

THE MANY AND THE FEW

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The Basic Argument

We shall adopt two key assumptions for the project:

1. That global population will grow substantially over the first half of this century (these are the Many).
2. That the supply of resources available to service this increased population is relatively fixed or declining.

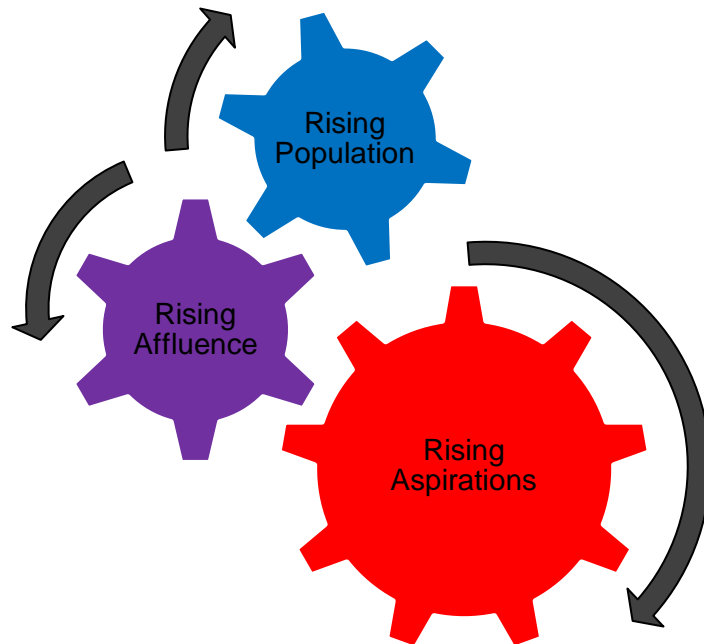
One of the main implications of these assumptions is that demand for resources will outstrip their available supply – that we are likely to see an ‘age of scarcity’.

The main supply pressure is likely to be felt upon our Food, Energy, and Water resources (these are the FEW).

This session will look at the interactions between the Many and the FEW.



The Drivers Of Scarcity



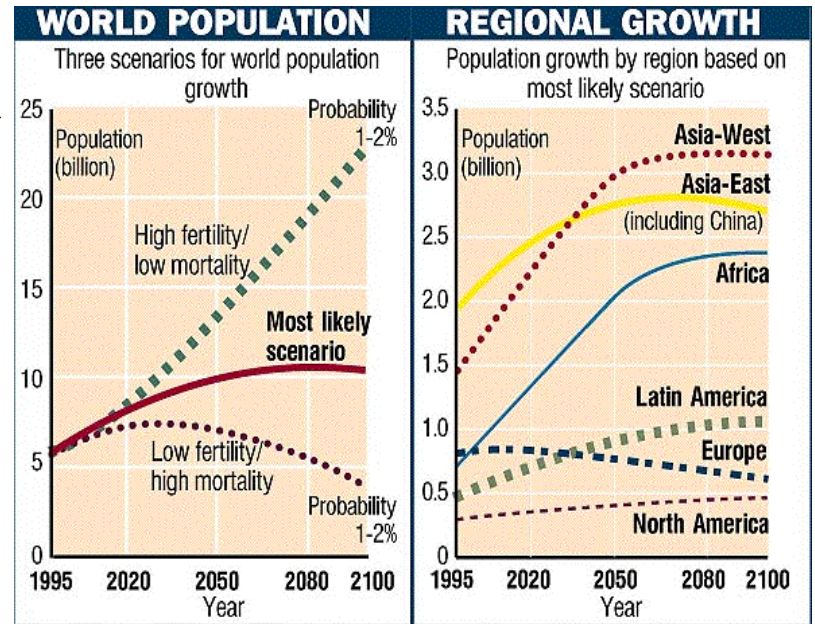
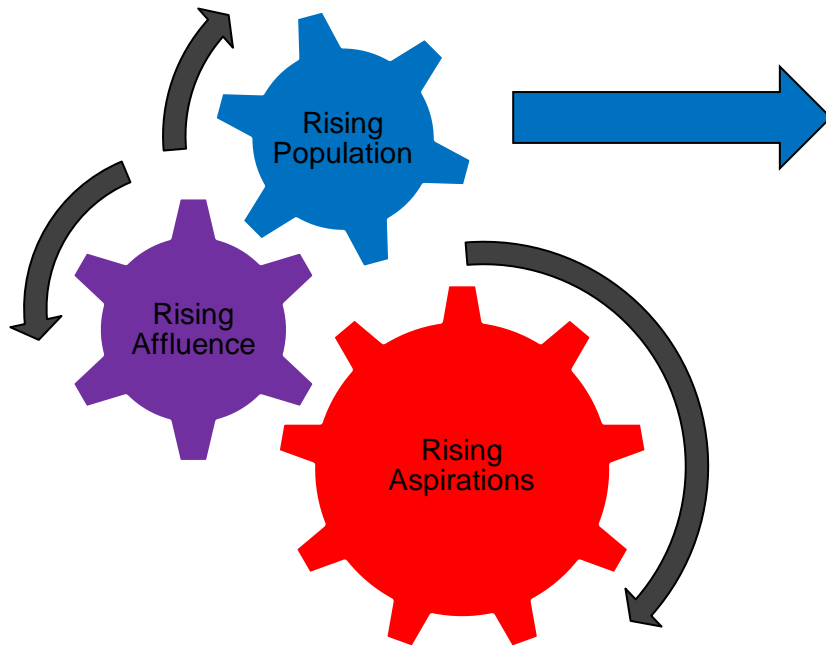
Pressure on the demand for resources are likely to come from three key sources:

- A rising population
- Rising affluence
- Rising aspirations

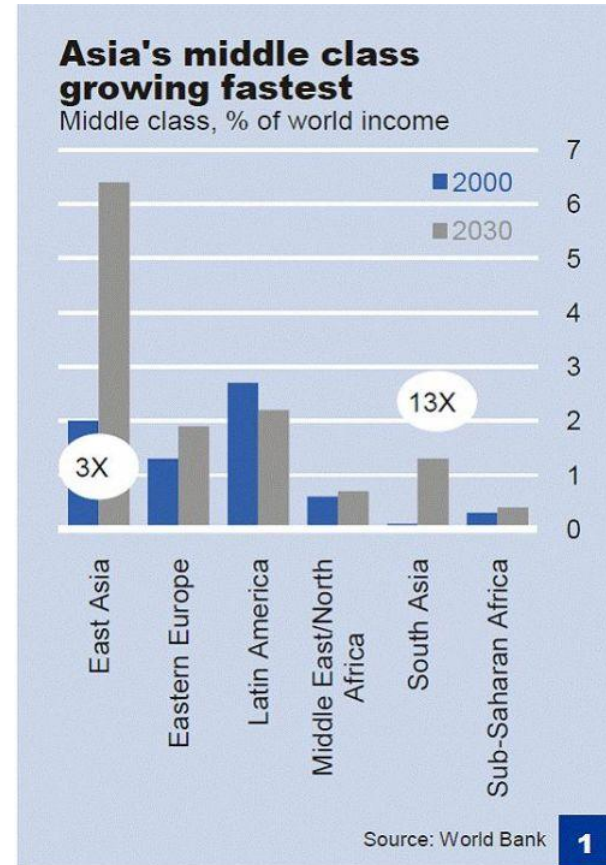
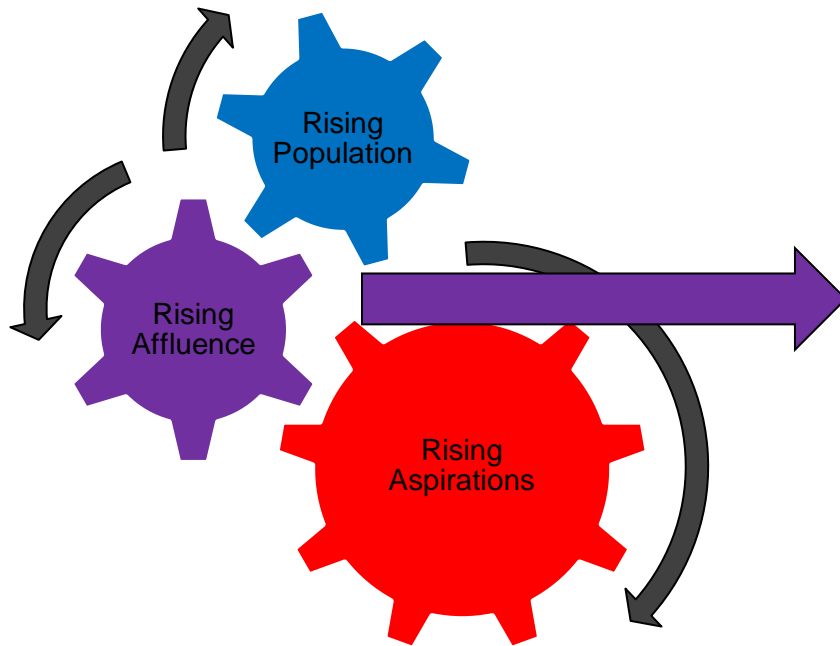
Each of these is a source of rising demand in itself, but together they will interact to produce an exponential growth in the for demand for resources.



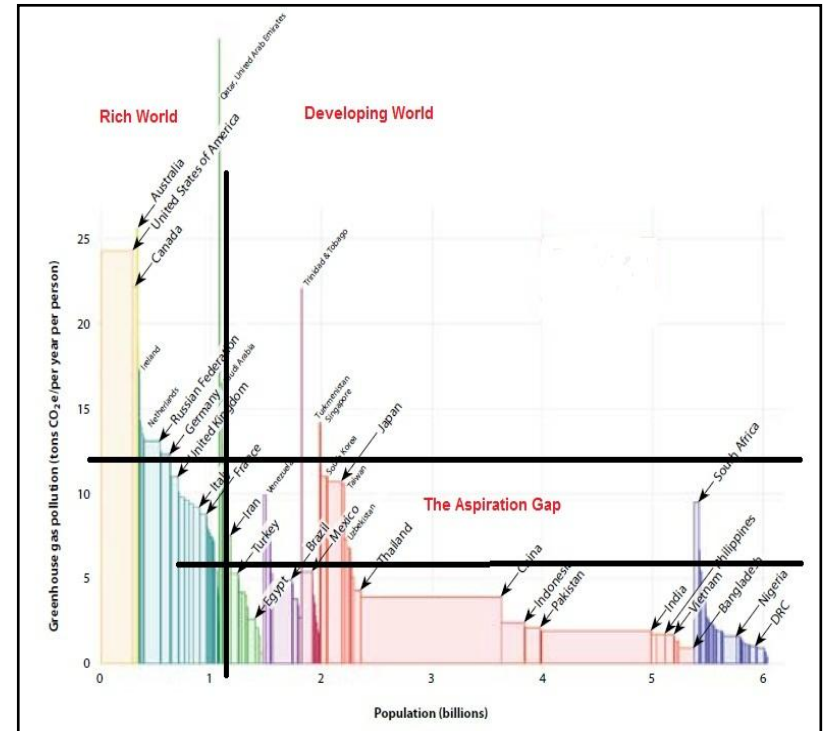
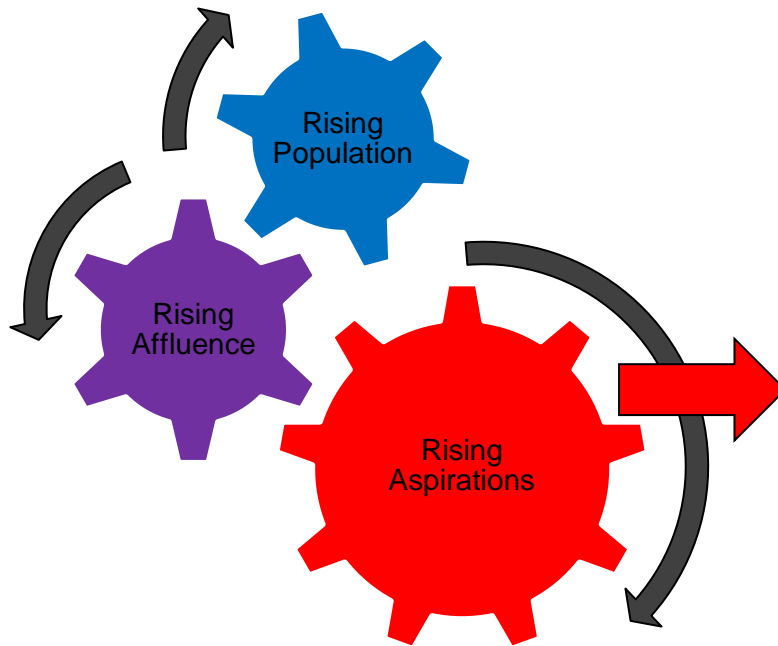
The Drivers Of Scarcity



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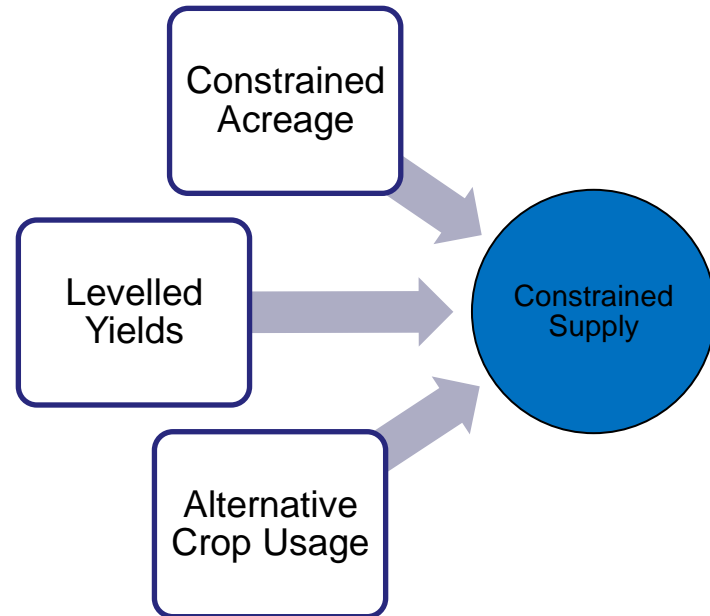


The Manifestations Of Scarcity: Food

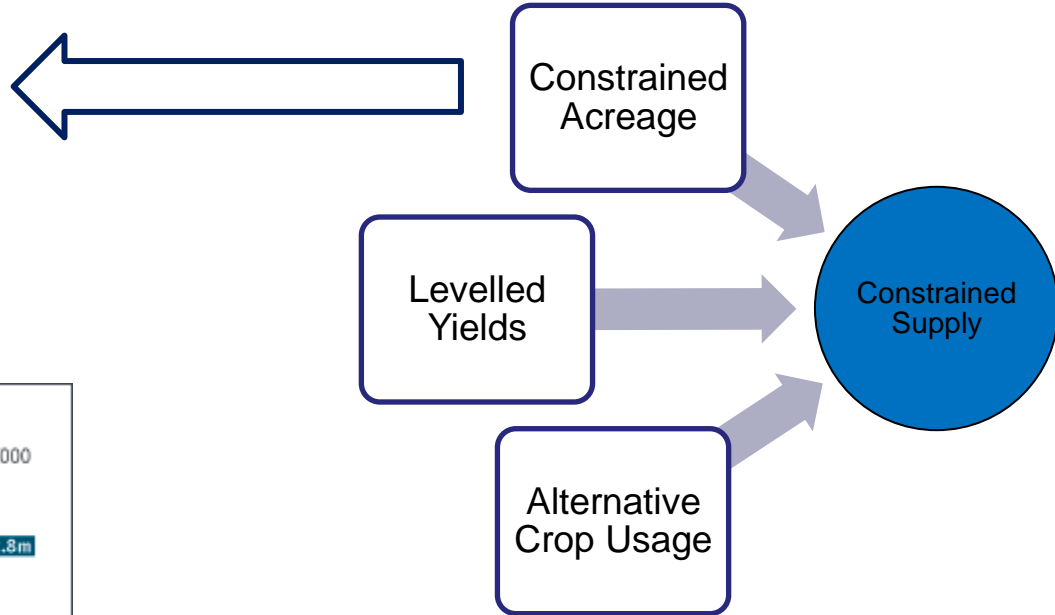
The growth of the supply of food is restricted by three factors:

- Constrained acreage
- Levelled yields
- Alternative crop usage

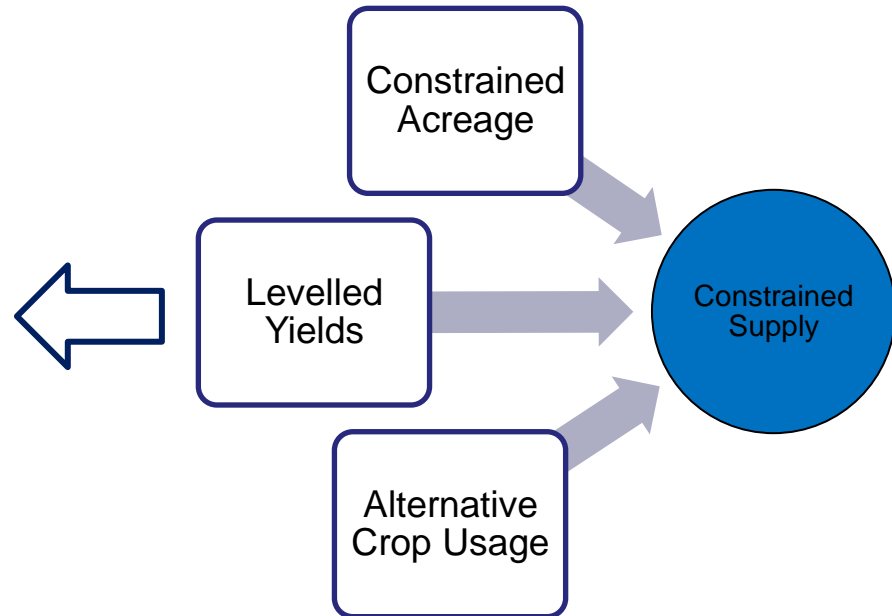
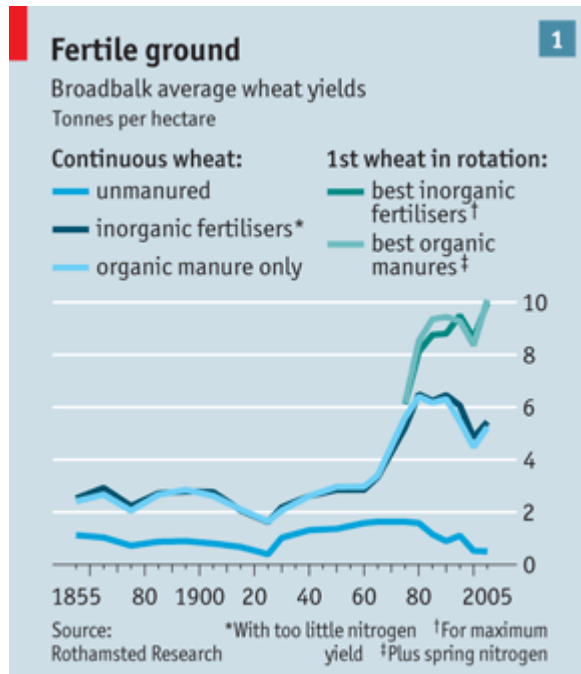
Each of these factors serves to limit the degree by which global food production can be expanded.



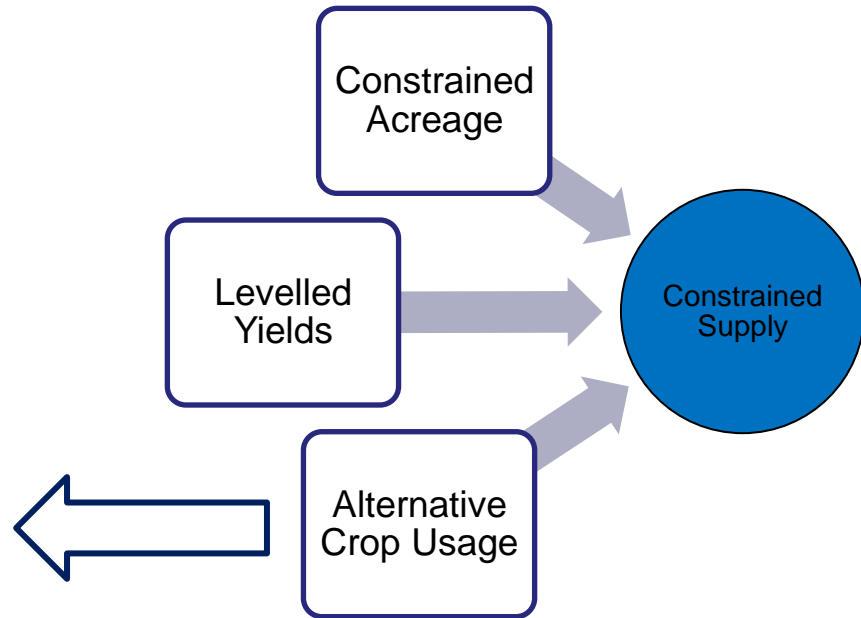
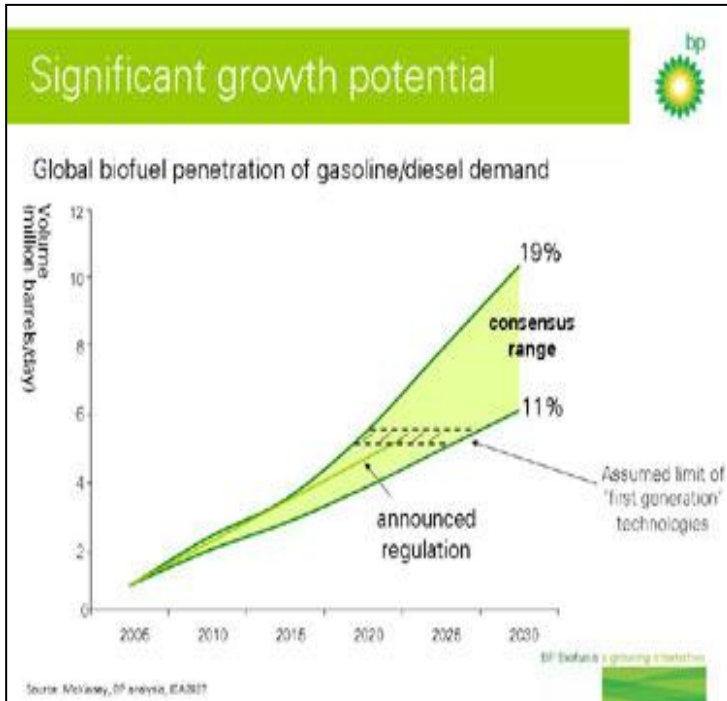
The Manifestations Of Scarcity: Food



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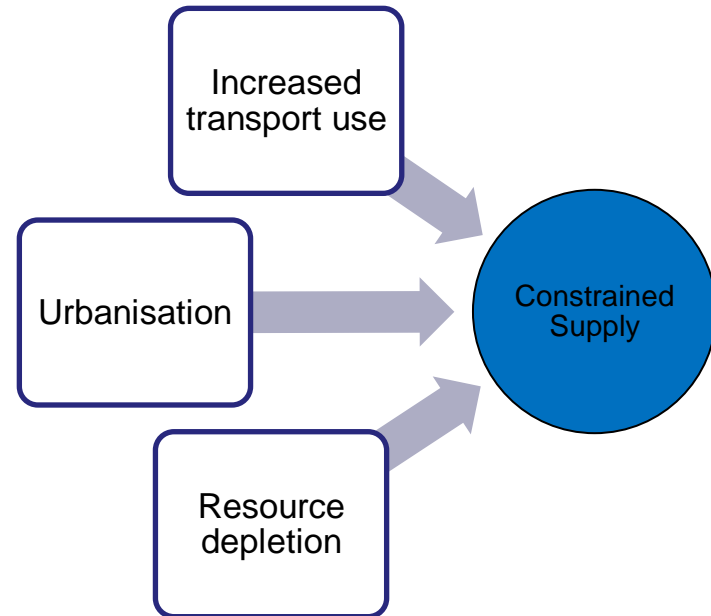


The Manifestations Of Scarcity: Energy

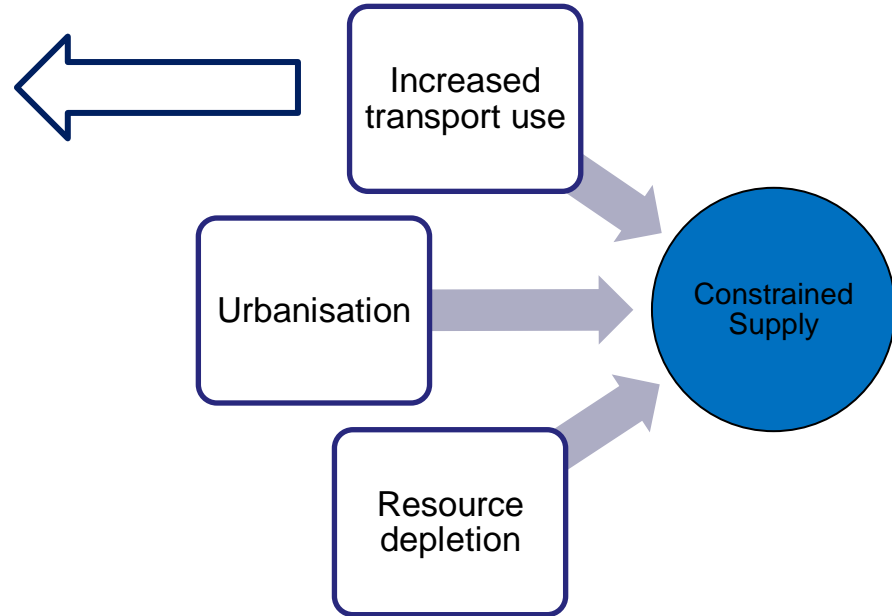
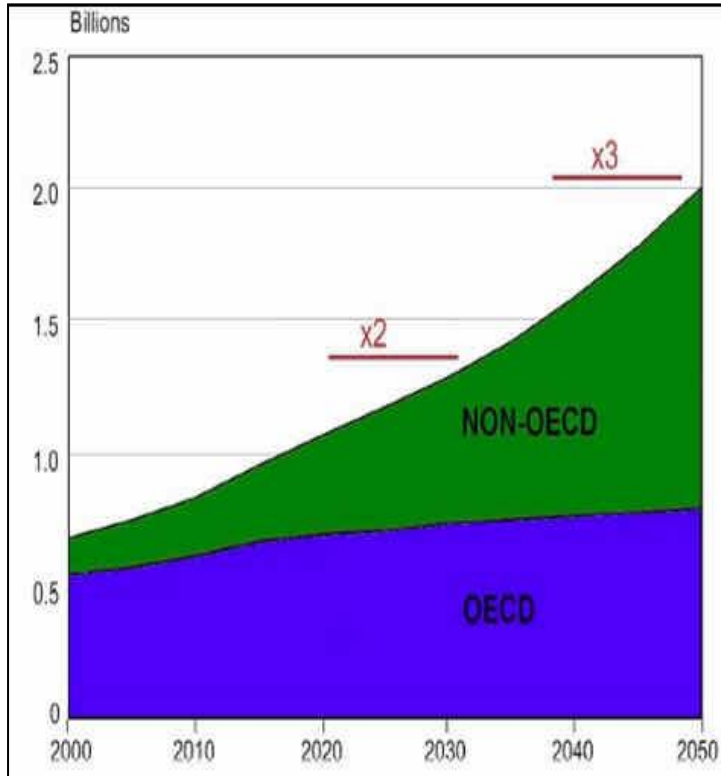
The growth of the supply of energy is restricted by three factors:

- Increased transport use
- Urbanisation
- Resource depletion

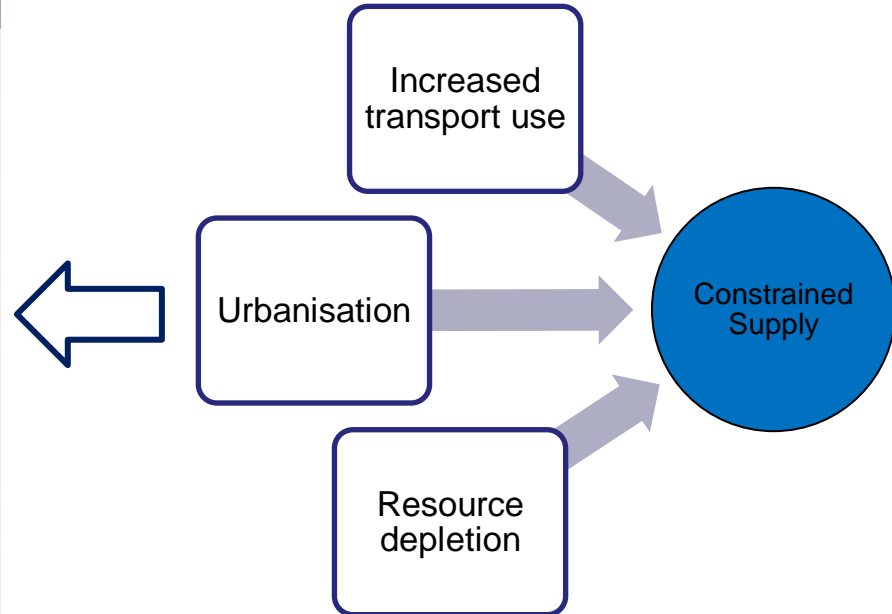
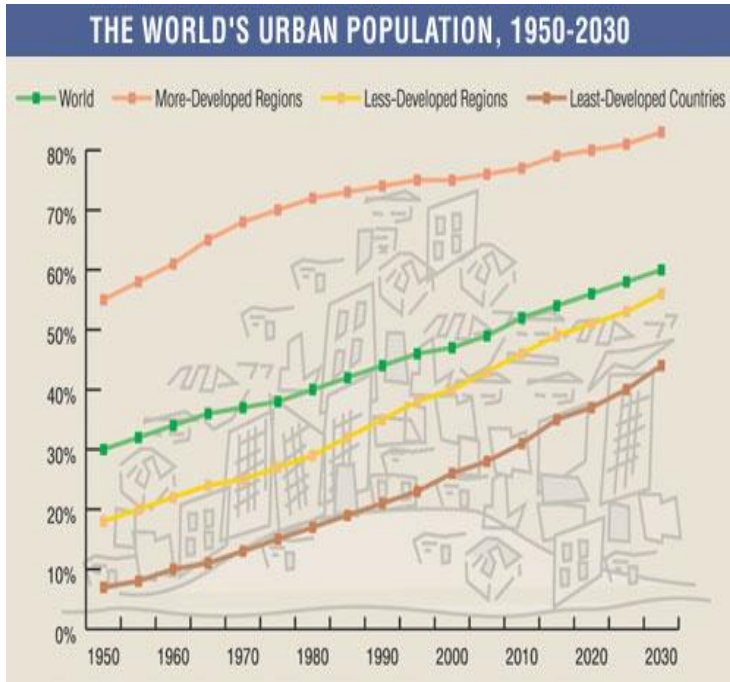
Each of these factors is expanding faster than the supply of energy sources to create energy scarcity.



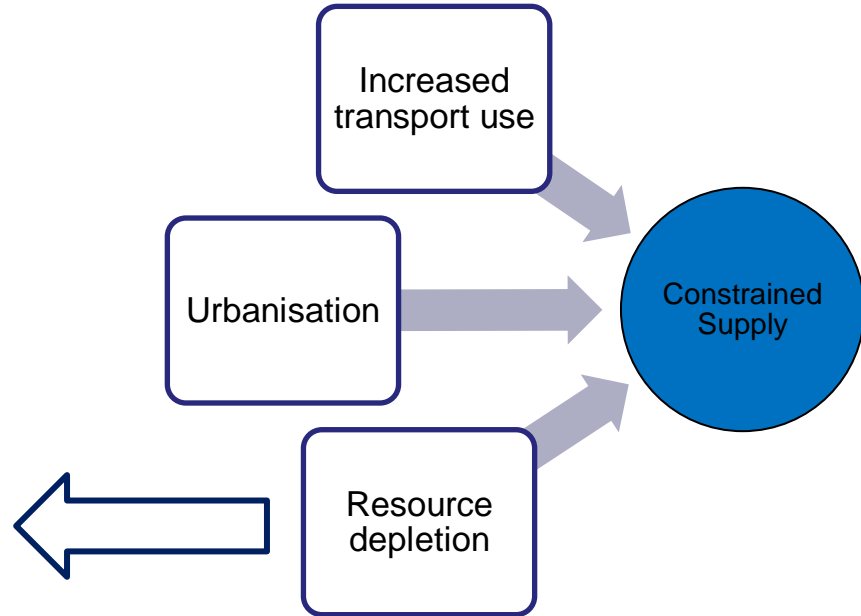
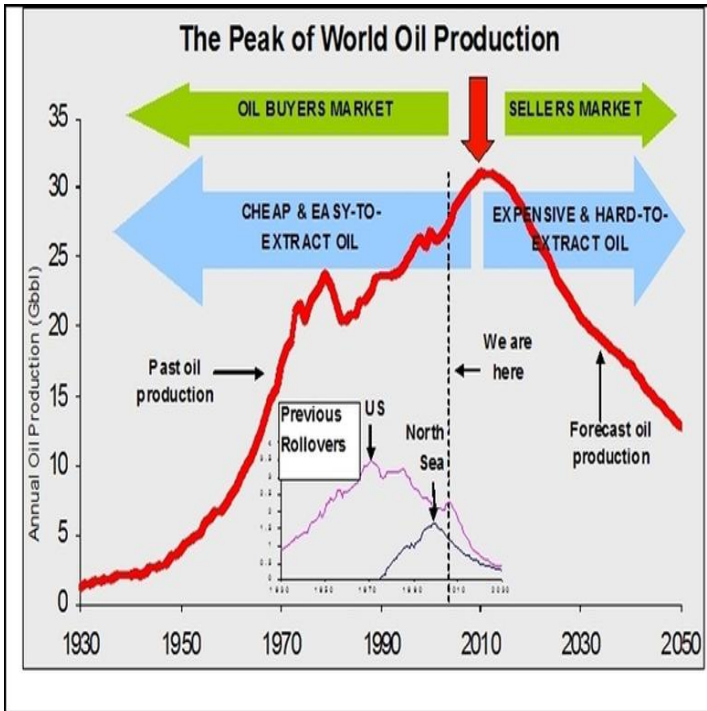
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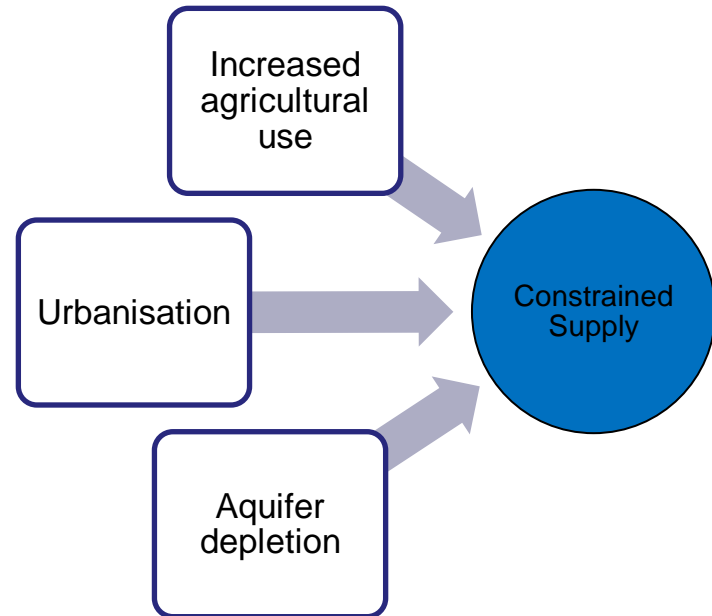


The Manifestations Of Scarcity: Water

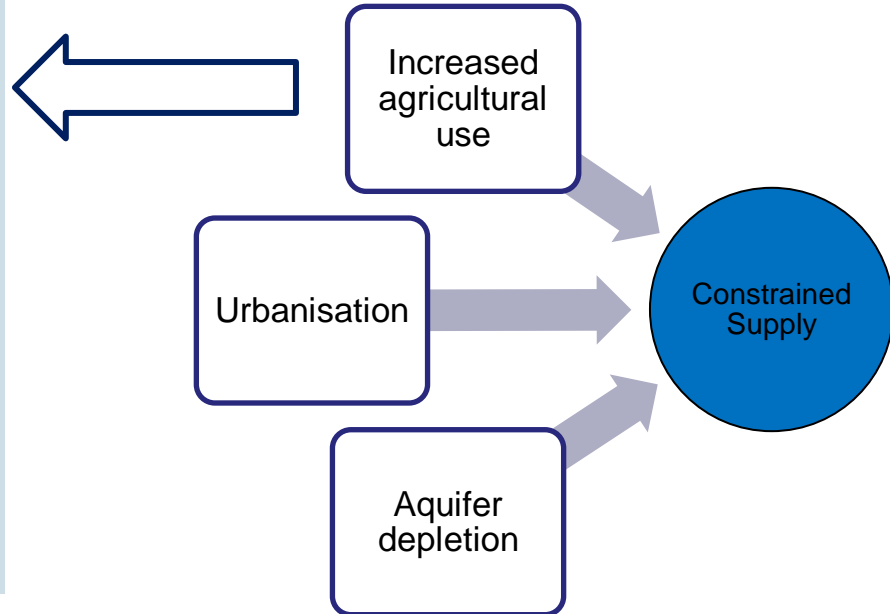
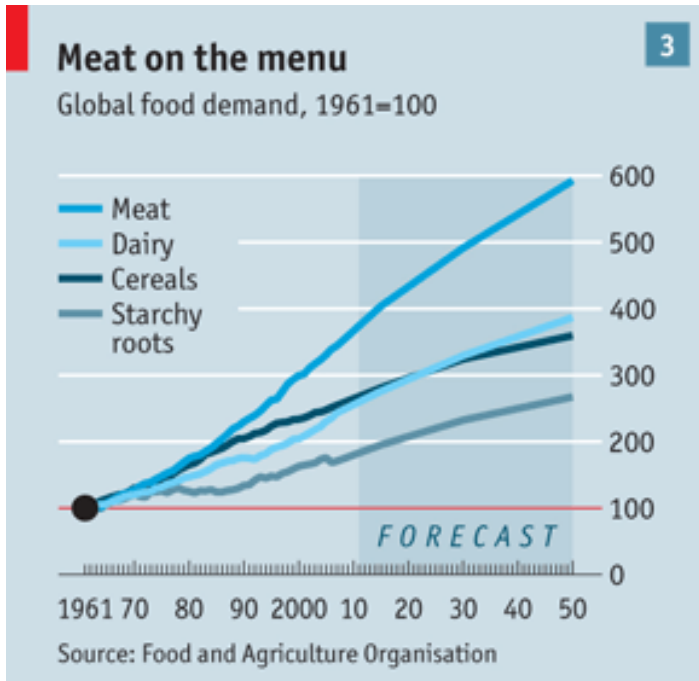
The growth of the supply of water is restricted by three factors:

- Increased agricultural use
- Urbanisation
- Aquifer depletion

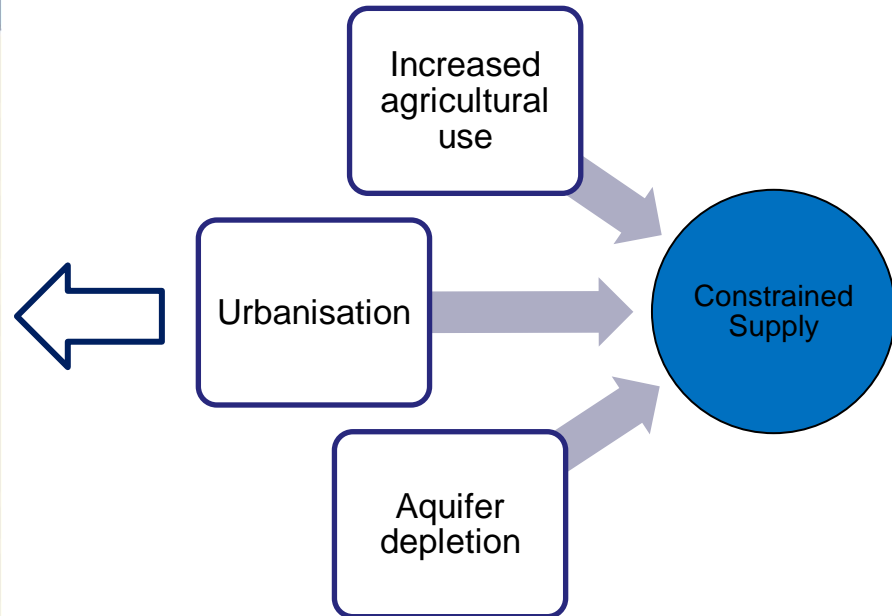
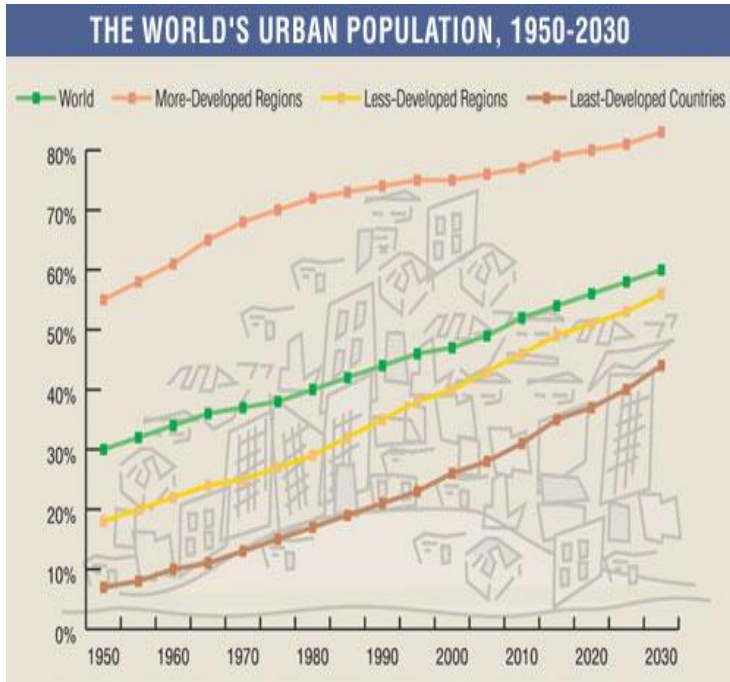
Each of these factors is growing faster than our ability to replenish the water supply, leading to increased global water stress.



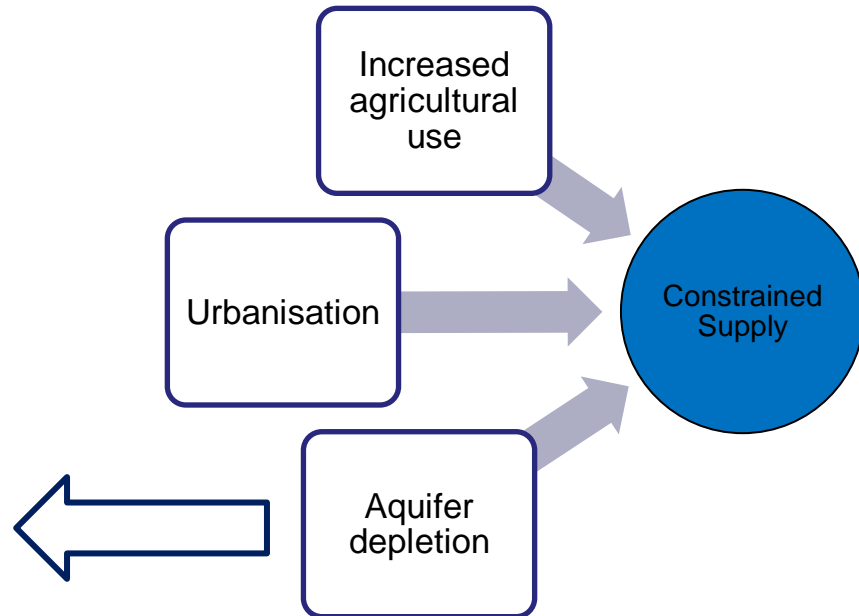
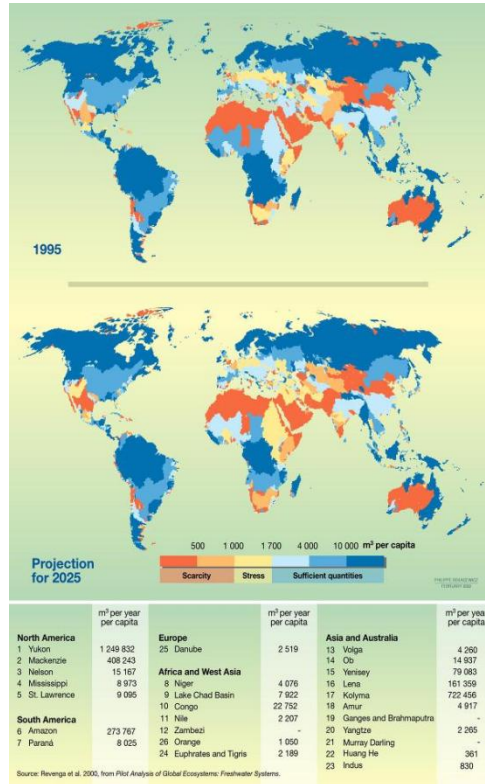
The Manifestations Of Scarcity: Water



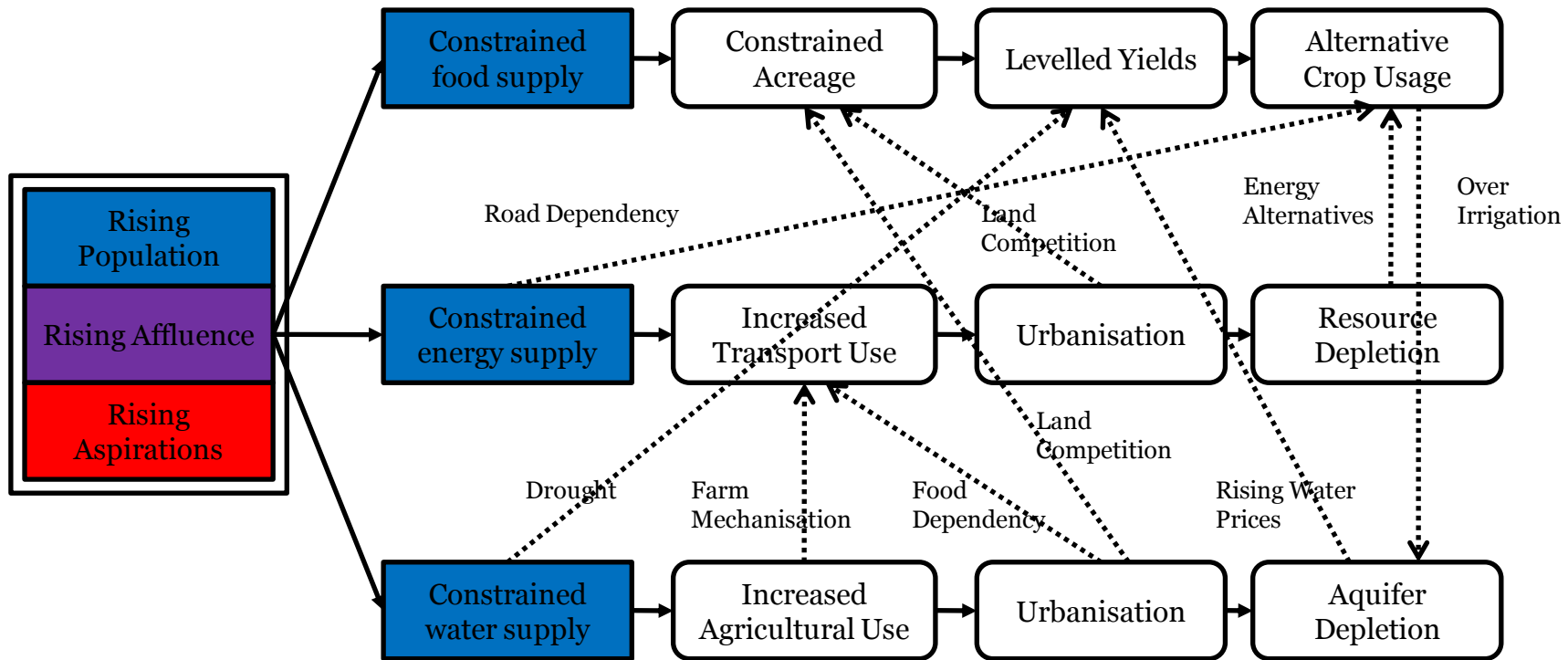
The Manifestations Of Scarcity: Water



The Manifestations Of Scarcity: Water



Feedback And Linkages



Feedback And Linkages

Our list of feedback and linkages is not exhaustive.

It does serve to demonstrate the complexity of the loops within the system.

It may be helpful to think of the complex bundle of linkages and feedback loops in terms of two basic concepts – climate change and peak oil.

Climate change can be represented as a shift in the operation of the carbon and water cycles.

Peak oil can be represented as an imbalance between the demand and supply of energy sources.

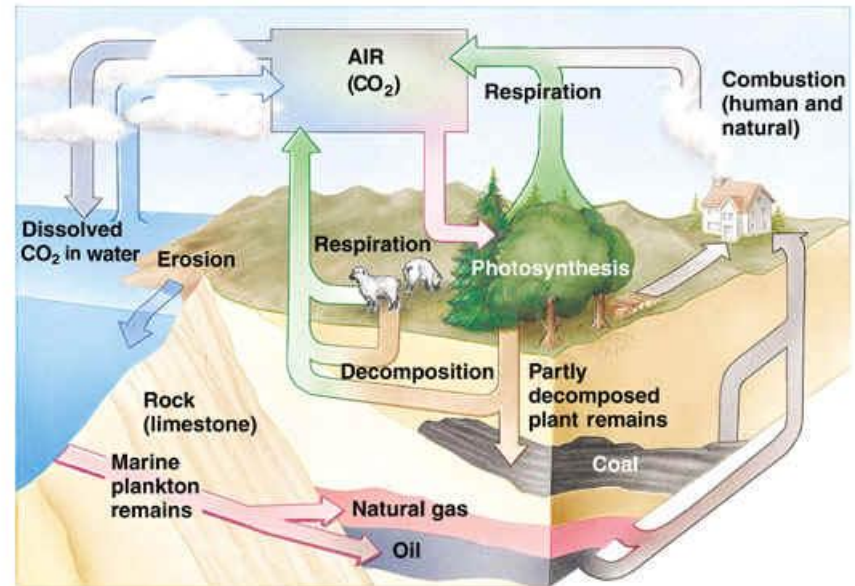


Climate Change And The Carbon Cycle

Change is being experienced in the time profile of the operation of the cycle.

An imbalance is being created where the extraction of carbon from the earth is being deposited into the air at a rate that is higher than the earth's ability to re-absorb it again.

The result is that the earth's atmosphere is warming and manifesting itself in an adjusted water cycle.



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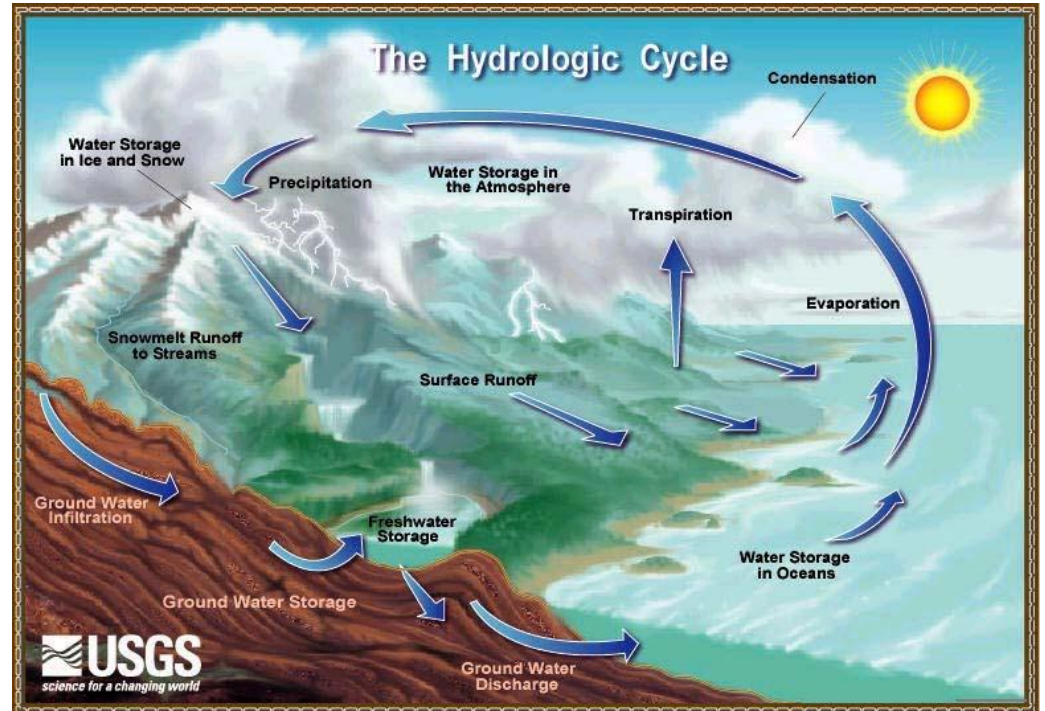


Climate Change And The Water Cycle

Change is being experienced in:

1. Precipitation patterns.
2. Run off patterns.
3. Tidal patterns.

Increasingly, our current land use does not reflect these changing patterns.



Peak Oil And The Carbon Cycle

The current patterns of energy usage and their prospective growth indicate a potential shortfall in the next two decades.

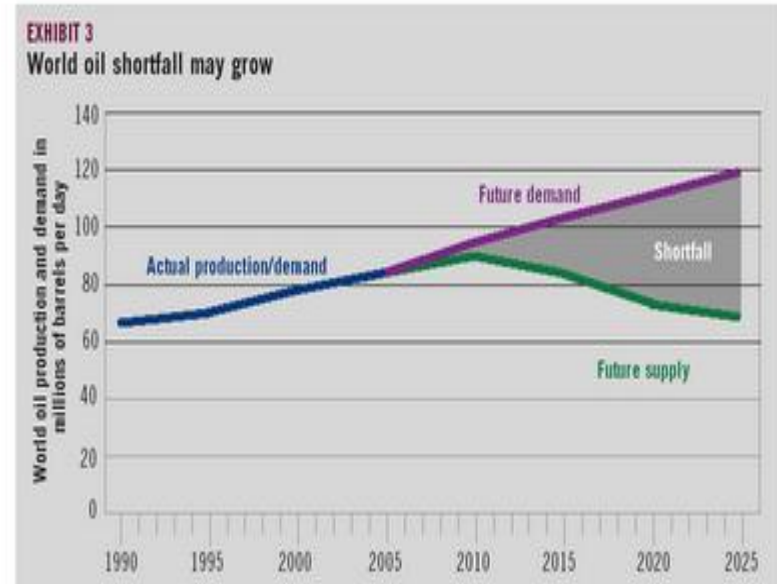
There may be technological breakthroughs to lessen this impact, but we can expect our total energy usage to increase.

This is likely to increase the imbalance in the carbon cycle.

The way to break this vicious circle is to change our patterns of energy usage.



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Communities Of The Future



Sources:

World Oil Production: U.S. Energy Information Administration.

Future demand: Reference Case — International Energy Outlook 2005 — U.S. Energy Information Administration.

Future supply: Projections by The Association for the Study of Peak Oil & Gas, April 2006.

Is All Lost?

All is not lost if we plan our future use of resources in a sustainable way.

This requires a blended approach that balances the needs of society, the economy, and the environment.

The move to a sustainable future is likely to create a huge number of opportunities in the future.

It is up to us to seize these opportunities.

