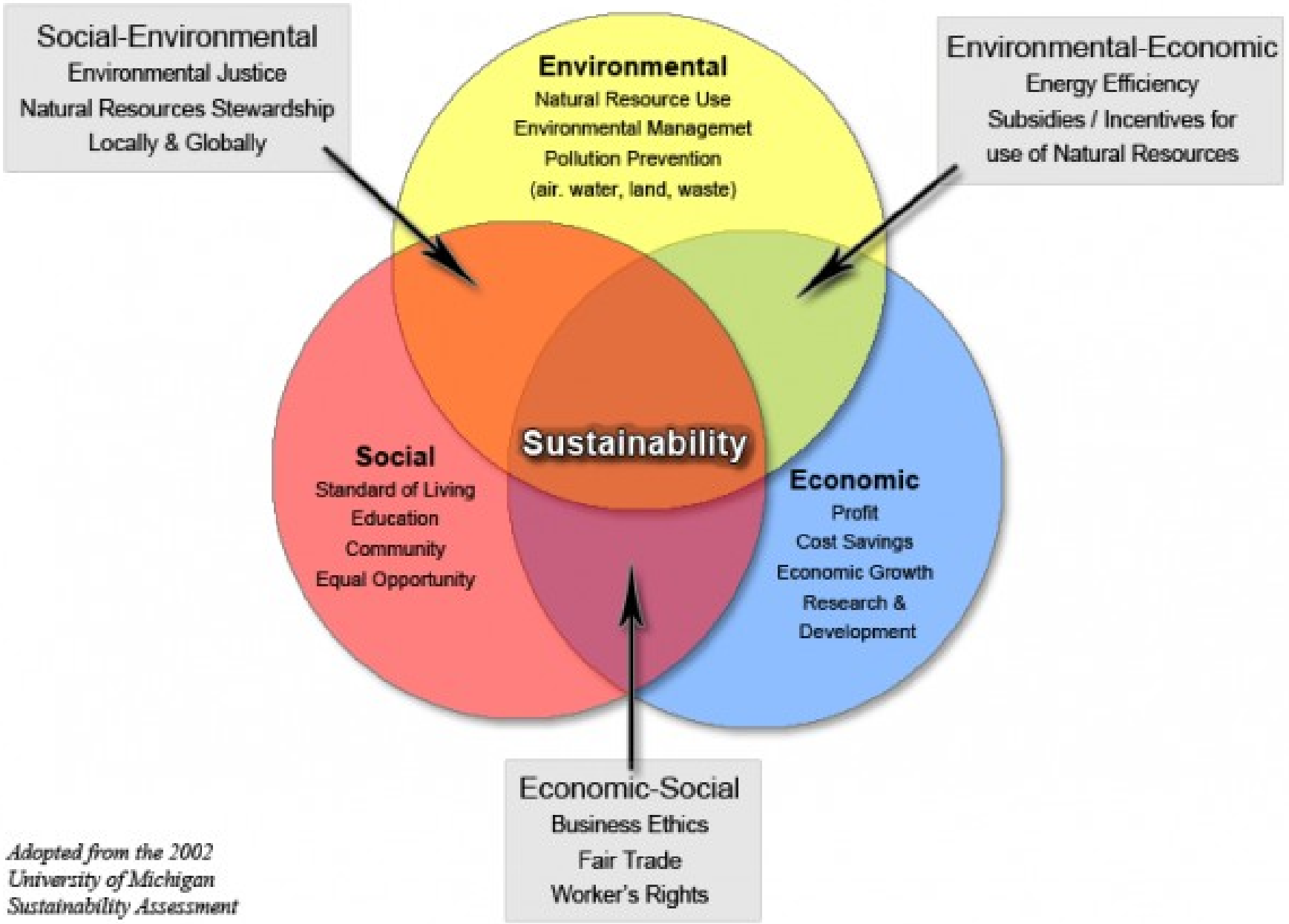


Figure 1 - The three main Axis of Sustainable Development

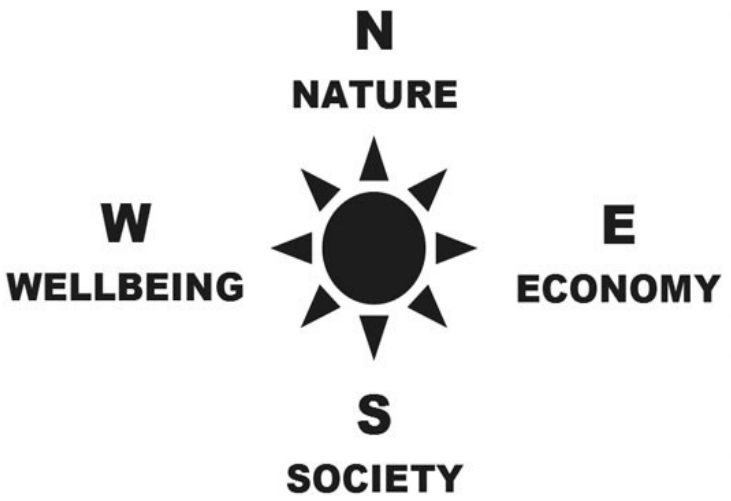
The Three Spheres of Sustainability



Adopted from the 2002 University of Michigan Sustainability Assessment

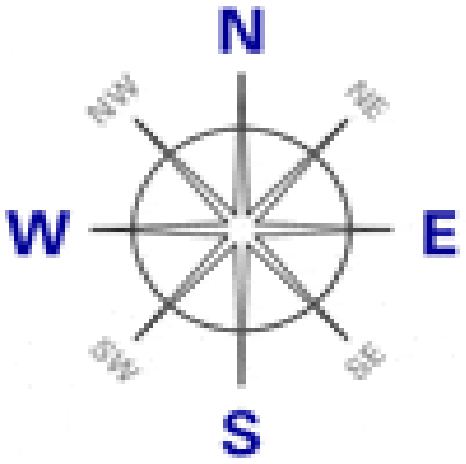

Create Value
PROFIT
Eliminate Waste
Recognize Interdependence
SUSTAINABLE DEVELOPMENT MATRIX
Energy Flows
Share Knowledge
PLANET
PEOPLE
Model Nature
Humans & Nature Co-exist
Accept Responsibility
Quality of Life

Compass of Sustainability



NATURAL SYSTEMS
Questions about the natural environment and their relationship to each other - the land, sea and living things.

WHO DECIDES?
Questions about politics and power: Who makes choices and decides what is to happen? Who benefits and loses as a result of thes decisions, and at what cost?

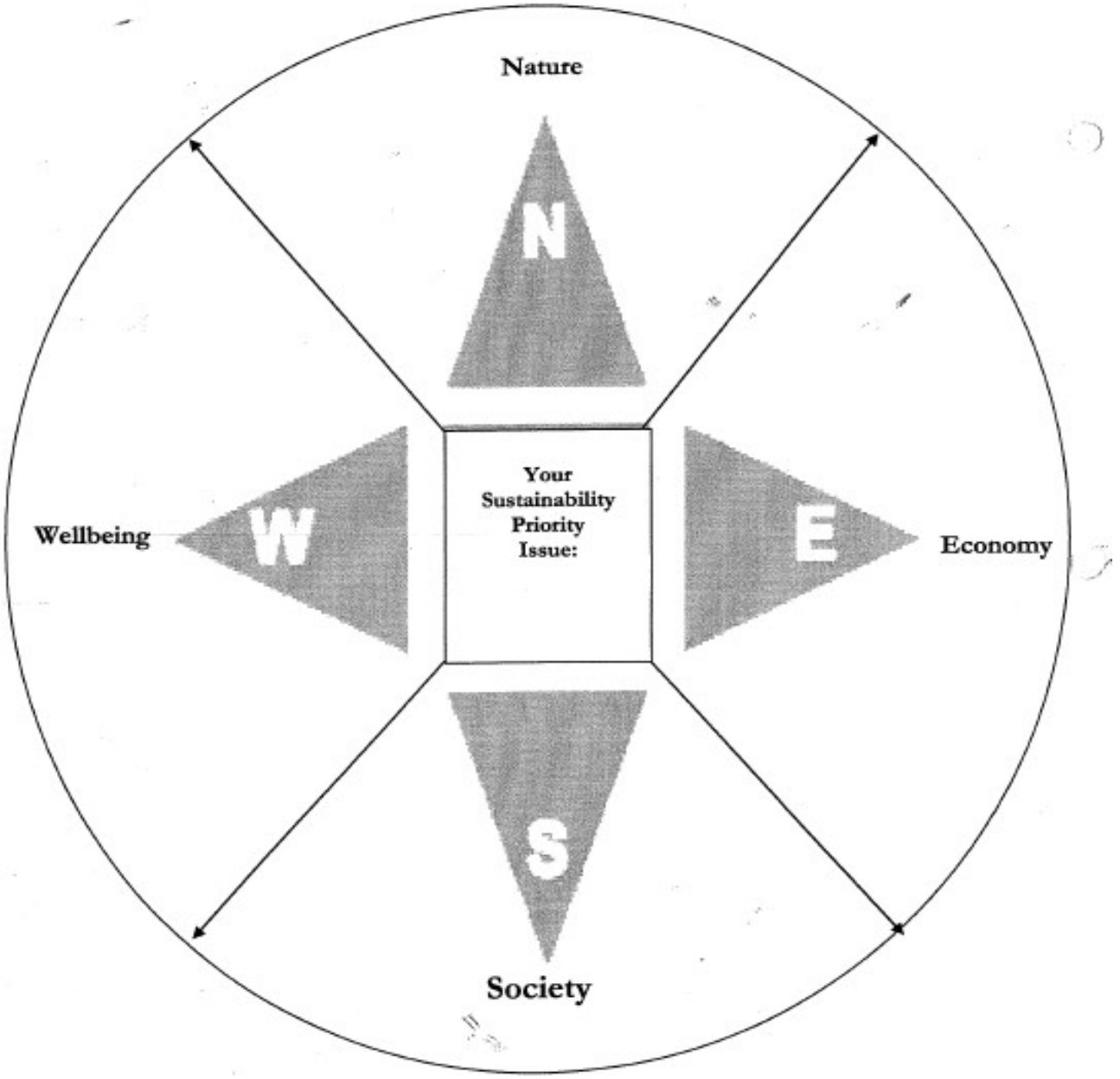


ECONOMIC SYSTEMS
Questions about money, trading, aid, ownership, buying and selling.

SOCIAL SYSTEMS
Questions about people, their relationships, their traditions and culture and the way they live, including questions about how, for example, gender, race, disability, class and age affect social relationships.

Exercise: Compass Framing of Thematic Sustainability Issues

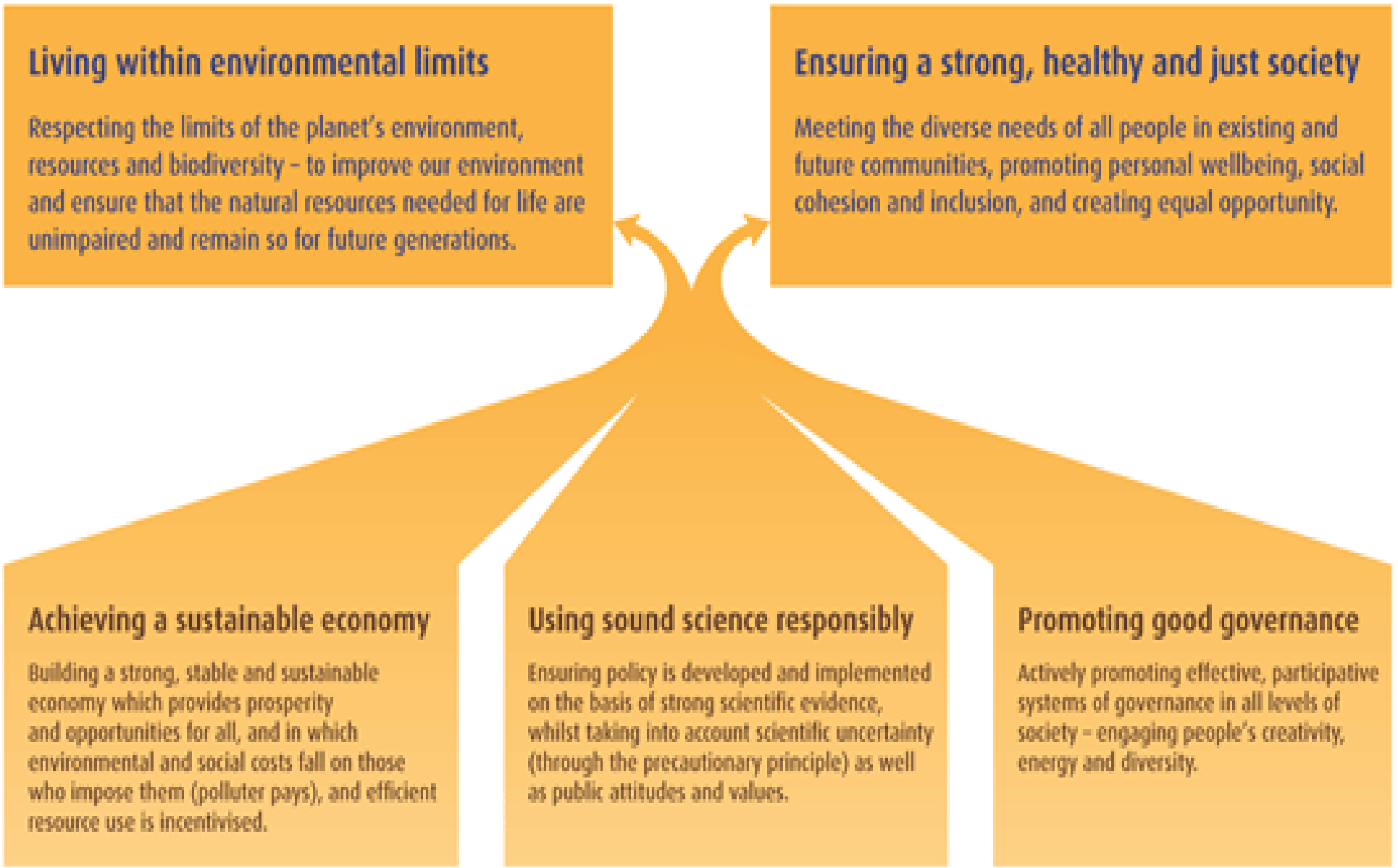
Instructions: Place your Sustainable Development Issue in the middle of the Compass then think about all the other factors, issues, variables are related to your main issue from each of the four dimensions of the Compass. Write down the related issues down in the appropriate Compass quadrant. Check the Compass on previous page.



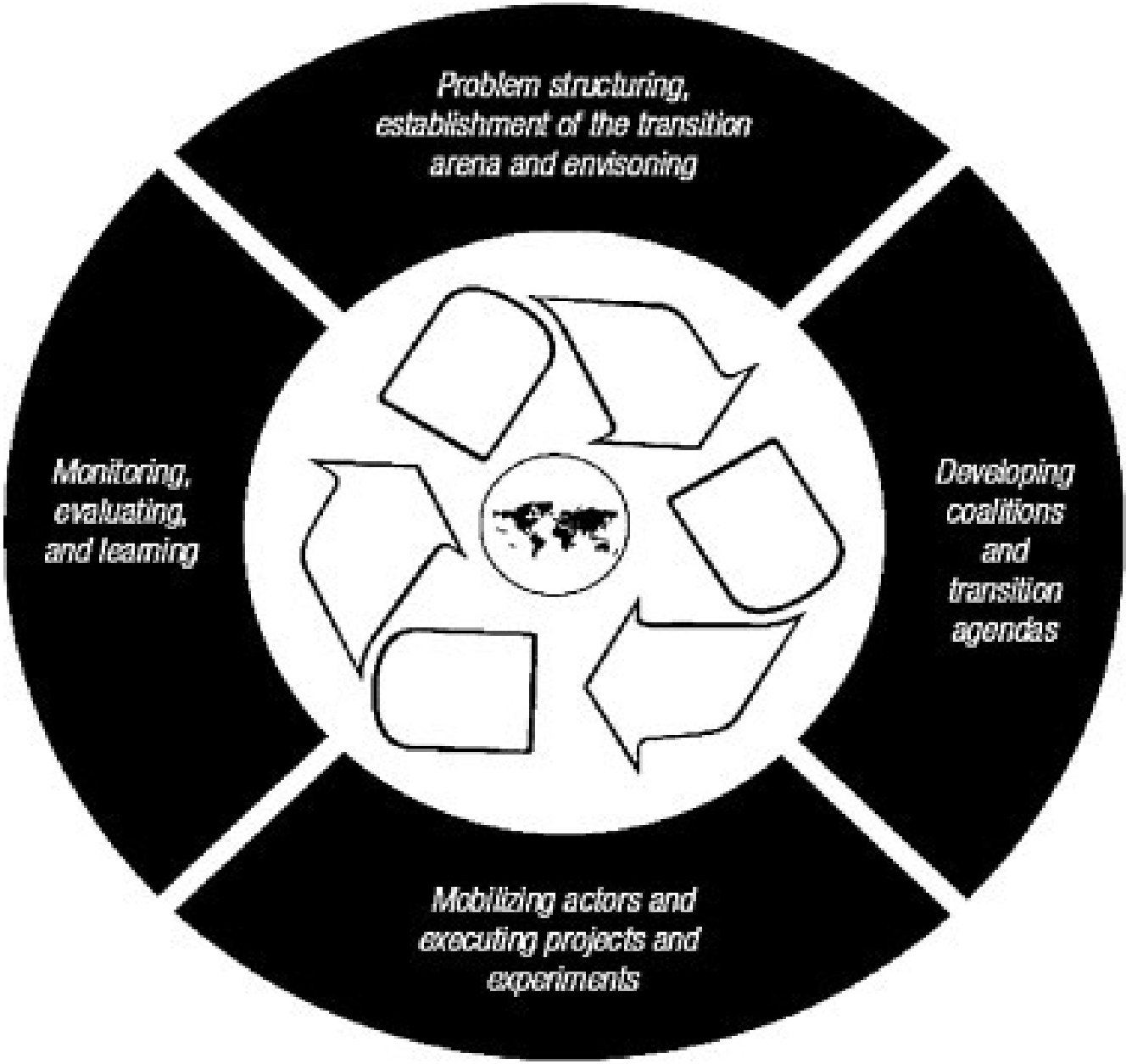
UK's Sustainable Development Strategy

Objectives

- Social progress which recognises the needs of everyone
- Effective protection of the environment
- Prudent use of natural resources
- Maintenance of high & stable levels of economic growth & employment


Living within environmental limits
Respecting the limits of the planet's environment, resources and biodiversity – to improve our environment and ensure that the natural resources needed for life are unimpaired and remain so for future generations.
Ensuring a strong, healthy and just society
Meeting the diverse needs of all people in existing and future communities, promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunity.
Achieving a sustainable economy
Building a strong, stable and sustainable economy which provides prosperity and opportunities for all, and in which environmental and social costs fall on those who impose them (polluter pays), and efficient resource use is incentivised.
Using sound science responsibly
Ensuring policy is developed and implemented on the basis of strong scientific evidence, whilst taking into account scientific uncertainty (through the precautionary principle) as well as public attitudes and values.
Promoting good governance
Actively promoting effective, participative systems of governance in all levels of society – engaging people's creativity, energy and diversity.

2 Sustainability Transition


Problem structuring, establishment of the transition arena and envisoning
Developing coalitions and transition agendas
Mobilizing actors and executing projects and experiments
Monitoring, evaluating, and learning

WWF One Planet Living

One Planet Living Principles

Zero carbon - Making buildings more energy efficient and delivering all energy with renewable technologies.

Zero waste - Reducing waste, reusing where possible, and ultimately sending zero waste to landfill.

Sustainable transport - Encouraging low carbon modes of transport to reduce emissions, reducing the need to travel.

Sustainable materials - Using sustainable healthy products, with low embodied energy, sourced locally, made from renewable or waste resources.

Local and sustainable food - Choosing low impact, local, seasonal and organic diets and reducing food waste.

Sustainable water - Using water more efficiently in buildings and in the products we buy; tackling local flooding and water course pollution.

Land use and wildlife - Protecting and restoring biodiversity and natural habitats through appropriate land use and integration into the built environment.

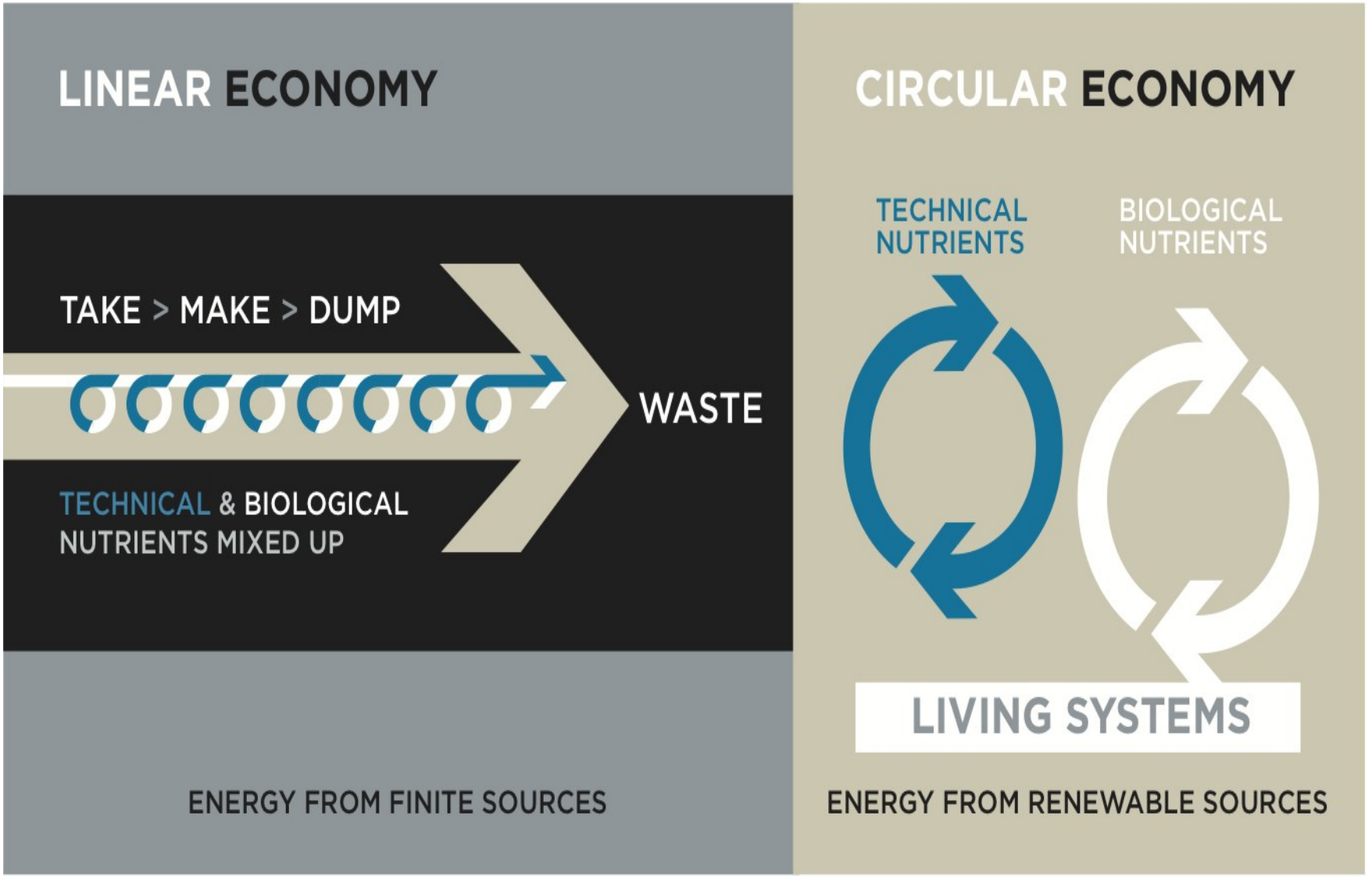
Culture and community - Reviving local identity and wisdom; supporting and participating in the arts.

Equity and local economy - Creating bioregional economies that support fair employment, inclusive communities and international fair trade.

Health and happiness - Encouraging active, sociable, meaningful lives to promote good health and well being.

3 Circular Economy

Film The Circular Economy



AFTER W McDONOUGH AND M BRAUNGART

Circular Economy Principles

Waste is food

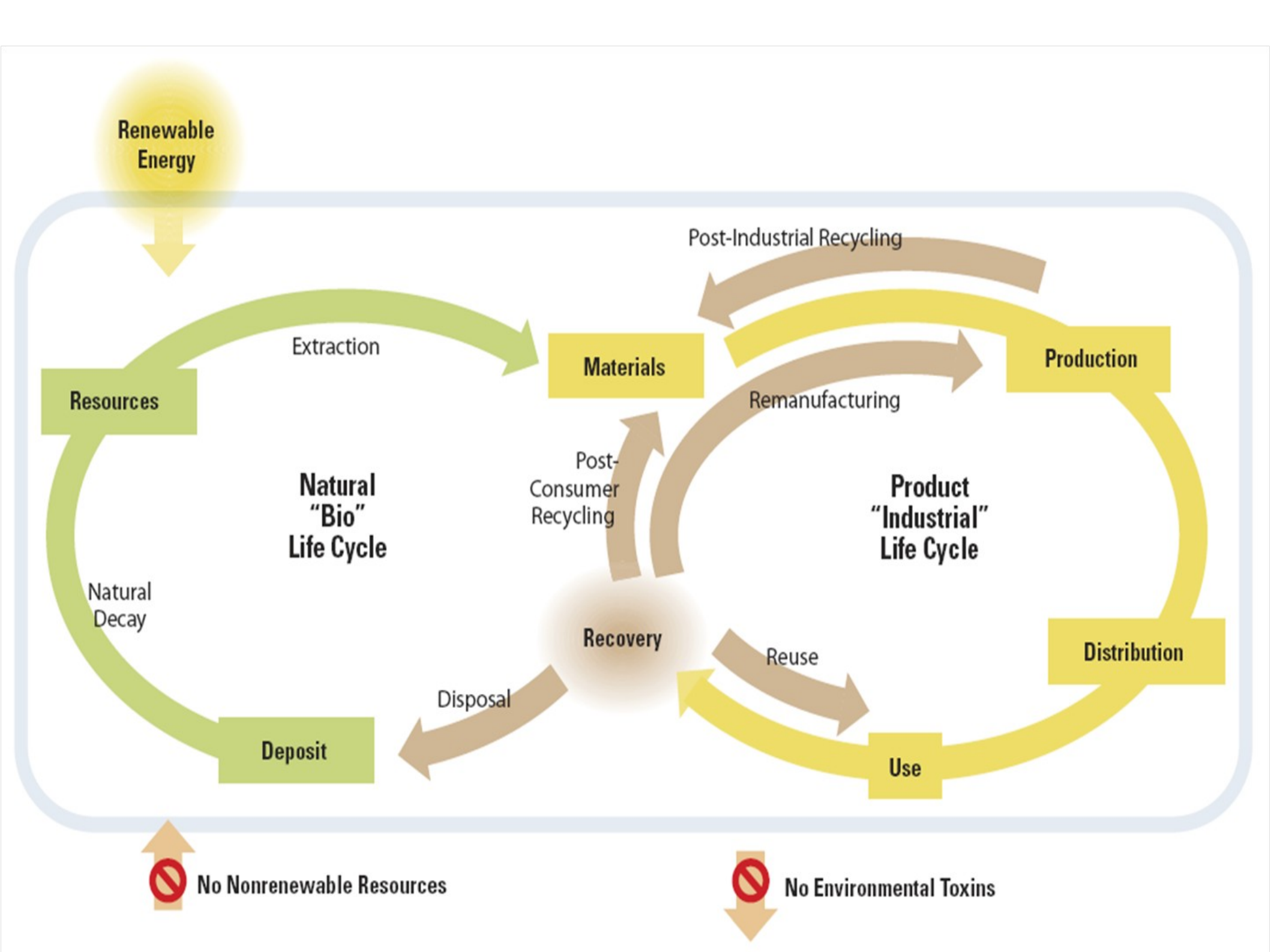
Diversity is strength

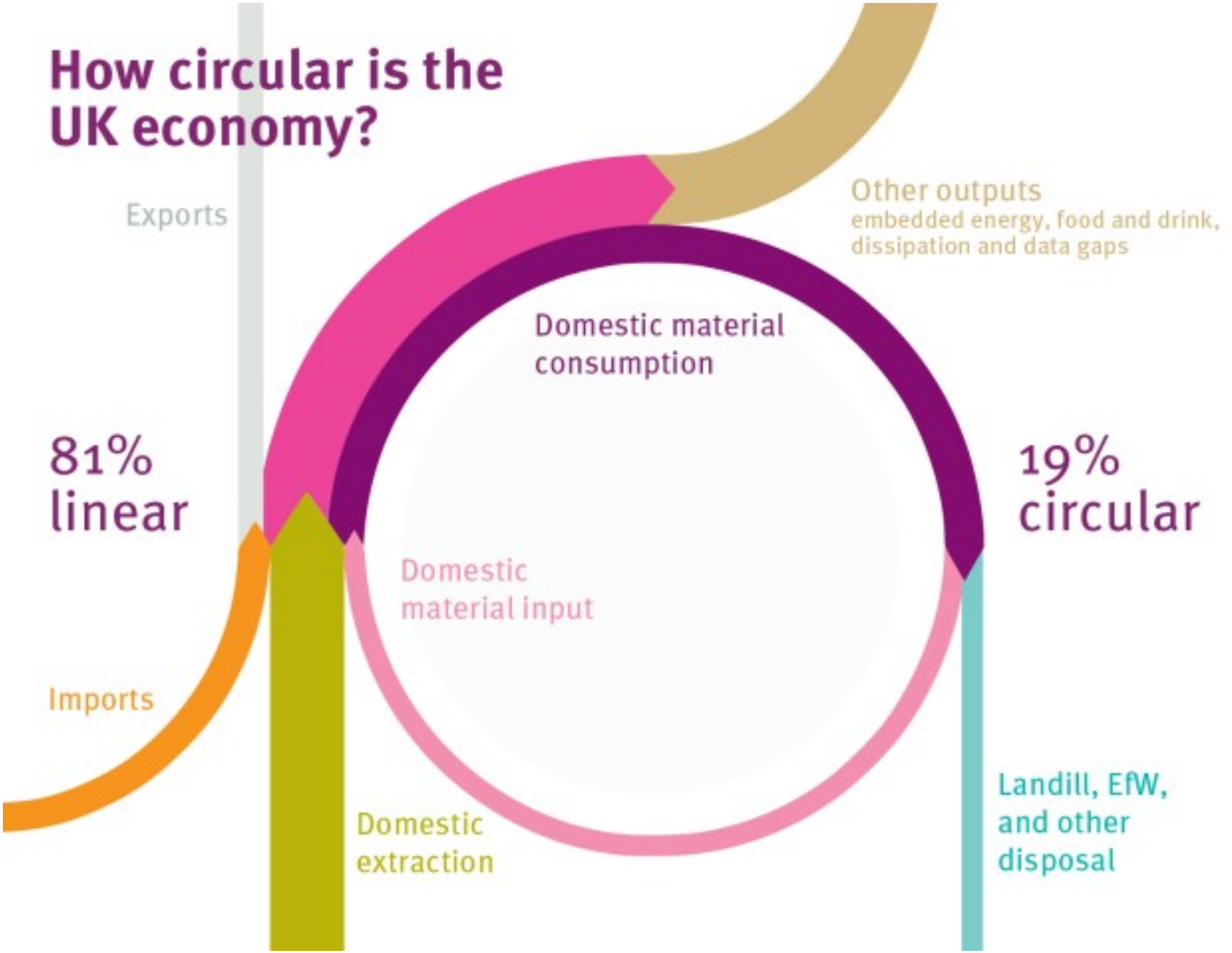
To make this happen…

Energy must come from renewable sources

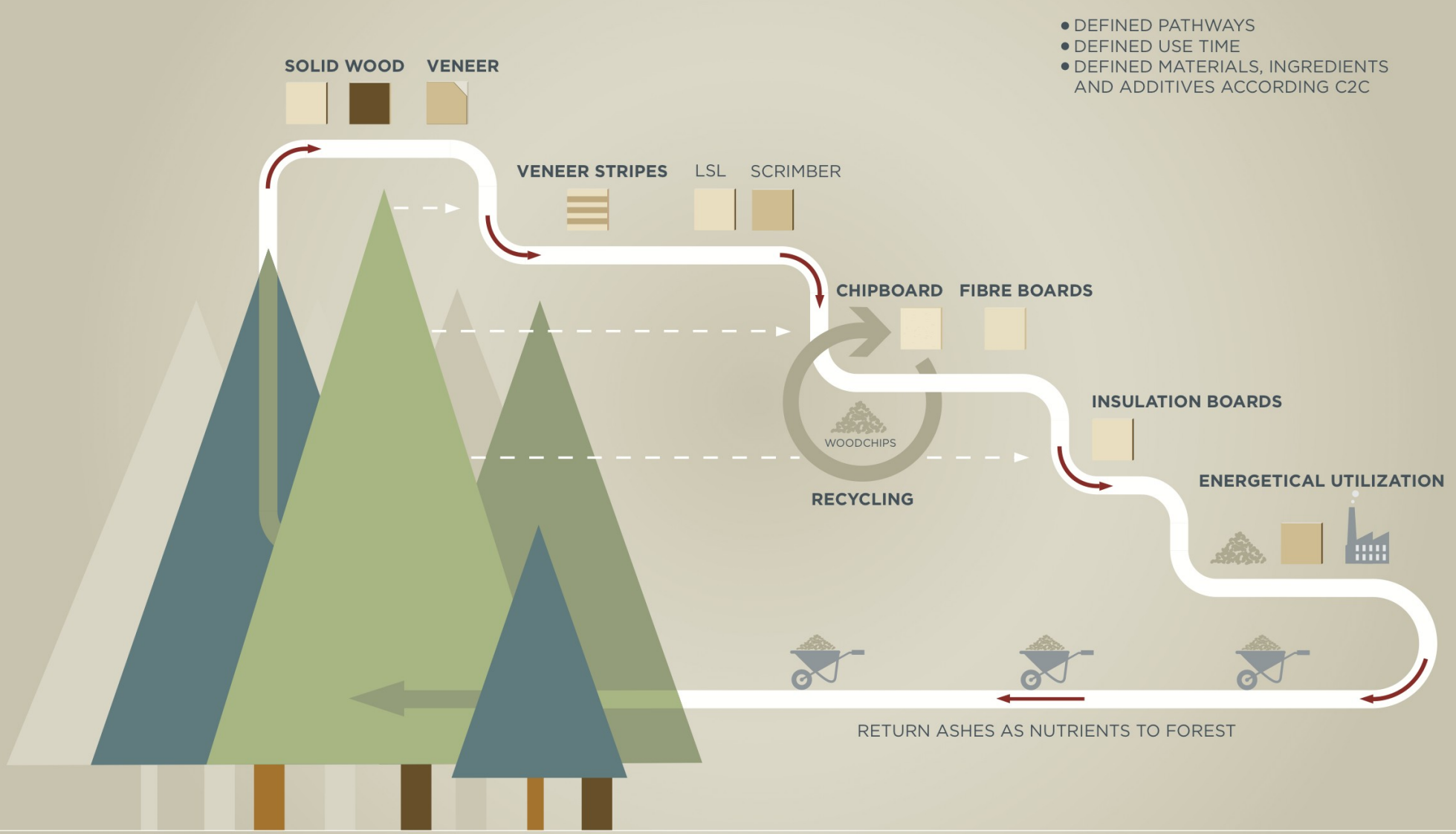
Prices must tell the truth

Thinking in terms of systems is key


Renewable Energy
Post-Industrial Recycling
Extraction
Materials
Production
Resources
Remanufacturing
Post-
Consumer
Recycling
Natural
"Bio"
Life Cycle
Product
"Industrial"
Life Cycle
Natural
Decay
Recovery
Reuse
Distribution
Disposal
Deposit
Use
No Nonrenewable Resources
No Environmental Toxins


How circular is the UK economy?
Exports
Other outputs
embedded energy, food and drink, dissipation and data gaps
Domestic material consumption
81% linear
19% circular
Domestic material input
Imports
Domestic extraction
Landill, EfW, and other disposal

WOOD CASCADE ACCORDING TO CRADLE TO CRADLE



ELLEN MACARTHUR FOUNDATION

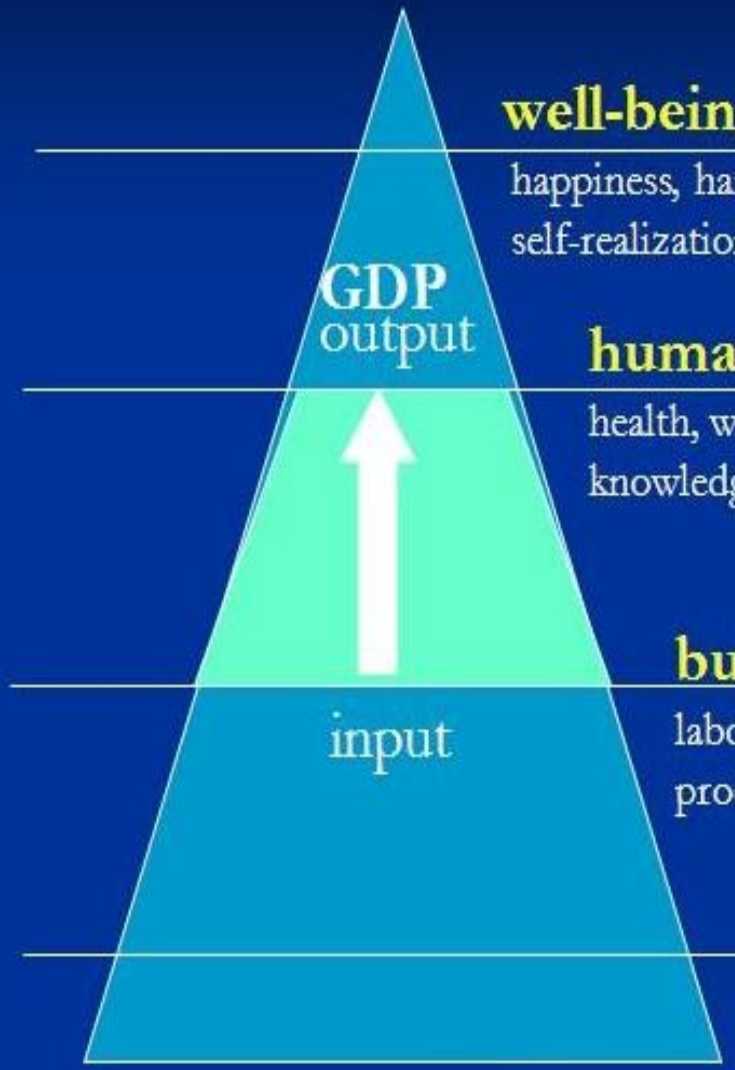
4 Low Entropy Economy

High Entropy Economy	Low Entropy Economy
Less with more Luxuries High Impact Economy = Age of economic growth	More with less Necessities Entropic world view
Private ownership of resources	Stewardship
Increased centralisation of power	Decentralisation of power
Elimination of diversity, Standardisation	Diversity
More reliance on science and technology	Nurturing
Refusal to set limits on production and consumption	Geo-biological limits acknowledged

The Natural Step

The Four System Conditions...
In a sustainable society, nature is not subject to systematically increasing:
1. concentrations of substances extracted from the earth's crust
2. concentrations of substances produced by society
3. degradation by physical means
4. and, in that society, people are not subject to conditions that systemically undermine their capacity to meet their needs

Herman Daly's Pyramid



well-being

happiness, harmony, identity fulfillment, self-respect,
self-realization, community, transcendence, enlightenment

human-capital, social capital

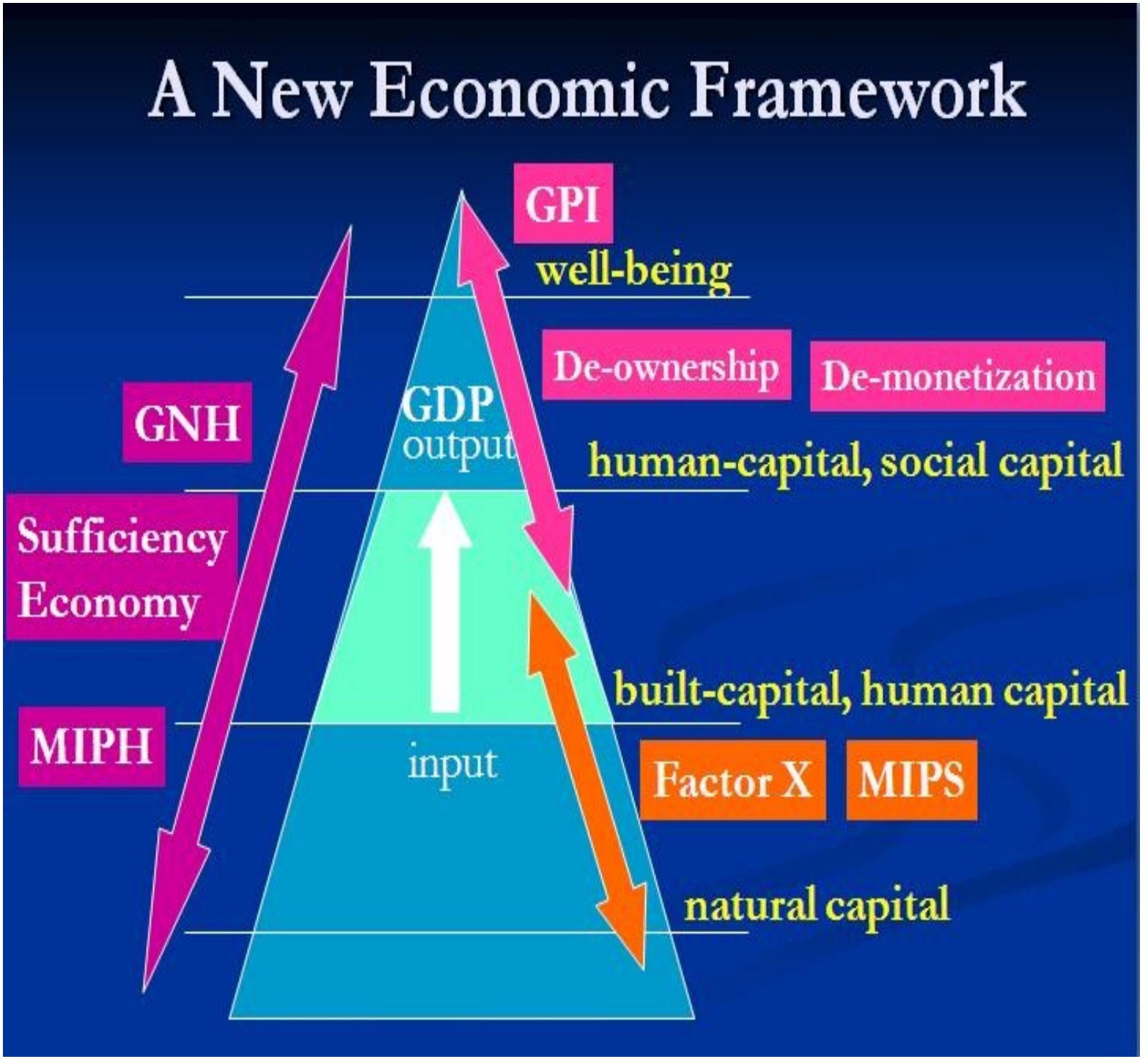
health, wealth, leisure, mobility
knowledge, communication, consumer goods

built-capital, human capital

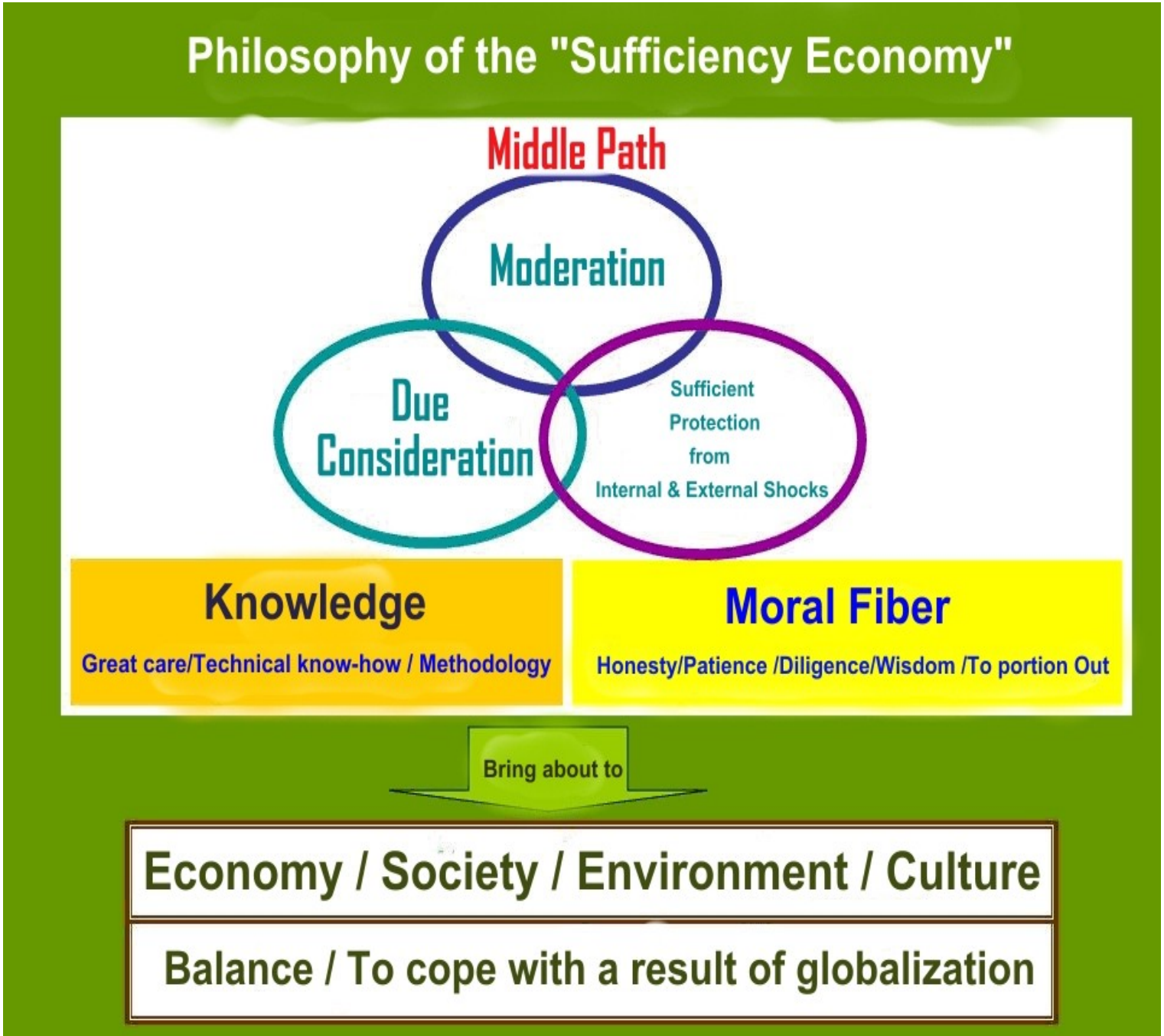
labor, tool, factories,
processed raw materials

natural capital

solar energy, the biosphere,
earth materials,
the biochemical cycles


A New Economic Framework
GPI
well-being
De-ownership
De-monetization
GNH
GDP
output
human-capital, social capital
Sufficiency
Economy
built-capital, human capital
MIPH
input
Factor X
MIPS
natural capital

5 Sufficient



5 Sufficient

Film Sufficiency Economy principle in a Thai vocational college

Sufficiency

吾唯足知

I only know that I have enough.

He who knows enough is enough will always have enough.

Sufficient Consumption

Activity **Meat or Veg?**

Learn that we can all make choices about our consumption, but we need good scientific evidence and clear values

Do we need or want a global food transition to less meat?

Mitigating climate change through food policy: The livestock connection and solution

Livestock production: recent trends, future prospects

Sufficient Consumption

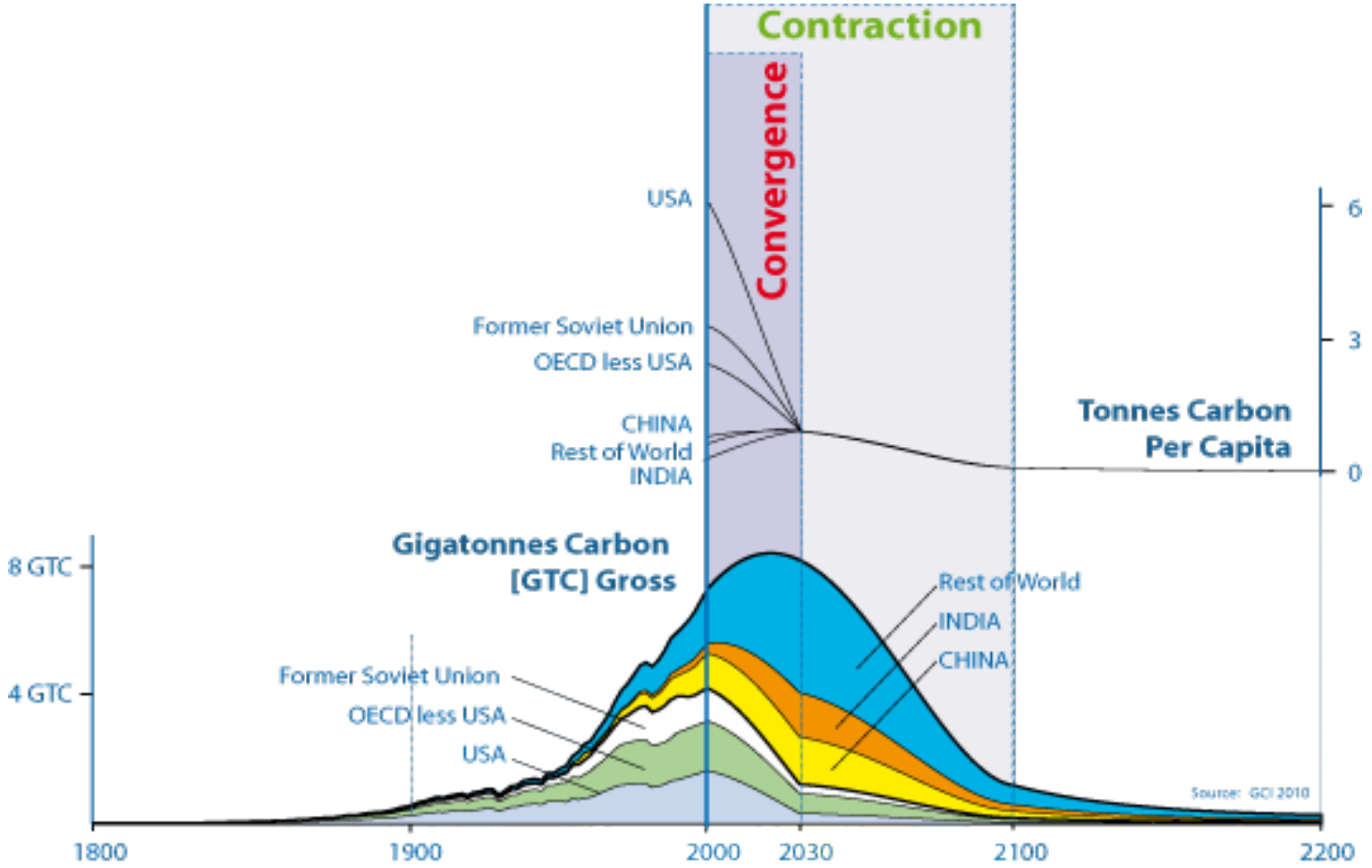
Activity **What's the impact of replacing our mobile phones?**

Learn that consumer choices in one country make social, economic and environmental issues in other countries.

See Mobile phones - CT and the DRC

6 Equitable

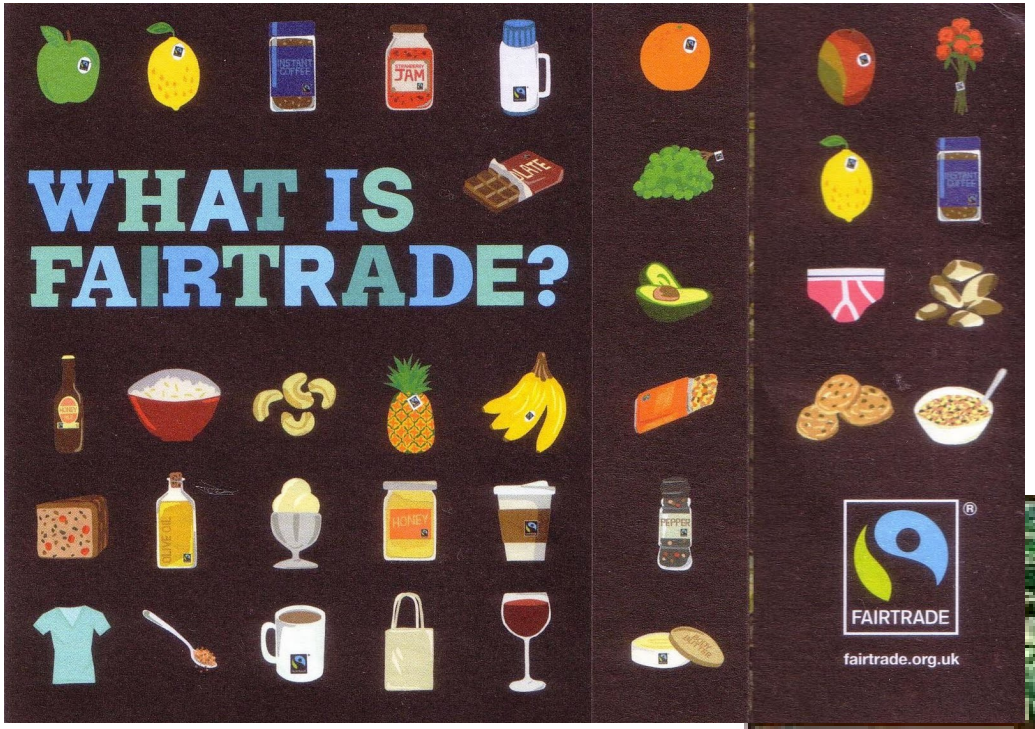
Film Contract and converge animation



This example shows regionally negotiated rates of C&C.
It is for a 450ppmv Contraction Budget, with Convergence by 2030.

Fair Trade

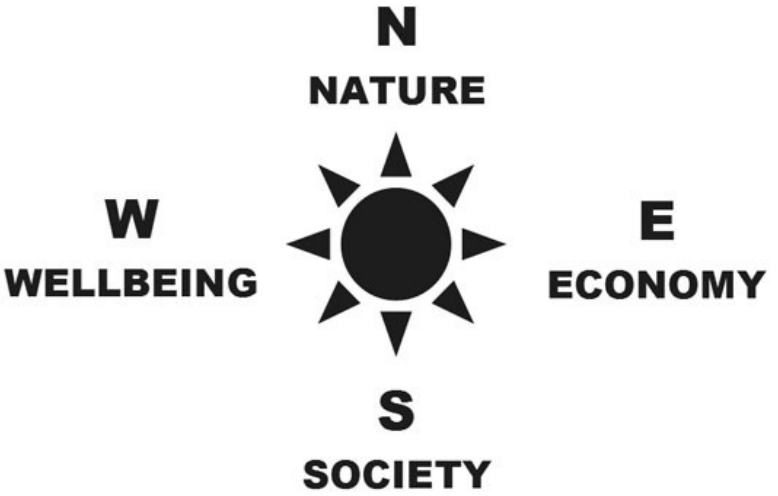
Film Fair trade – The Movie



7 Well-being and happiness

Film Bhutan, Gross National Happiness and Sustainable Development

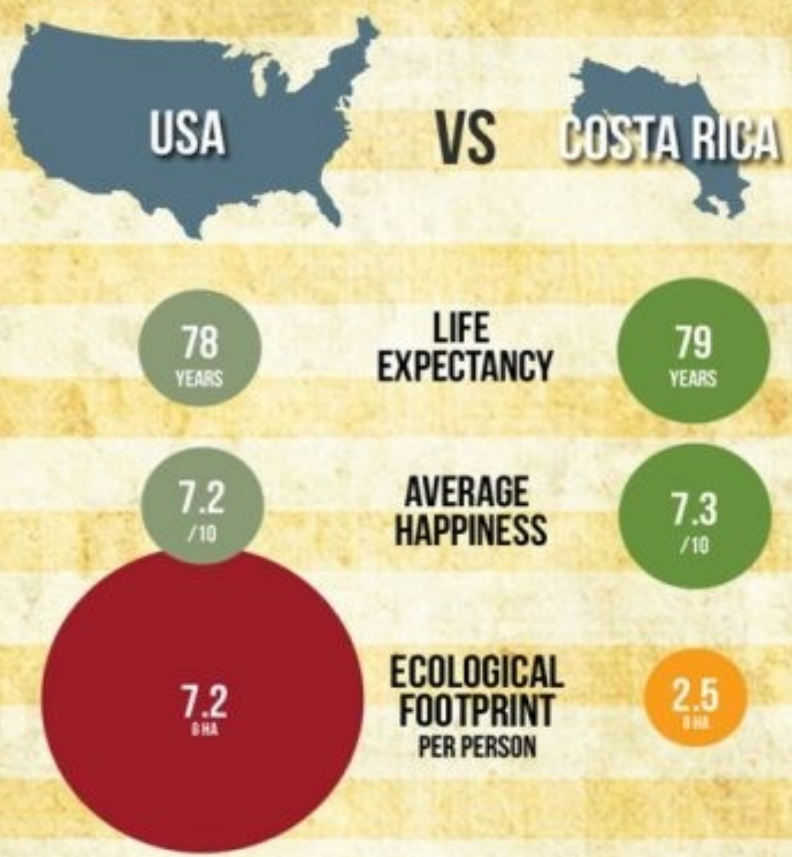
7 Well-being and happiness



7 Well-being and happiness

Film Bhutan, Gross National Happiness and Sustainable Development

WHICH ECONOMY IS MORE EFFICIENT?



SEE HOW OTHER COUNTRIES COMPARE:

WWW.HAPPYPLANETINDEX.ORG

HAPPY PLANET INDEX

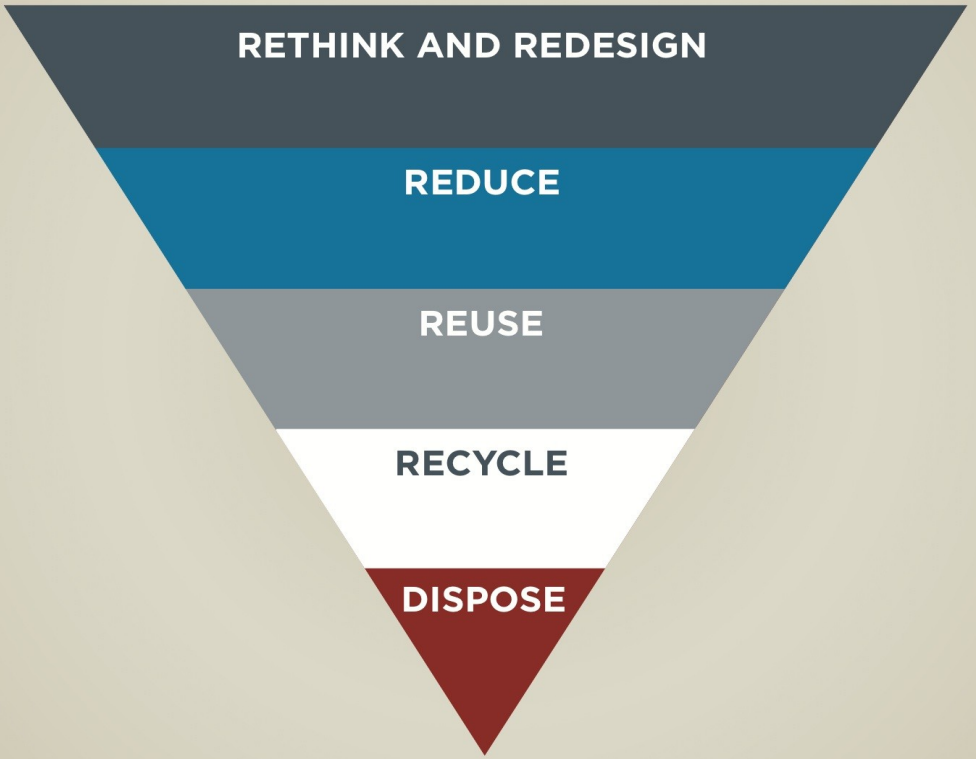
8 Efficient

Film UNIDO Eco-efficiency (Cleaner Production) Programme (Part 2)

Eco-efficiency objectives

- Reducing consumption of resources
  - energy, materials, water, land
- Reducing impact on nature by minimising
  - Minimising air emissions
  - Minimising water discharges
  - Minimising waste disposal
  - Minimising dispersion of toxic substances
  - Sustainable use of renewable resources
- Increasing product or service value by providing more benefits to customers
- Implement an Environmental Management System to drive this approach

HIERARCHY OF WASTE



9 Local

Film Food miles (Crafers Primary School)

LocalCheck

Much in little, much in local

MULTUM IN PARVO

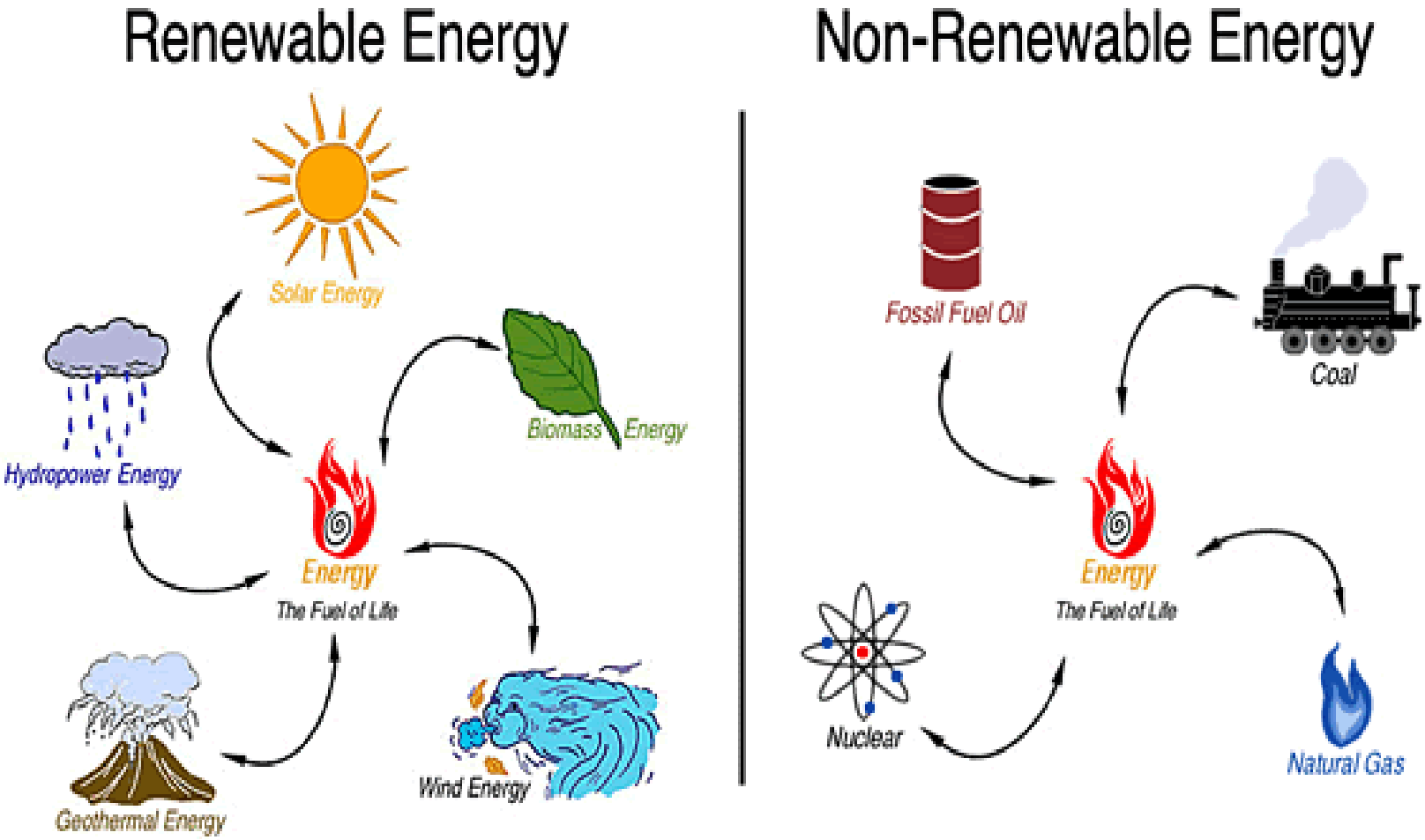
LocalCheck is all about helping people to recognise and value their local heritage so they can sustain the distinctive resources of the locality to pass on to future generations.

Localisation v. Globalisation

Activity **Debate the pros and cons of globalisation**
One team to support and one team to oppose the motion:
“Globalisation is good for people, profit and the planet”.

10 Renewable

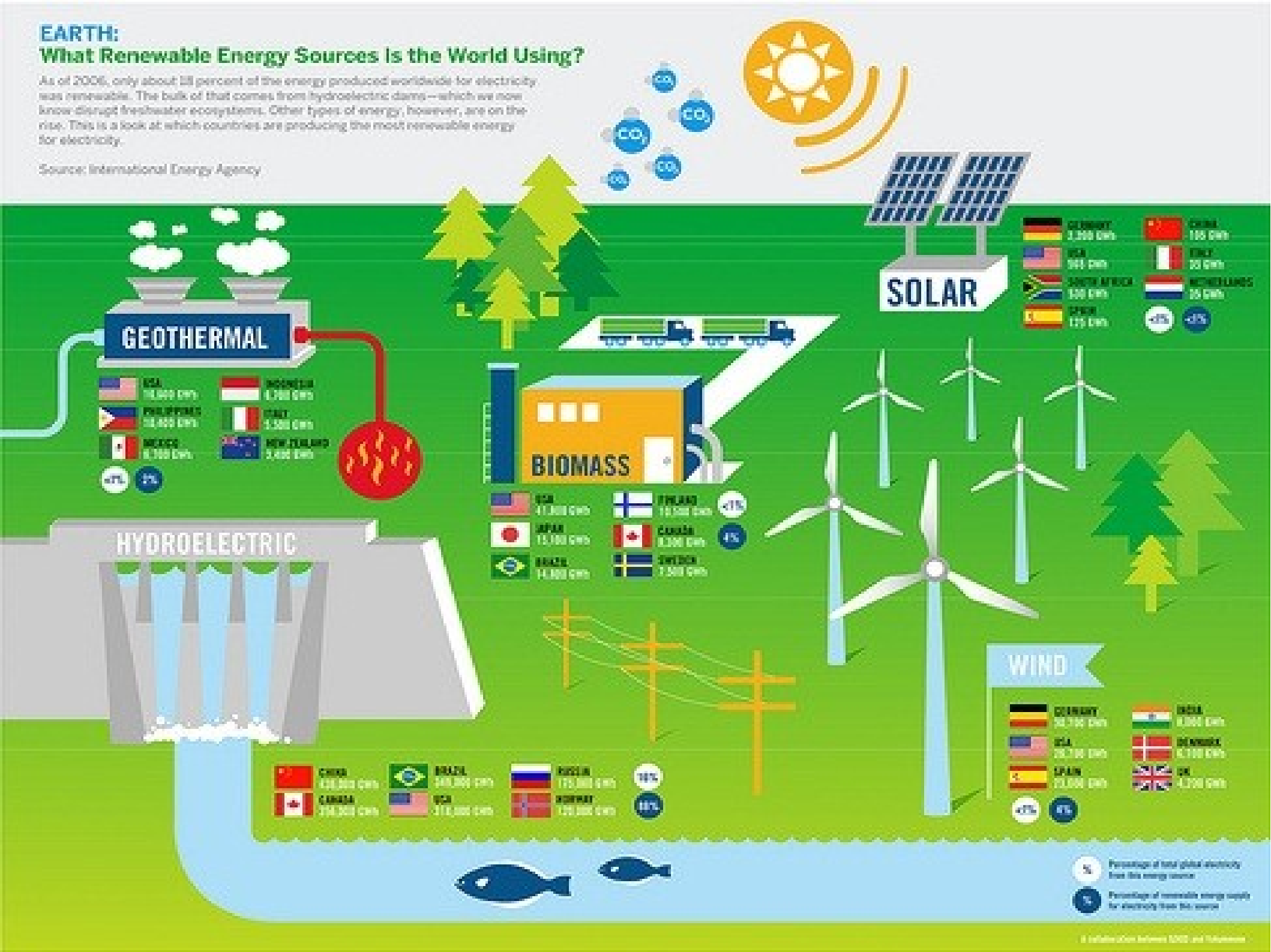
Films Ashden Awards - Sustainable Energy solutions



EARTH:
What Renewable Energy Sources Is the World Using?

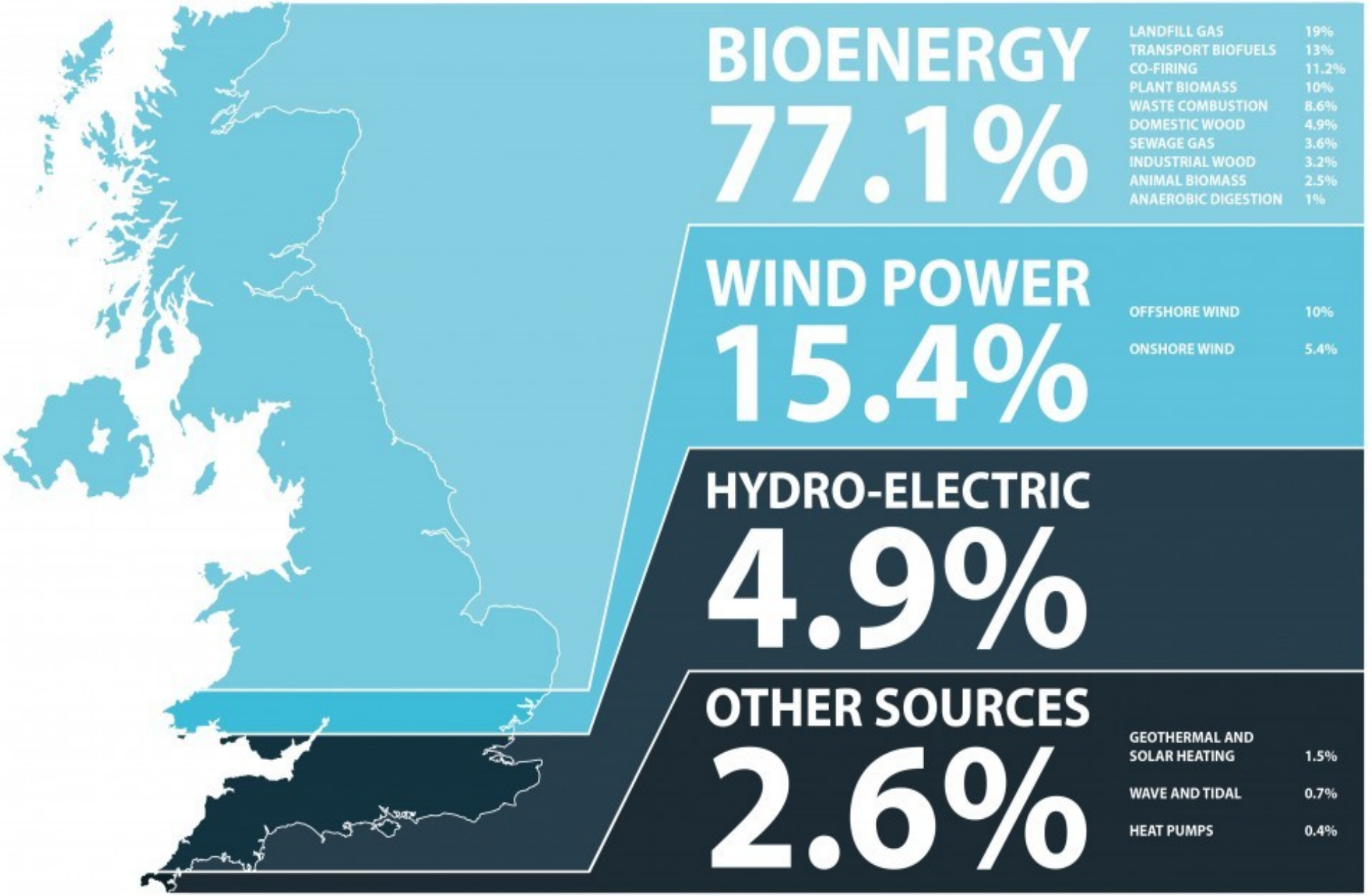
As of 2006, only about 18 percent of the energy produced worldwide for electricity was renewable. The bulk of that comes from hydroelectric dams—which we now know disrupt freshwater ecosystems. Other types of energy, however, are on the rise. This is a look at which countries are producing the most renewable energy for electricity.

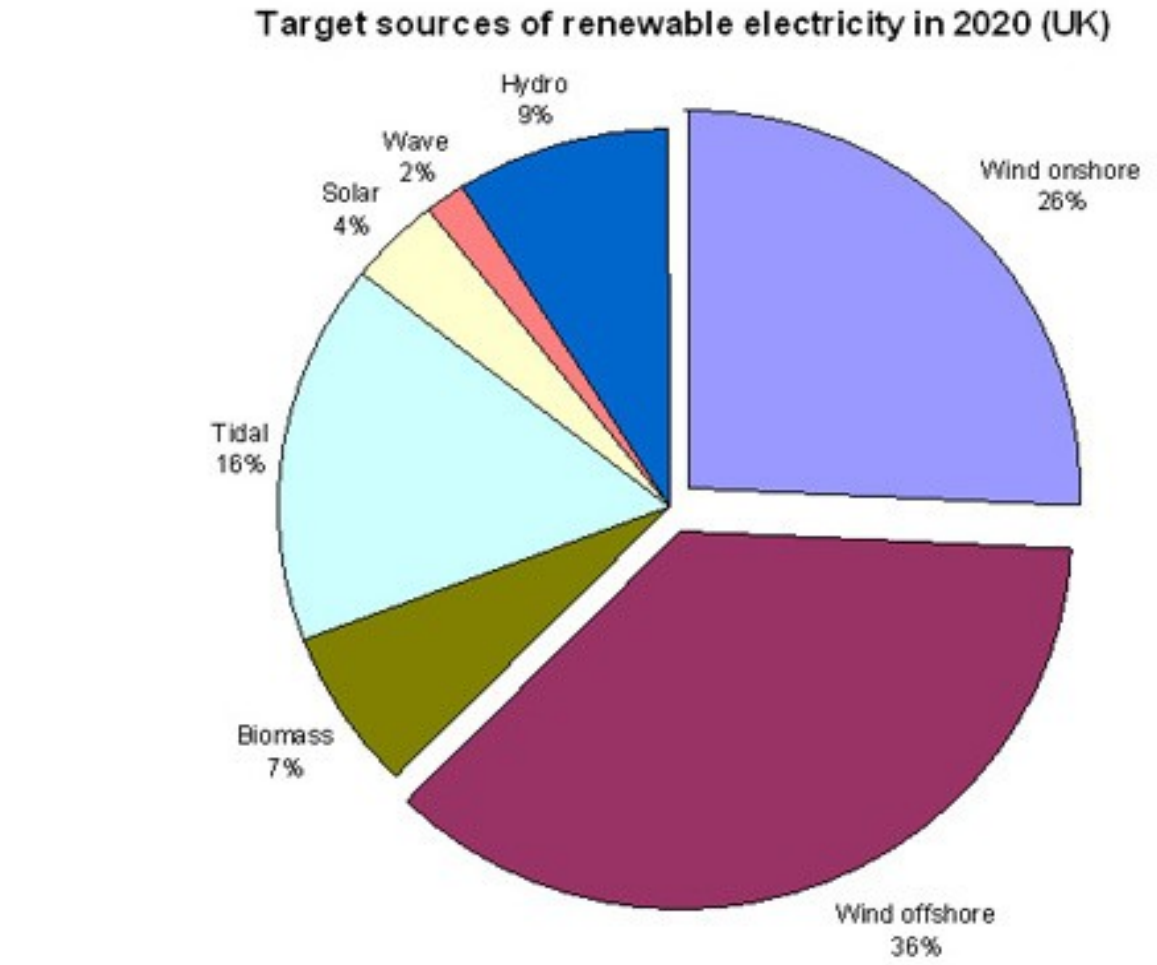
Source: International Energy Agency

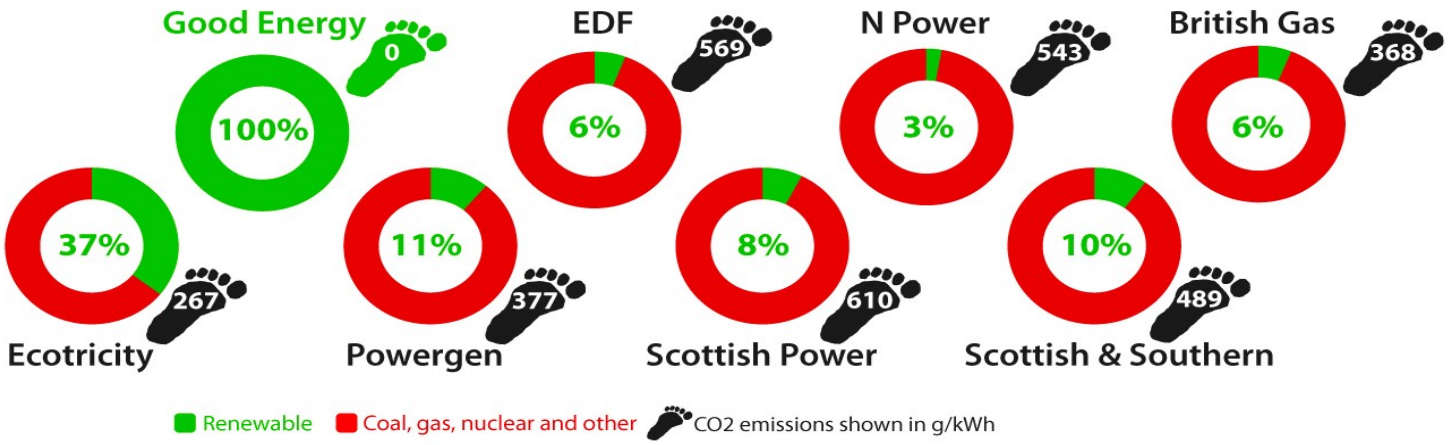


UK RENEWABLE ENERGY 2012

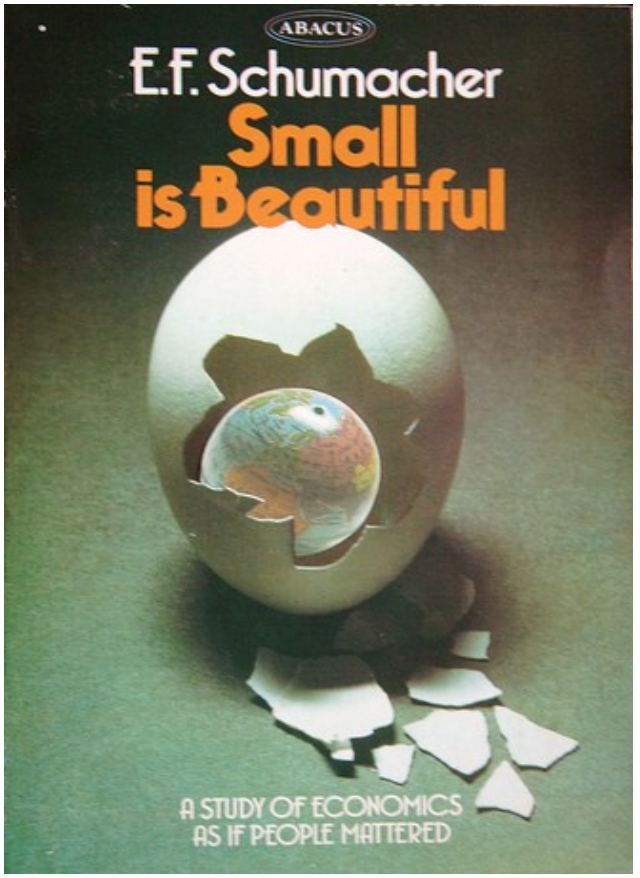
Renewable Energy Accounts for 12% of Total UK Energy Consumption




Target sources of renewable electricity in 2020 (UK)
Hydro 9%
Wave 2%
Solar 4%
Wind onshore 26%
Tidal 16%
Biomass 7%
Wind offshore 36%


Good Energy
0
100%
EDF
569
6%
N Power
543
3%
British Gas
368
6%
37%
267
Ecotricity
11%
377
Powergen
8%
610
Scottish Power
10%
489
Scottish & Southern
Renewable
Coal, gas, nuclear and other
CO2 emissions shown in g/kWh

11 Small-scale and Diverse



Uniformity v. Diversity

Standardised v Complex

Monoculture v. polyculture

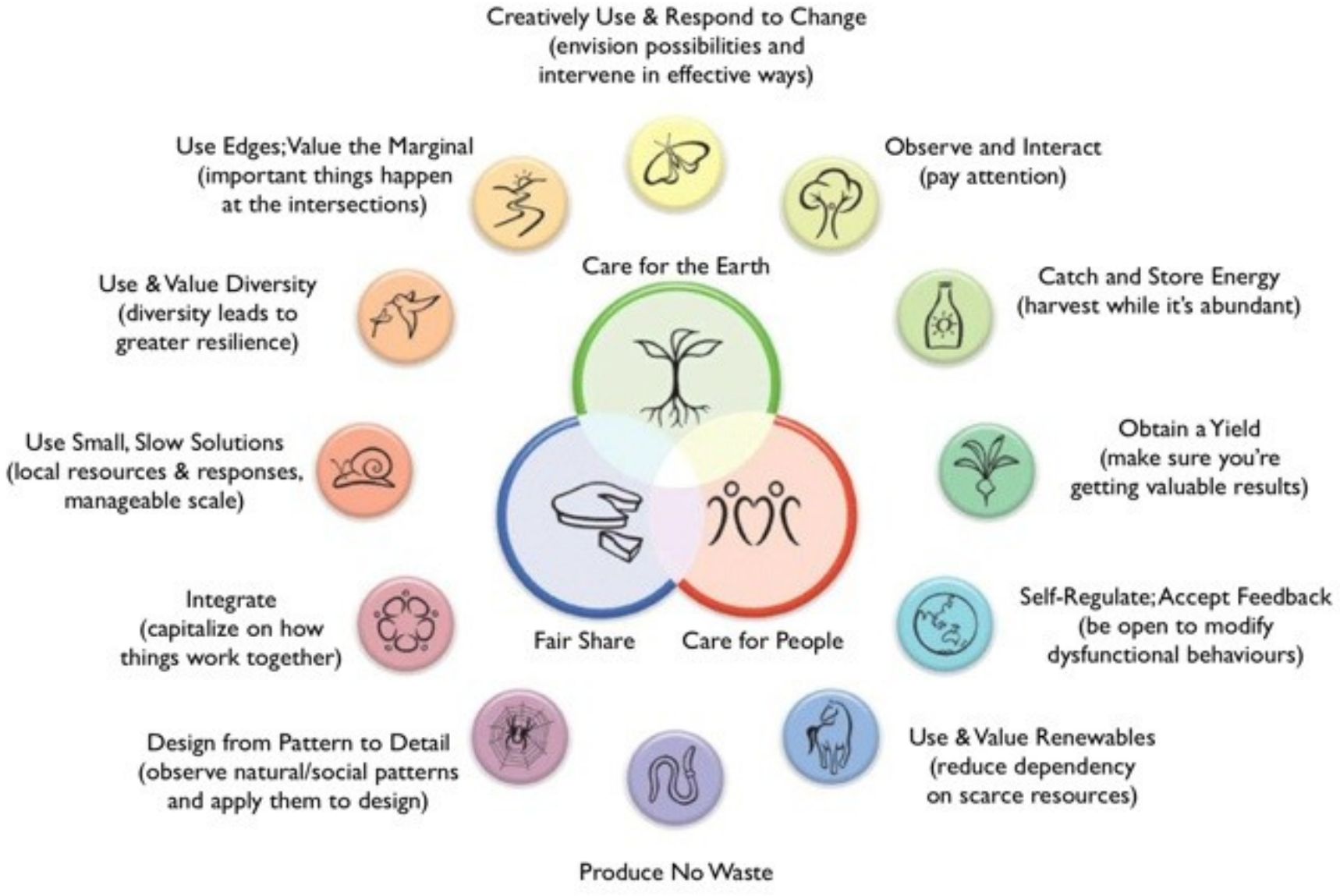
Genetic, Species and Ecosystem diversity

Alien, introduced species

Cultural diversity - immigration and emigration

Permaculture

Presentation [An Introduction to Permaculture]



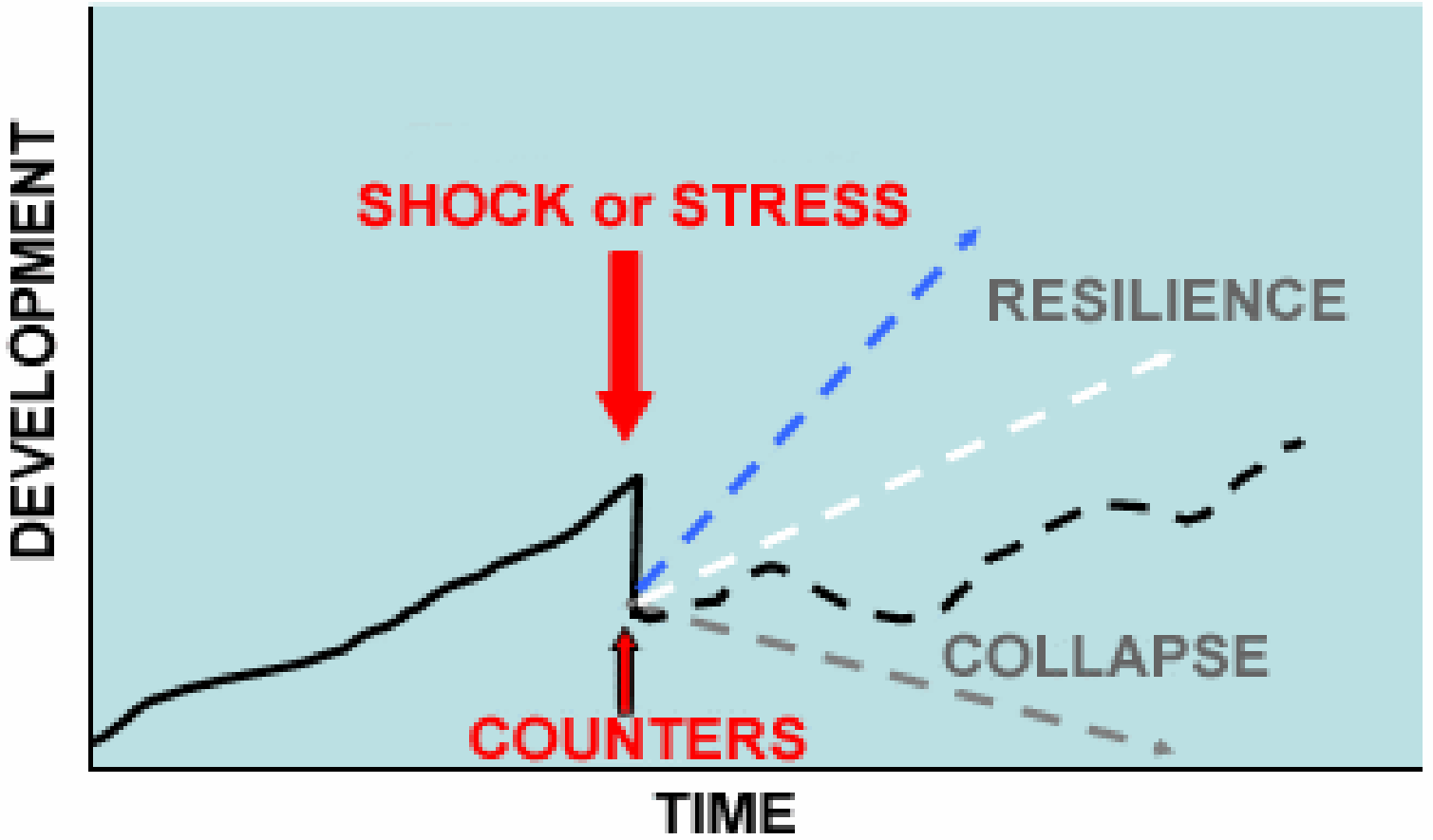
12 Resilient

Film Surfing the waves of change, Cultivate Ireland

Dependent, Insecure, Rigid v Independent, Secure, Resilient

Resilience is based on resistance and tolerance of shock or stress, enabling local security — safety and access to sufficient food, water, energy, shelter, health, and livelihood.

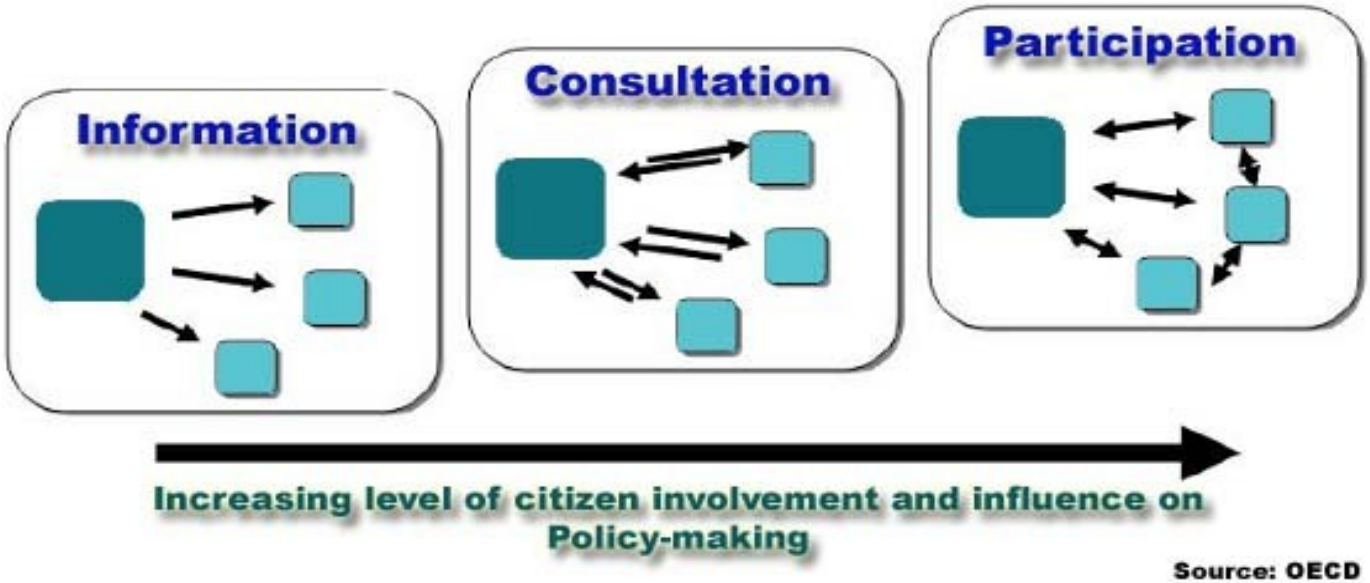
Figure 1 - Concept of resilience



13 Cooperative and Participative

Film Collaborative Consumption groundswell – What's mine is yours

PARTICIPATORY DEMOCRACY



Source: OECD

PARTICIPATIVE (DEMOCRATIC) LEADERSHIP STYLE

- Known to be the most effective leadership style
- The leader acts as a guide and mentor for the employees in achieving their goals but leader makes final decision after everyone's input
- A participative leader lets employees to play a major part in any decision making process


UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE
DELAY
KILLS


GREENPEACE
TOO BIG TO FAIL
STOP GLOBAL WARMING
RESCUE THE PLANET

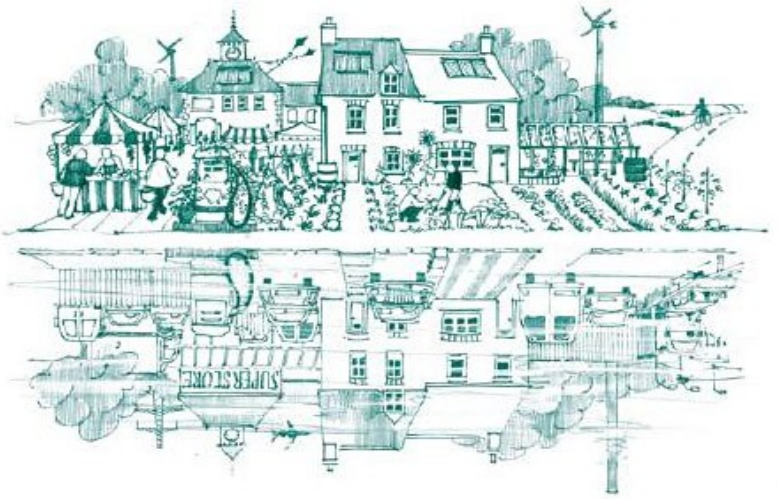
14 Local Community Action

Transition Town Model

Small-scale, local, cooperative and resilient

Film Transition Town Totnes - Transition Together

Film Rob Hopkins' Transition Handbook



IN TRANSITION

From oil dependence to local resilience

Community-led responses to peak oil and climate change,

building resilience and happiness

"for all those aspects of life that this community needs in order to sustain itself and thrive, how do we significantly increase resilience (to mitigate the effects of peak oil) and drastically reduce carbon emissions (to mitigate the effects of climate change)?"

Transition principles

Positive Visioning

Help People Access Good Information and Trust Them to Make Good Decisions

Inclusion and Openness

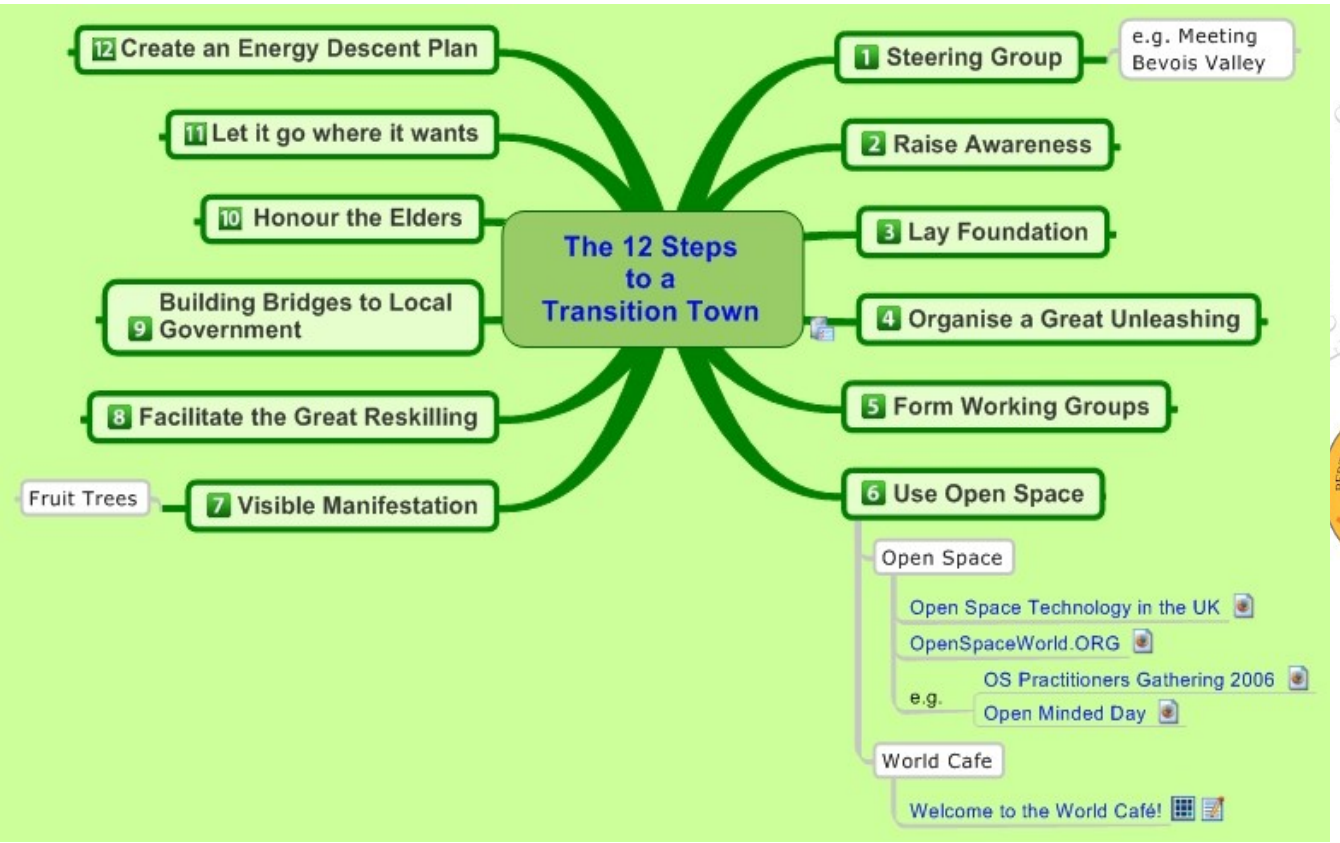
Enable Sharing and Networking

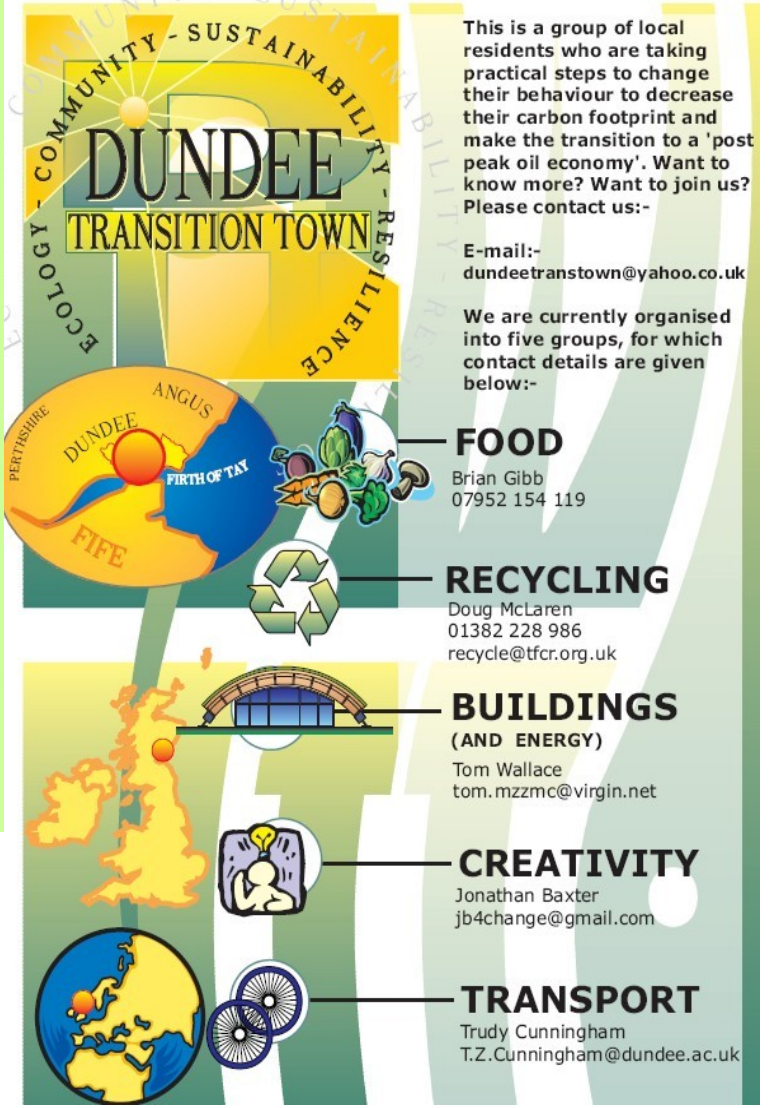
Build Resilience

Inner and Outer Transition

Transition makes sense - the solution is the same size as the problem

Subsidiarity: self-organisation and decision making at the appropriate level


The 12 Steps to a Transition Town
1 Steering Group
e.g. Meeting Bevois Valley
2 Raise Awareness
3 Lay Foundation
4 Organise a Great Unleashing
5 Form Working Groups
6 Use Open Space
Open Space
Open Space Technology in the UK
OpenSpaceWorld.ORG
e.g.
OS Practitioners Gathering 2006
Open Minded Day
World Cafe
Welcome to the World Café!
7 Visible Manifestation
Fruit Trees
8 Facilitate the Great Reskilling
9 Building Bridges to Local Government
10 Honour the Elders
11 Let it go where it wants
12 Create an Energy Descent Plan


ECOLOGY - COMMUNITY - SUSTAINABILITY - RESILIENCE
DUNDEE
TRANSITION TOWN
This is a group of local residents who are taking practical steps to change their behaviour to decrease their carbon footprint and make the transition to a 'post peak oil economy'. Want to know more? Want to join us? Please contact us:-
E-mail:-
dundeetranstown@yahoo.co.uk
We are currently organised into five groups, for which contact details are given below:-
PERTHSHIRE
ANGUS
DUNDEE
FIRTH OF TAY
FIFE
FOOD
Brian Gibb
07952 154 119
RECYCLING
Doug McLaren
01382 228 986
recycle@tfcr.org.uk
BUILDINGS
(AND ENERGY)
Tom Wallace
tom.mzzmc@virgin.net
CREATIVITY
Jonathan Baxter
jb4change@gmail.com
TRANSPORT
Trudy Cunningham
T.Z.Cunningham@dundee.ac.uk

Activity Assess Transition Town projects with the Compass of Sustainability