

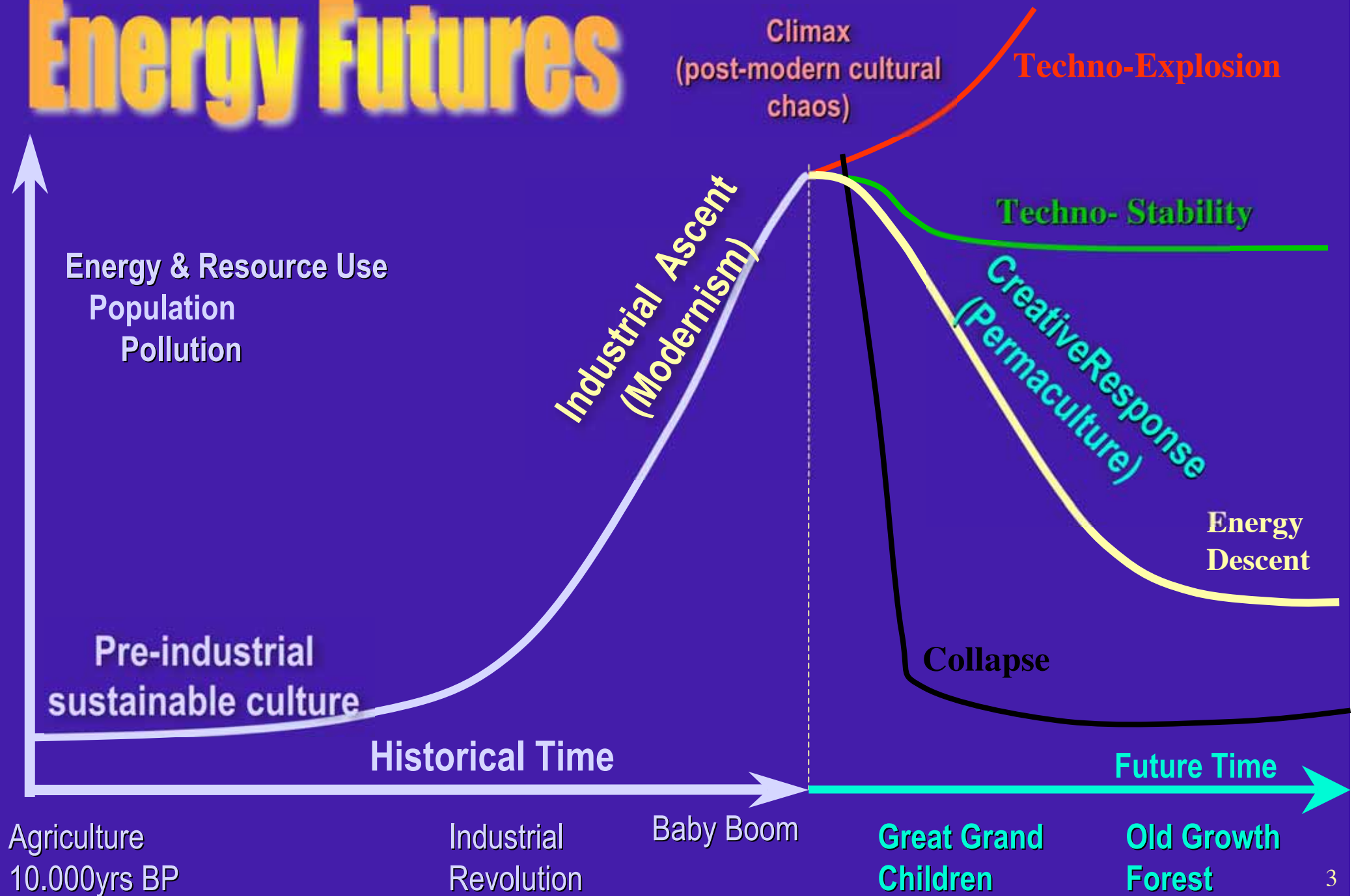
# *Scenario Planning for* *Climate Change*

*and*

*Peak Oil*

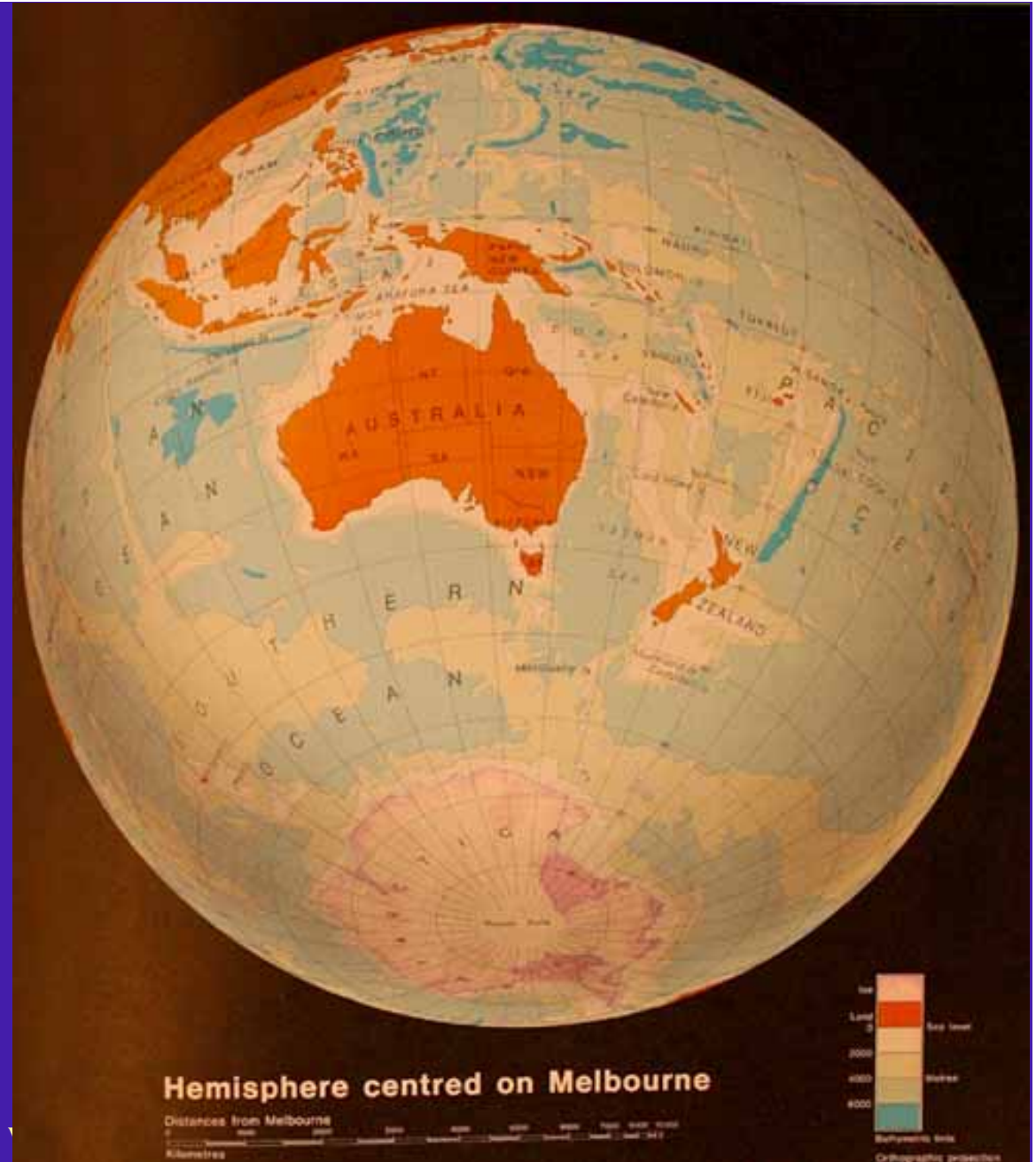


# Energy Futures



# ***Our Globalised World: A systemic summary***

- Energy & Resources
- Political Power
- Economy
- Settlement pattern
- Culture





# ***Our Globalised World: Energy & Resources***

**Coal, Oil & Gas dominate  
Nuclear & renewable secondary  
Agriculture as net consumer of energy**



# ***Our Globalised World: Political Power***

**Washington consensus**

**Transnational corporate power**

**Global governance based mainly on finance & trade and fiat currency**



# ***Our Globalised World: Economy***

**Buyers dominant in trade of cheap commodities  
Specialisation and economies of scale in production  
Globalised class structure and status symbols  
Explosion of financial services**





# ***Our Globalised World: Settlement pattern***



Rapid urbanisation and reduced household size  
Population still growing and consumption accelerating  
Transport and information infrastructure dominates



# ***Our Globalised World: Culture***

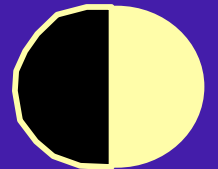
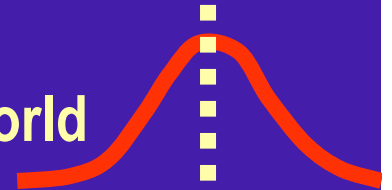


Multicultural due to migration & mobility  
Dominance of anglo-american materialism  
Consumer and service culture  
Network & media based subcultures  
Gender breakdown  
Fundamentalist backlash

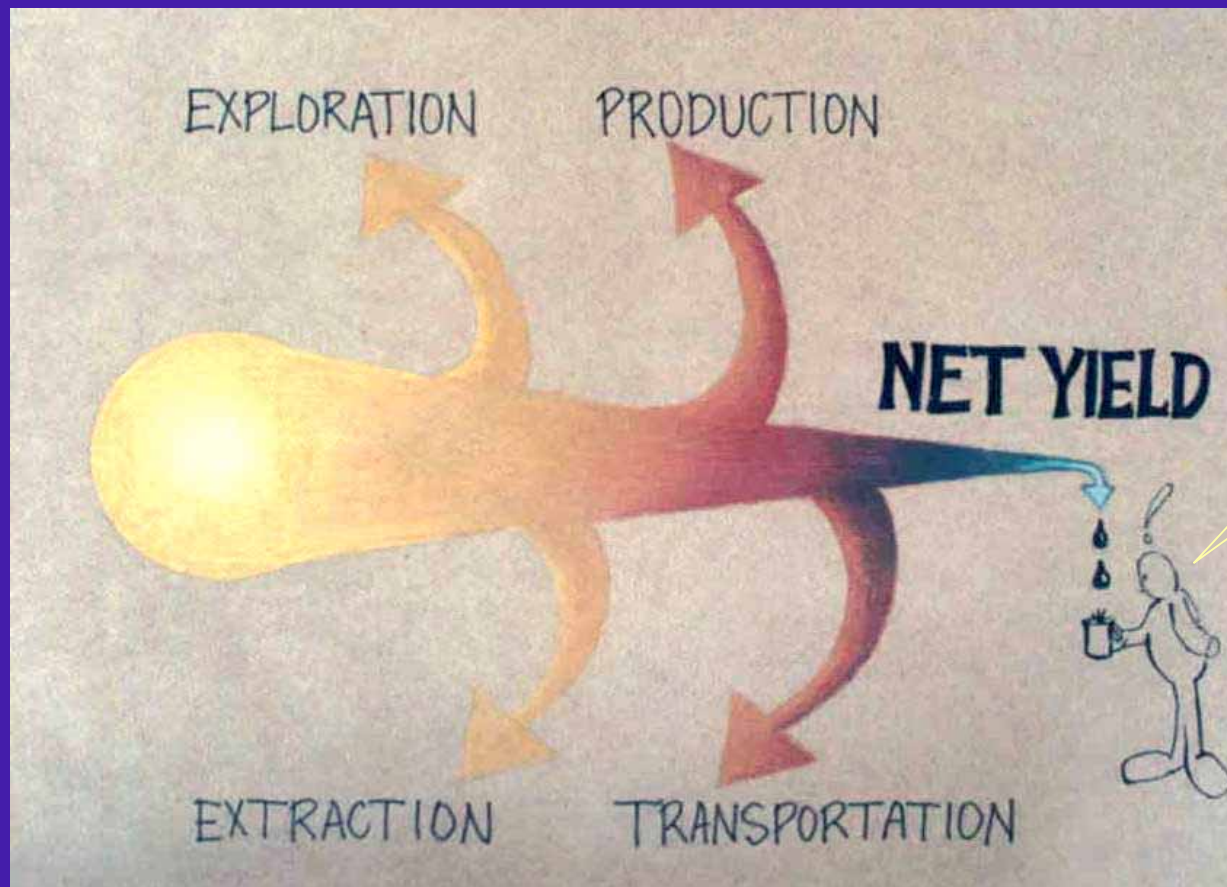


# ***What Is Peak Oil ?***

- Point of maximum production of a field, a nation or the whole world
- Peak usually occurs when about half the total resource is used
- The easy, best quality and biggest fields are always tapped first
- Heavy, deep ocean and arctic oil can only mask the recent peak in conventional oil for a few years (at a higher cost)
- Natural gas is the only high quality fuel with high net energy returns which can substitute for oil
- Natural gas production peak will quickly follow oil peak



# What is Net Energy?



*That's only 10%  
(Net energy yield 1.1)*

“ We believe that to maintain society's current level of infrastructure and information processing, a net energy ratio of about four to one is required”

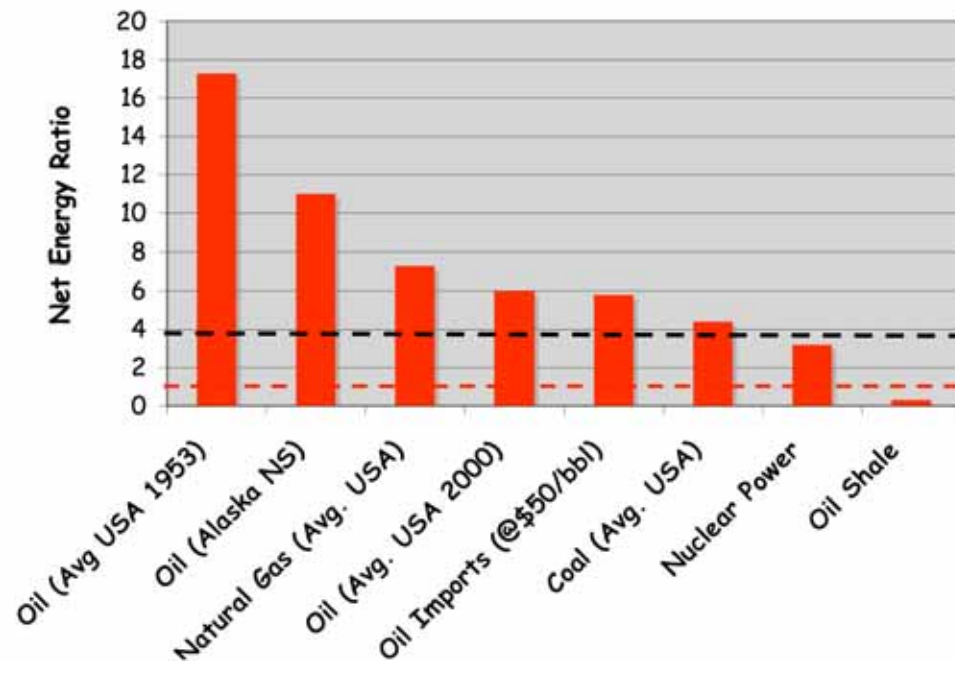
Mark T. Brown



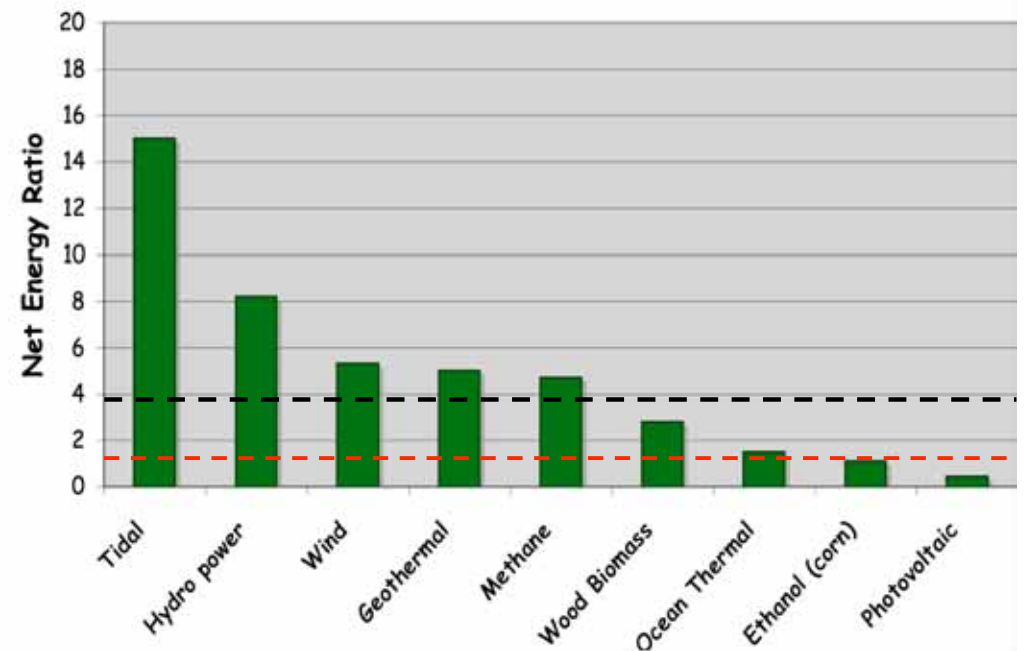
# Net Energy Sources



## Net Energy of Non-Renewables

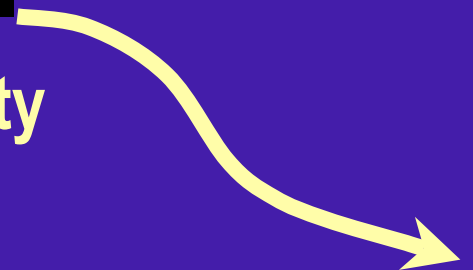
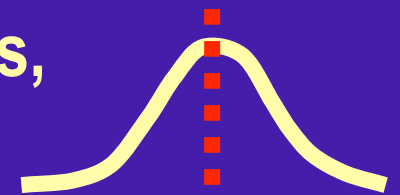


## Net Energy of Renewables



# ***What Is Energy Descent?***

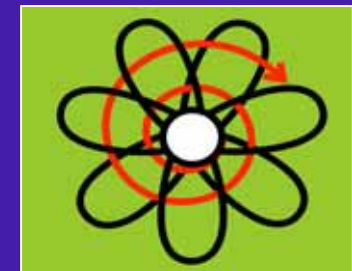
- A gentle decline like a balloon coming back to earth as the most hopeful future.
- Mirrors energy ascent; very fast over several decades, and then more slowly over several centuries
- Rate of change appears greater due to radical change in direction
- Decline in net energy available to support humanity  
(after all direct & indirect costs of production are subtracted)





# *Opportunities from energy descent*

- Higher prices for natural resources will;
  - drive energy conservation and renewable energy
  - boost primary industries and rural economies
  - reduce greenhouse gas emissions faster than policies or technology
  - allow low input & organic farming to compete against intensive land uses
- Reduced mobility of people and goods will;
  - kick start household and local economies (Relocalisation)
  - make local products more competitive than imported ones
  - stimulate self-reliance, repair, retrofit & recycling
  - increase community interaction and exchange
- Relocalisation will shift respect and influence to persons;
  - with self reliance and useful skills
  - those who can work physically
- Demand for permaculture
  - as life skills education
  - relocalisation strategies
  - design principles for total system redesign



# ***Climate Change Impacts and Opportunities?***

High degree of uncertainty in rate of global warming

- Is global mitigation going to happen in time?
- Risk of tipping points due to ice caps, tundra methane etc

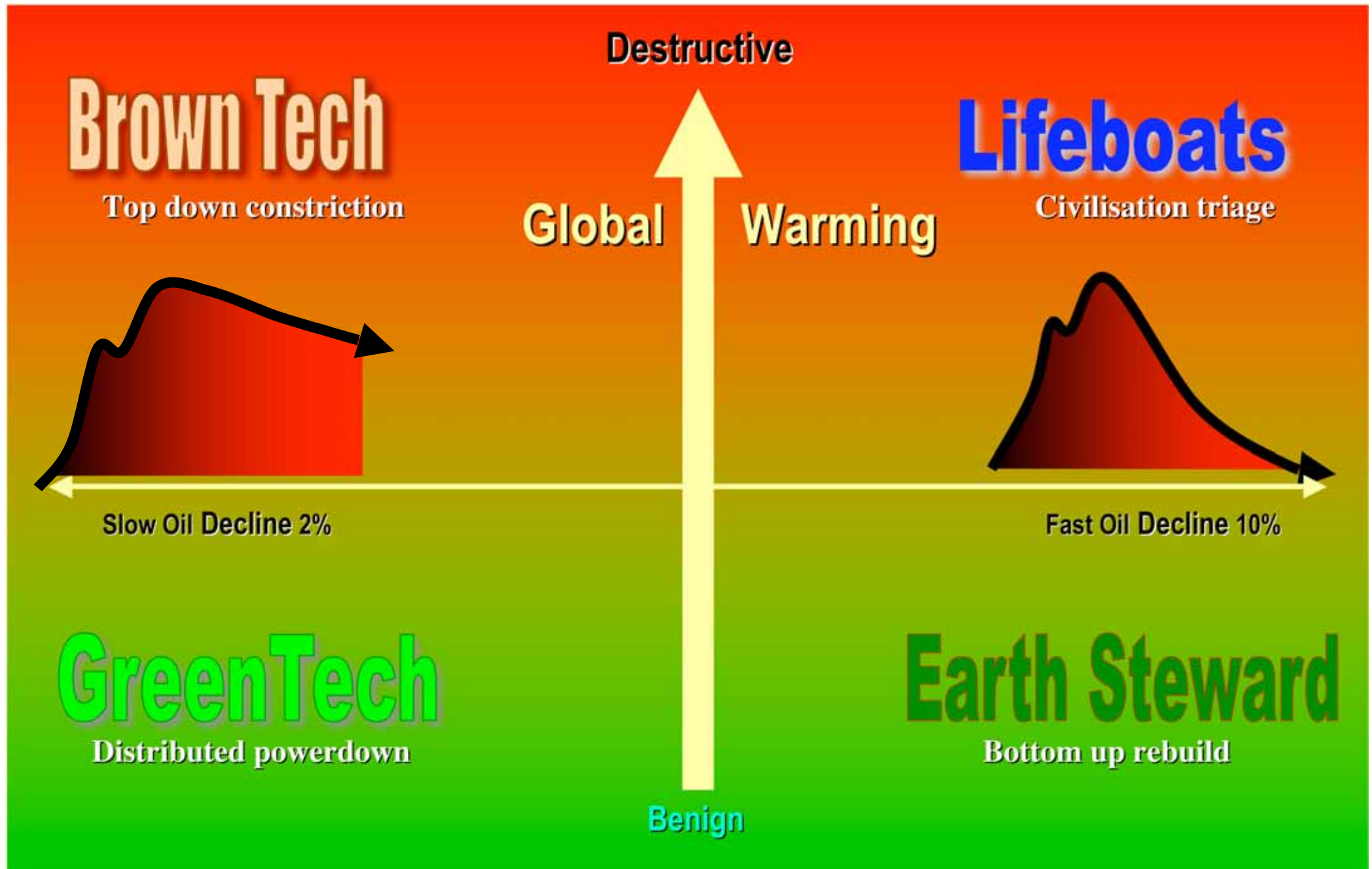


Uncertainty in bioregional impacts due to;

- modelling complexity at regional scale
- knock on effects of impacts outside bioregion (via economy & geopolitics)
- Eg carbon credits for farmers
- Or global economic recession leading to collapse in overseas markets.



# Global Climate Change & Energy Descent Scenarios



# Characterising Climate/Energy Scenarios

| Scenario                                   | Energy & Agriculture   | Settlement form & mobility  | Economy & Money                     | Politics   | Gender                      | Culture & Spirituality                     |
|--|--|---|-------------------------------------|--|-----------------------------|--|
| <b>Brown Tech</b><br>Top down constriction | Centralised power<br>High tech efficiency<br>Non convent. oil gas, coal, nuclear<br>Bio shelter agric. | High density cities,<br>Electric private transport.<br>Hinterland abandonment<br>Mass migration | National banks & currencies         | National Neo-Fascist<br>Class structure & rights<br>Price rationing<br>Pop control | Male dominated & blended    | Super rationalist/fundamentalist dichotomy |
| <b>Green Tech</b><br>Distributed powerdown | Distributed network<br>Conservation,<br>Gas, wind, solar,<br>Forest, Organic agric                     | Compact towns & cities,<br>Electric public transport<br>Telecommuting                           | Regional currencies & funds         | City state & Infrastructure<br>Rationing<br>Democracy?                             | Balanced & blended          | Humanist/Eco-rationalist                   |
| <b>Earth Steward</b><br>Bottom up rebuild  | Distributed local hydro, methane<br>Industrial salvage<br>Forest, organic & garden agric,              | Ruralisation of suburbia, Rural resettlement, minimal mobility                                  | Local currency, barter              | Town and bioregion<br>Participatory democracy?<br>Neo-feudalism                    | Female dominated & gendered | Earth spirituality                         |
| <b>Lifeboats</b><br>Civilisation triage    | Distributed local<br>Forest, rangeland,<br>Industrial salvage<br>Oasis agric.                          | Hamlet and gated communities,<br>Nomads   | Household & barter, precious metals | Feudal system<br>Patriarchal authority   | Male dominated & gendered   | Warrior cult                               |

# *Relevance of Mainstream Sustainability to Energy Descent Scenarios*

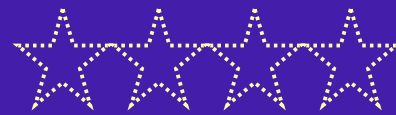
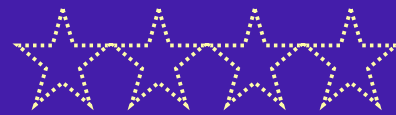
**GreenTech**

**Brown Tech**

**Earth Steward**

**Lifeboats**

## Typical Strategies



**Total**

**3/16**

## Fundamental Principles

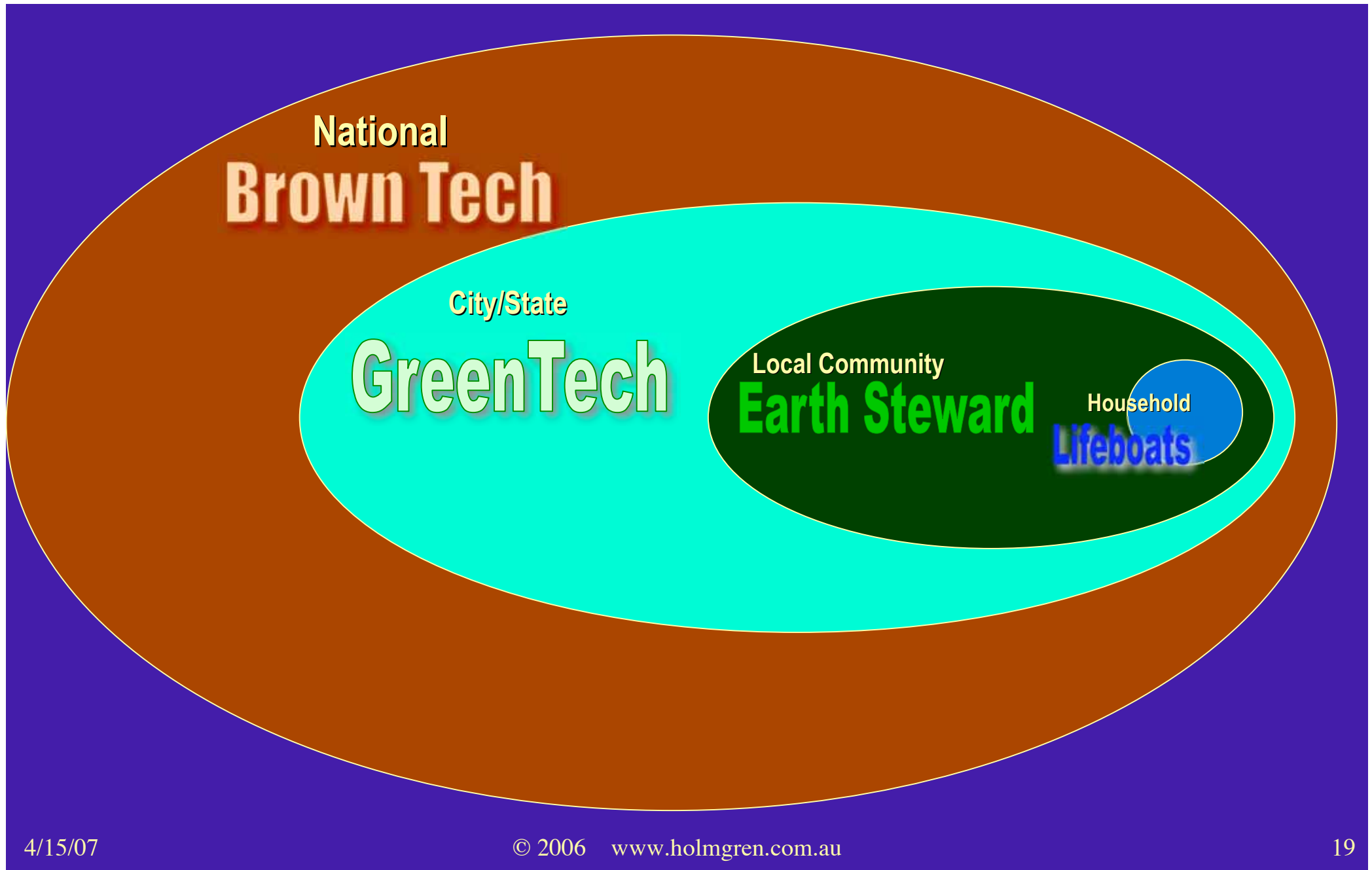


**Total**

**6/16**



# *Climate/Energy Scenarios nested by scale of related system*





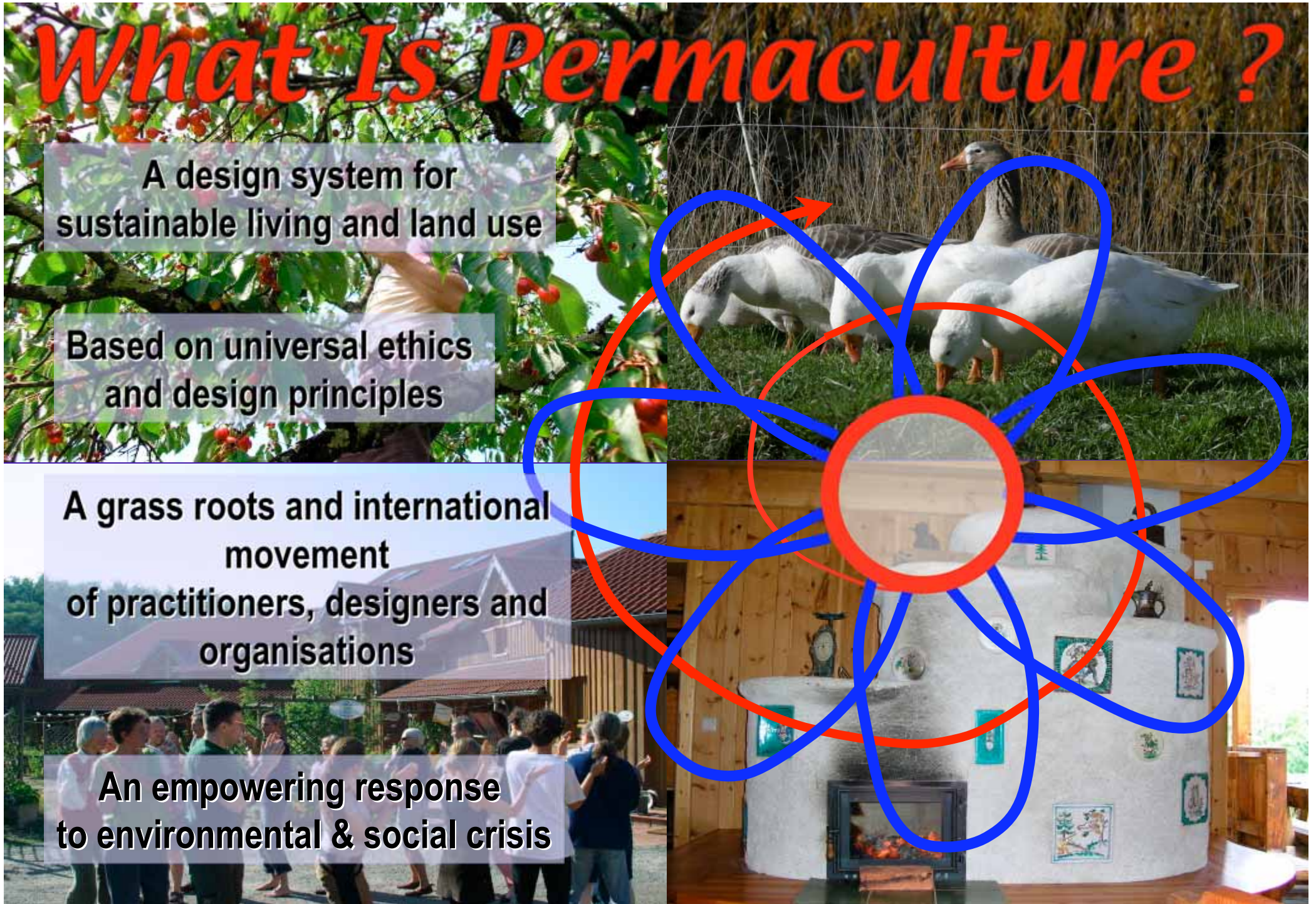
# *What Is Permaculture ?*

A design system for  
sustainable living and land use

Based on universal ethics  
and design principles

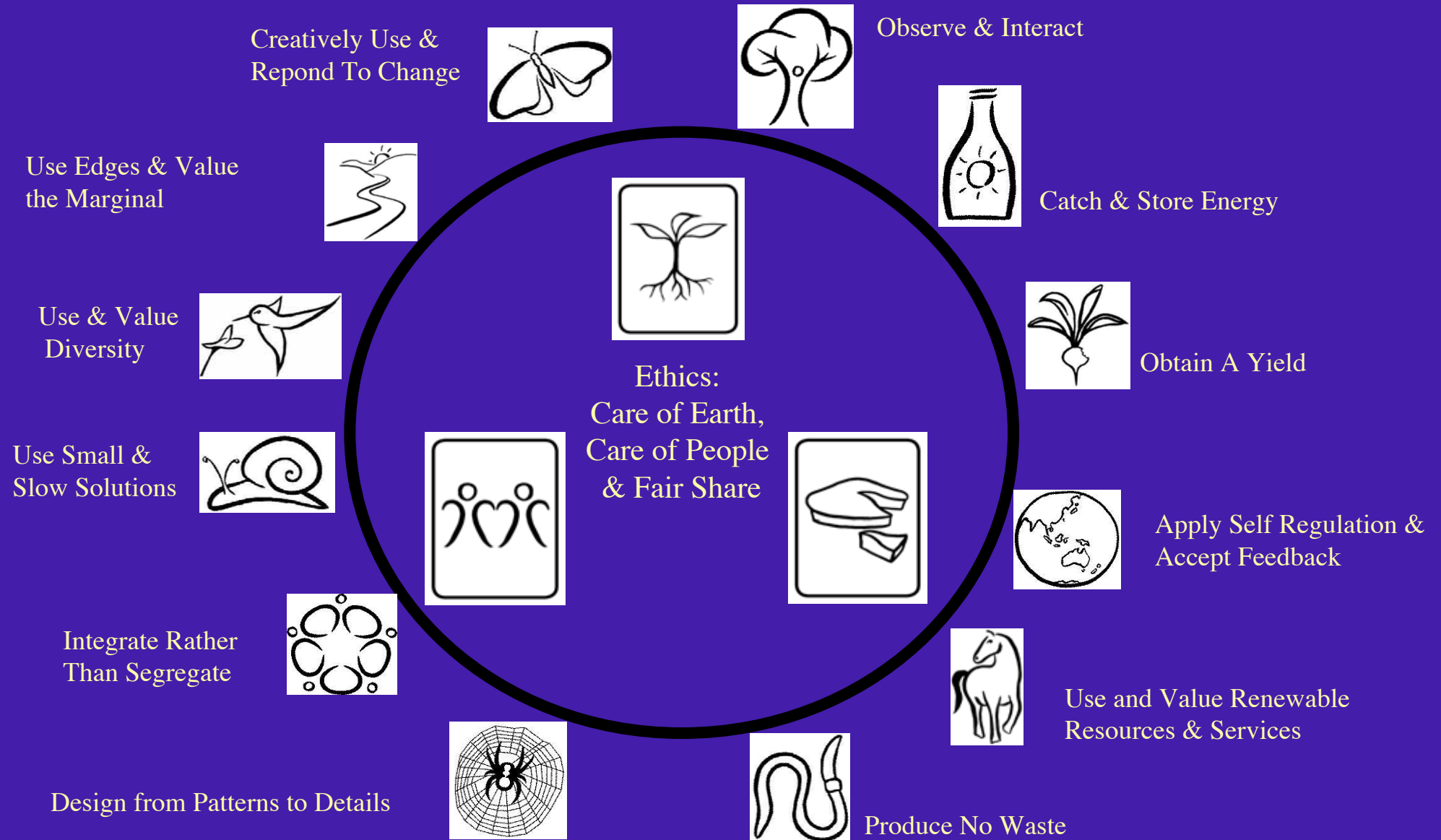
A grass roots and international  
movement  
of practitioners, designers and  
organisations

An empowering response  
to environmental & social crisis





# Permaculture Ethics & Design Principles





# *Relevance of Permaculture to Energy Descent Scenarios*

**GreenTech**

**Brown Tech**

**Earth Steward**

**Lifeboats**

Typical Strategies

Fundamental Principles



Total 9/16

Total 13/16



# ***Beyond Strategies and Scenarios***



***Can the public, the media and the markets cope with reality?  
Can fantasies of endless dependence and consumerism  
be replaced by stories of transition and relocalisation?***



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