

Business, Transport, Environment the Policy Challenge

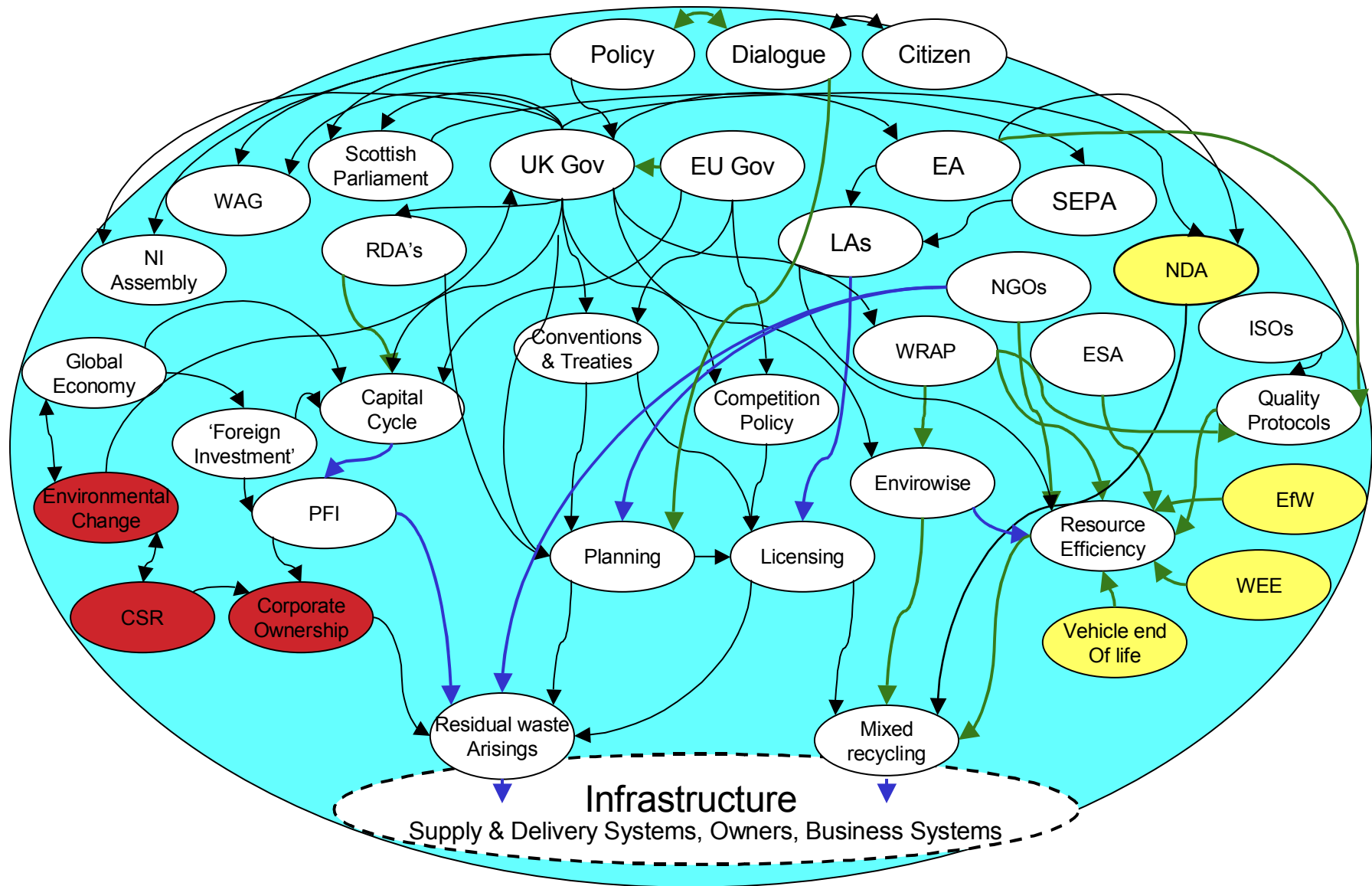
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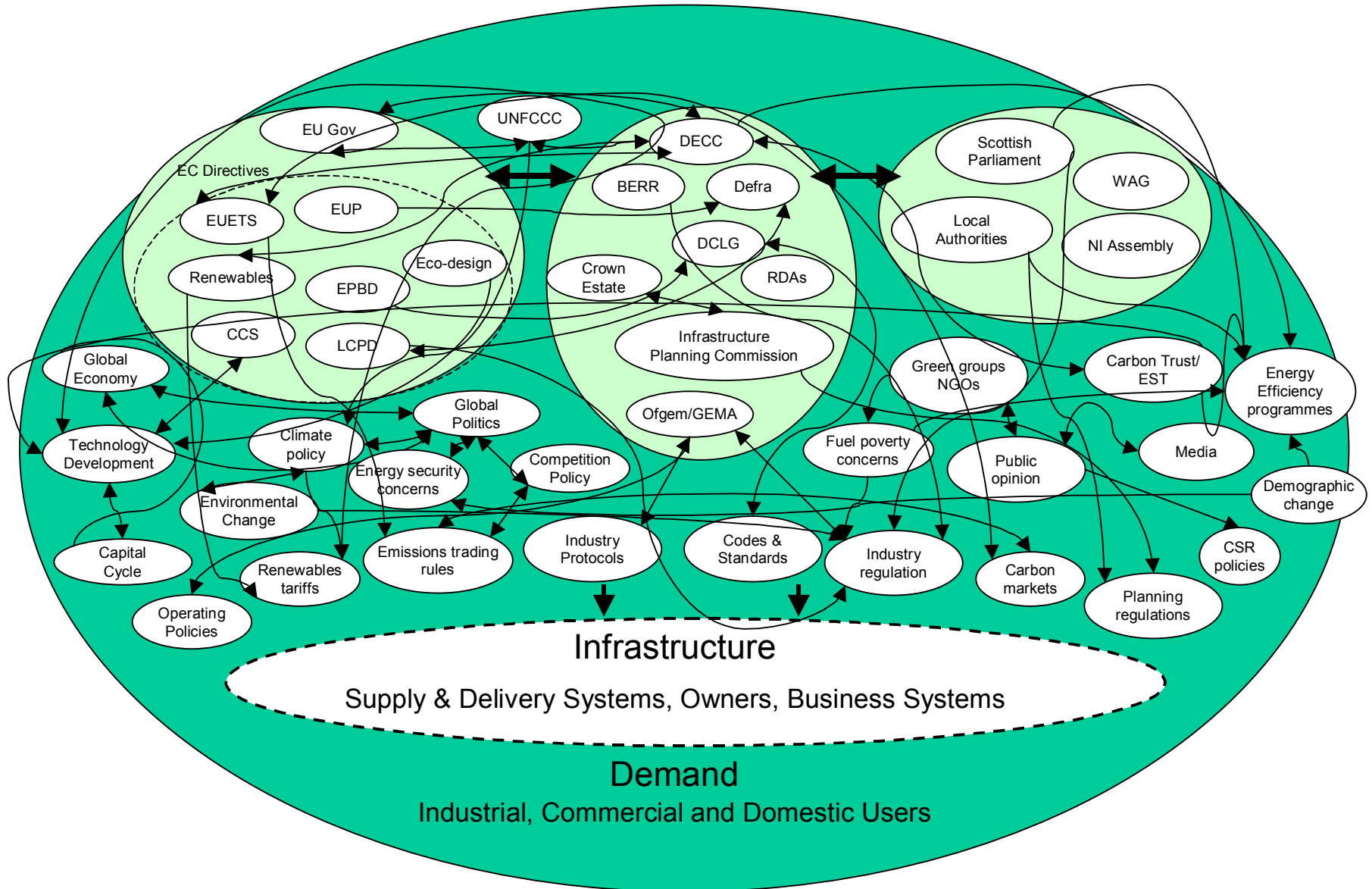
Agenda

- Infrastructure
- Transport
- Climate change and Environment]
- Provocation

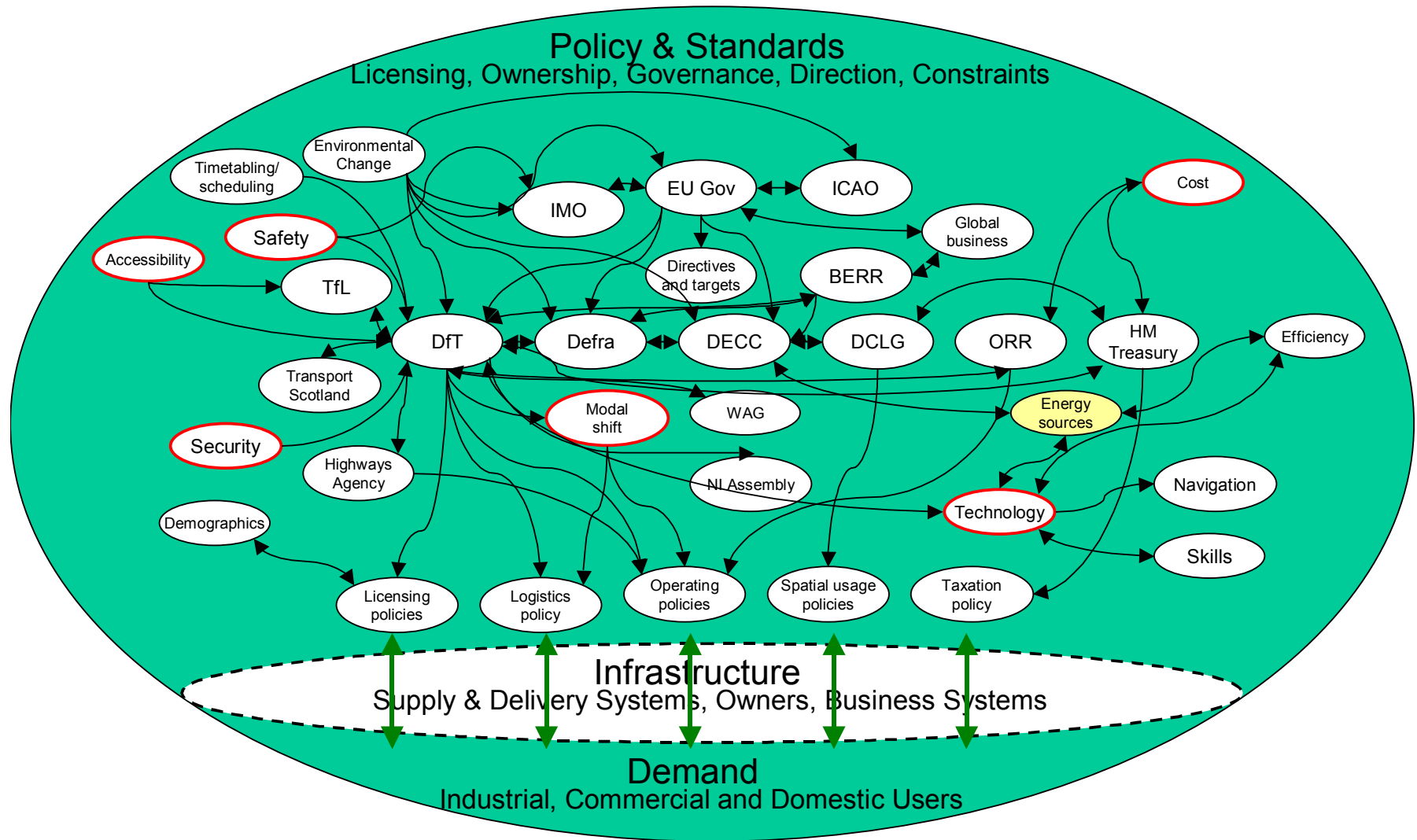
Waste - Policy and Standards



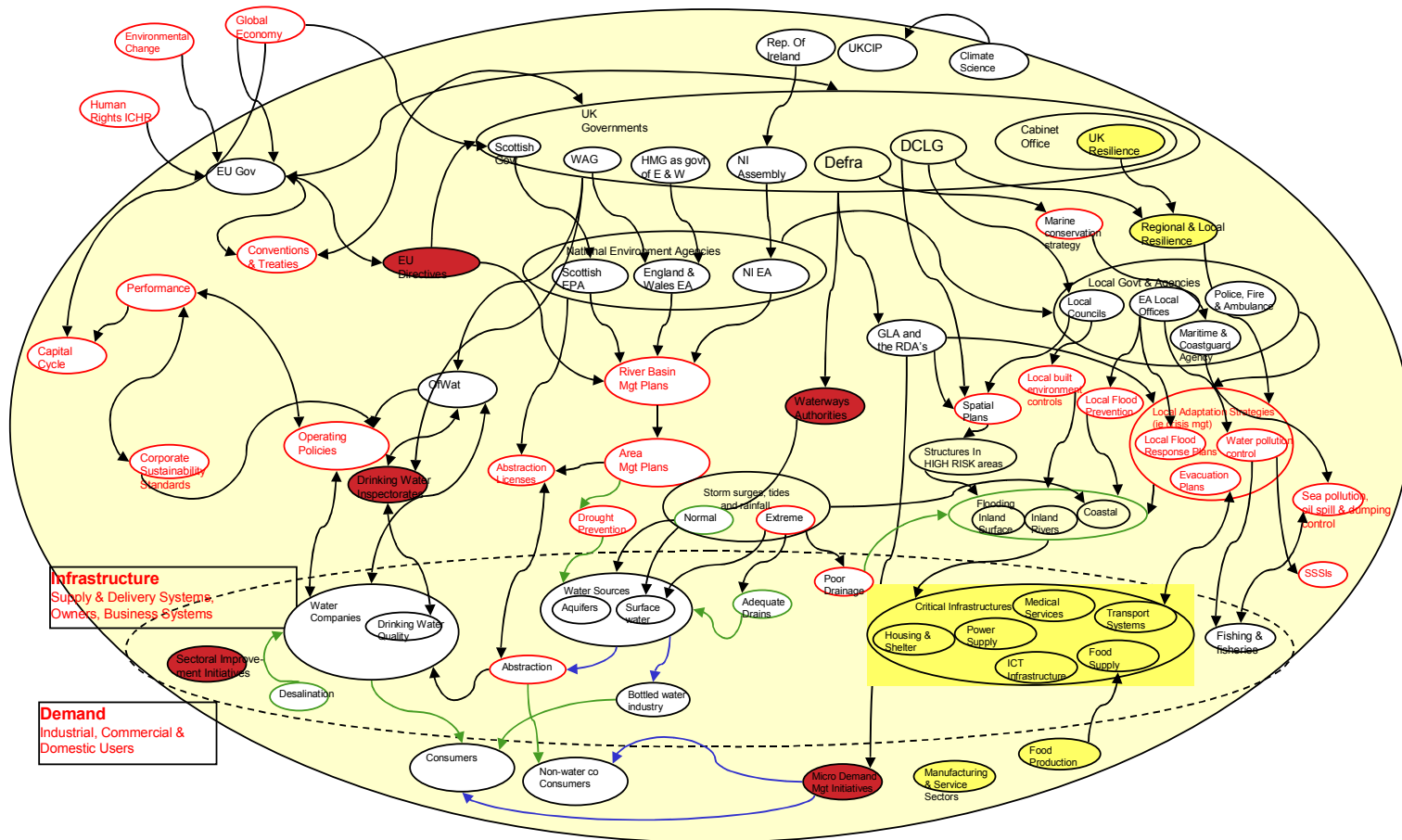
Energy – Policy and standards



Transport - Policy and Standards

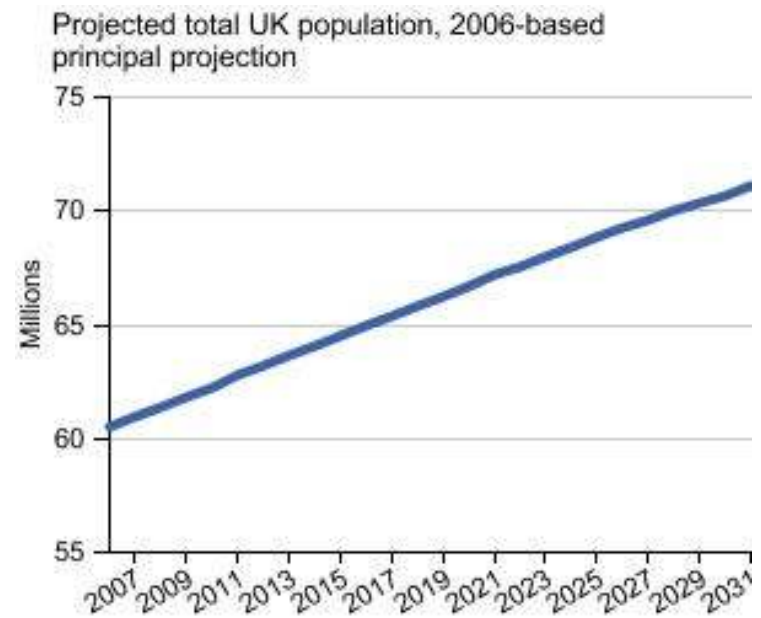


Water – Policy and Standards

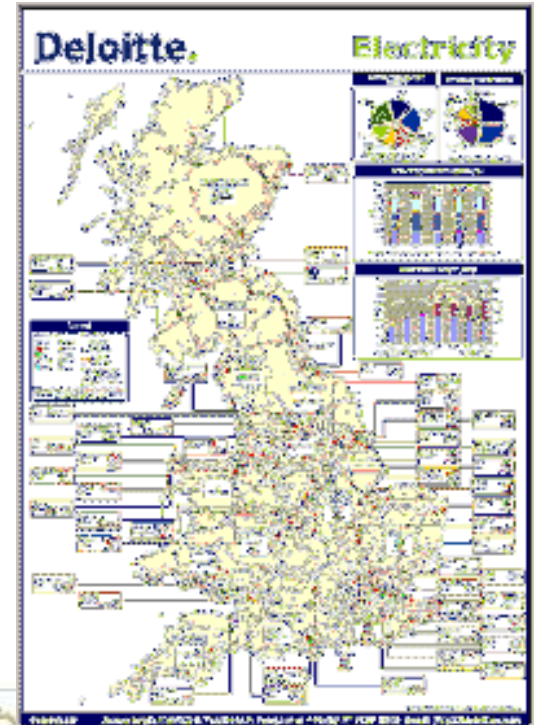
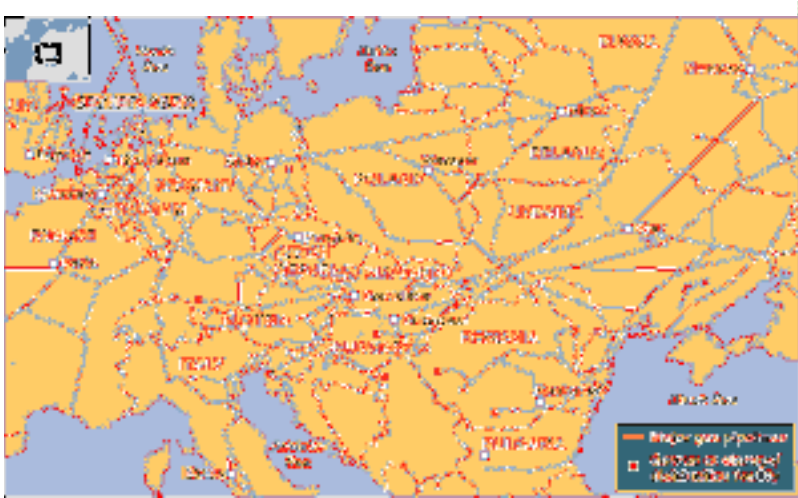




Ageing infrastructure components



Capacity – current and future

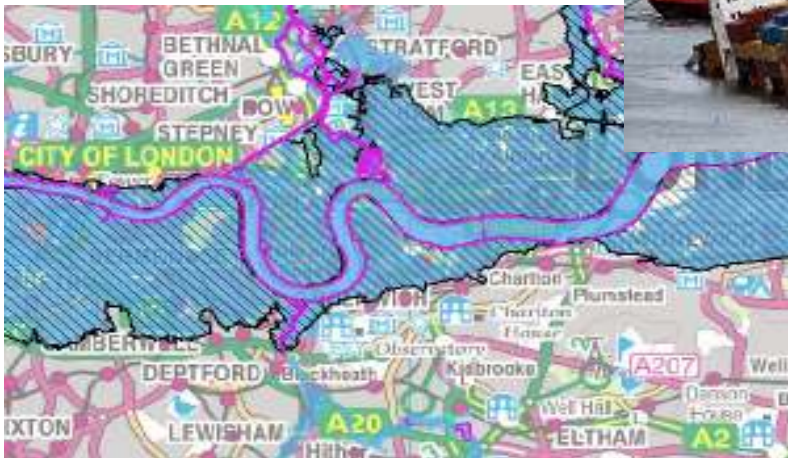


Understanding Interdependencies





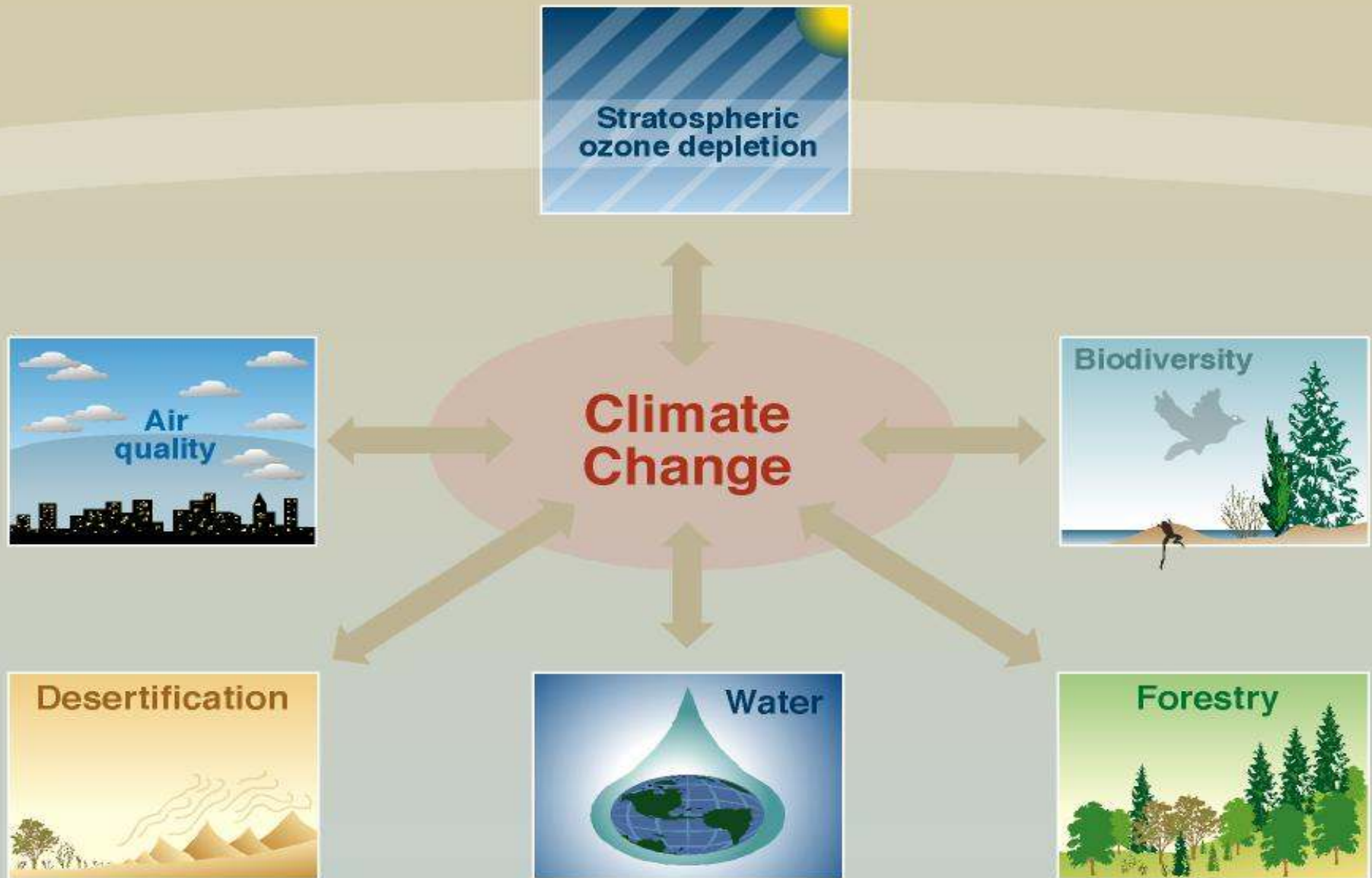
Resilience
future proofing,
extreme events,
long term challenges
operational resilience



Transport Conclusions

- Strongly interdependent on Energy and ICT
- Resilience and low carbon have not been essential requirements until now
- Value of end to end journeys is increasingly the metric.
- Multimodal thinking is essential
- Disruptive innovation might be necessary

Linkages between climate change and other environmental issues



Climate Change Resilient Development

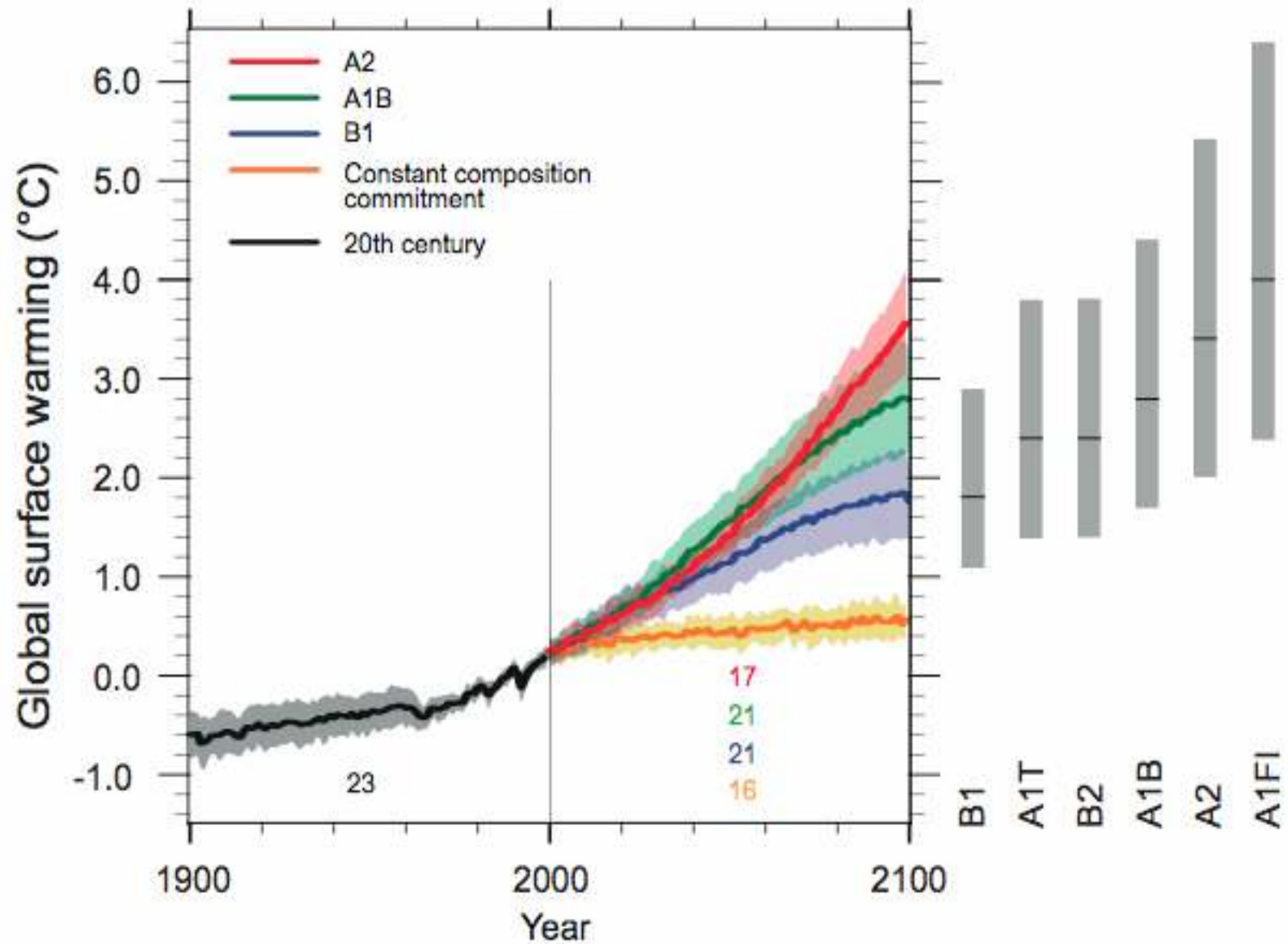
Requires cost-effective and equitable mitigation and adaptation

- **Mitigation:** While minimizing the emissions of greenhouse gases and transitioning to a low-carbon economy, access to affordable energy in developing countries is a pre-requisite for poverty alleviation and sustainable economic growth
- **Adaptation:** Requires integrating current climate variability and projected changes in climate in sector and national economic planning while recognizing the aspirations of local communities

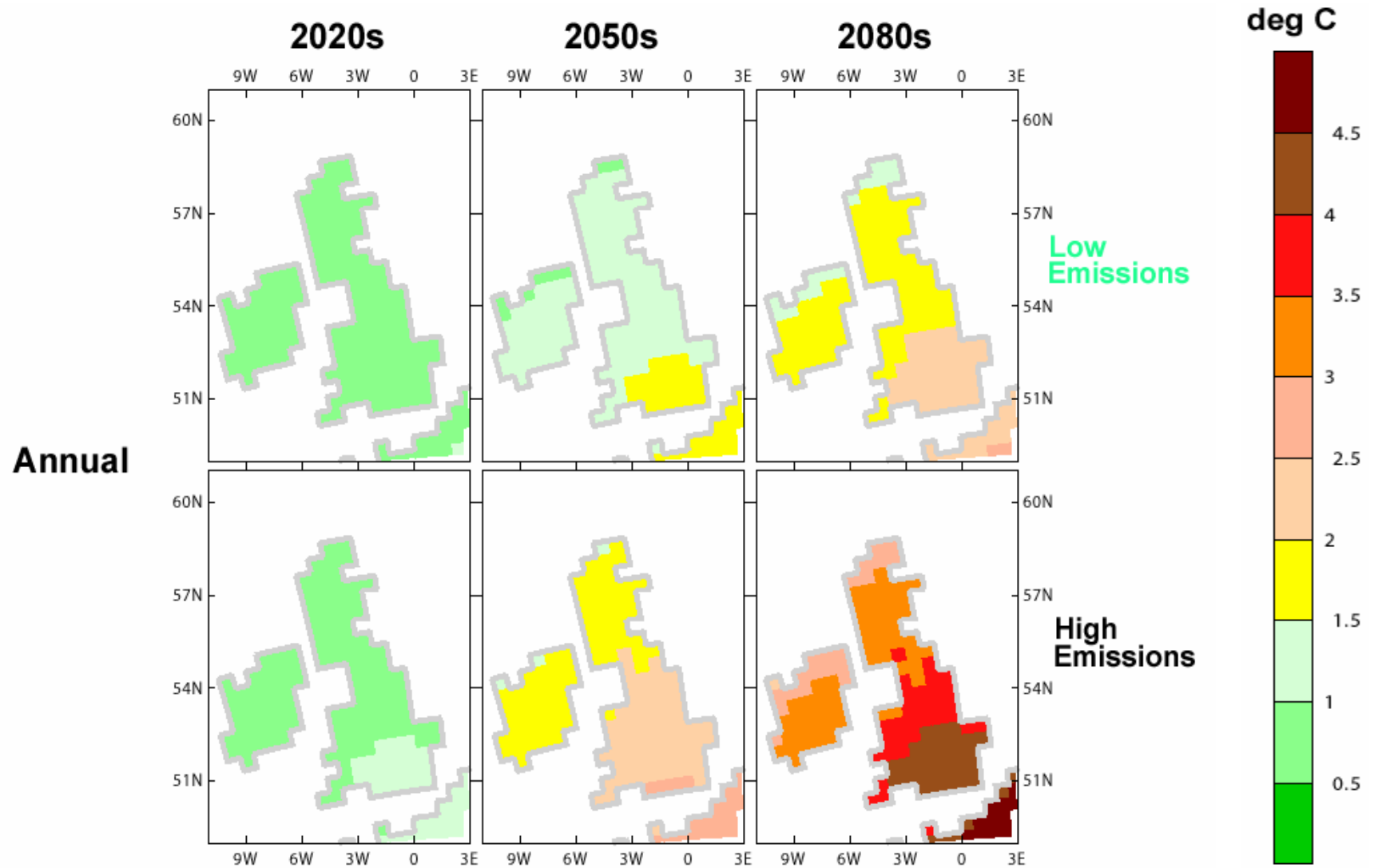
Climate Change

- The composition of the atmosphere, and the Earth's climate has changed, mostly due to human activities (highly certain), and is projected to continue to change, globally and regionally:
 - Increased greenhouse gases and aerosols
 - Warmer temperatures
 - Changing precipitation patterns – spatially and temporally
 - Higher sea levels – higher storm surges
 - Retreating mountain glaciers
 - Melting of the Greenland ice cap
 - Reduced arctic sea ice
 - More frequent extreme weather events
 - heat waves, floods and droughts
 - More intense cyclonic events, e.g., hurricanes in the Atlantic

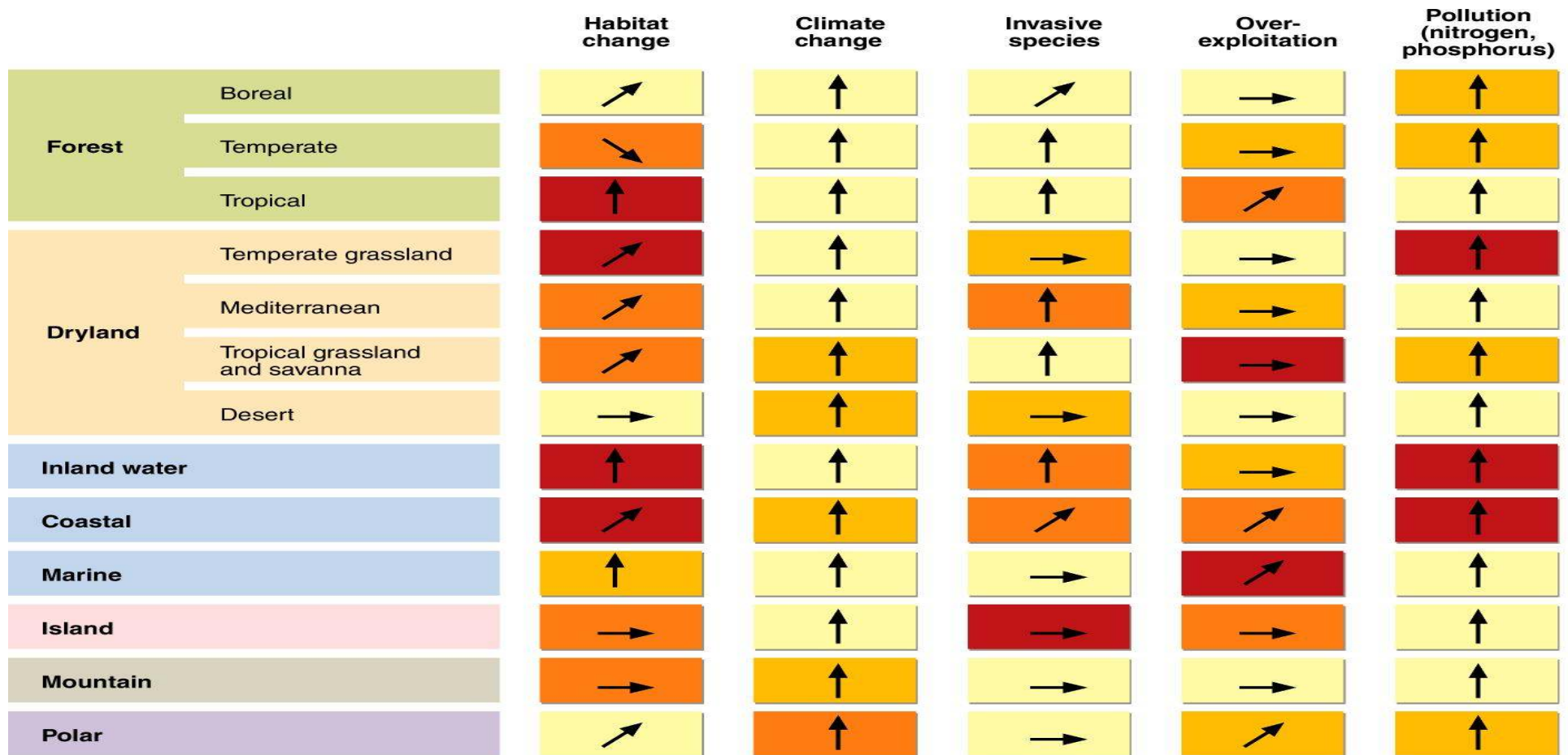
Projections of Future Changes in Climate



UK mean temperature change UKCIP02

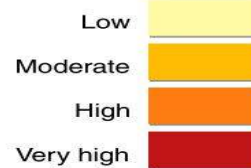


Drivers of biodiversity loss growing



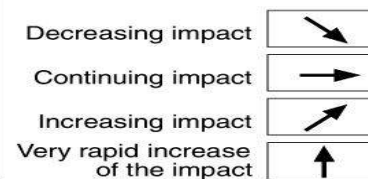
RESULT OF PAST EVOLUTION

Driver's impact on biodiversity over the last century












WHAT HAPPENS TODAY

Driver's actual trends



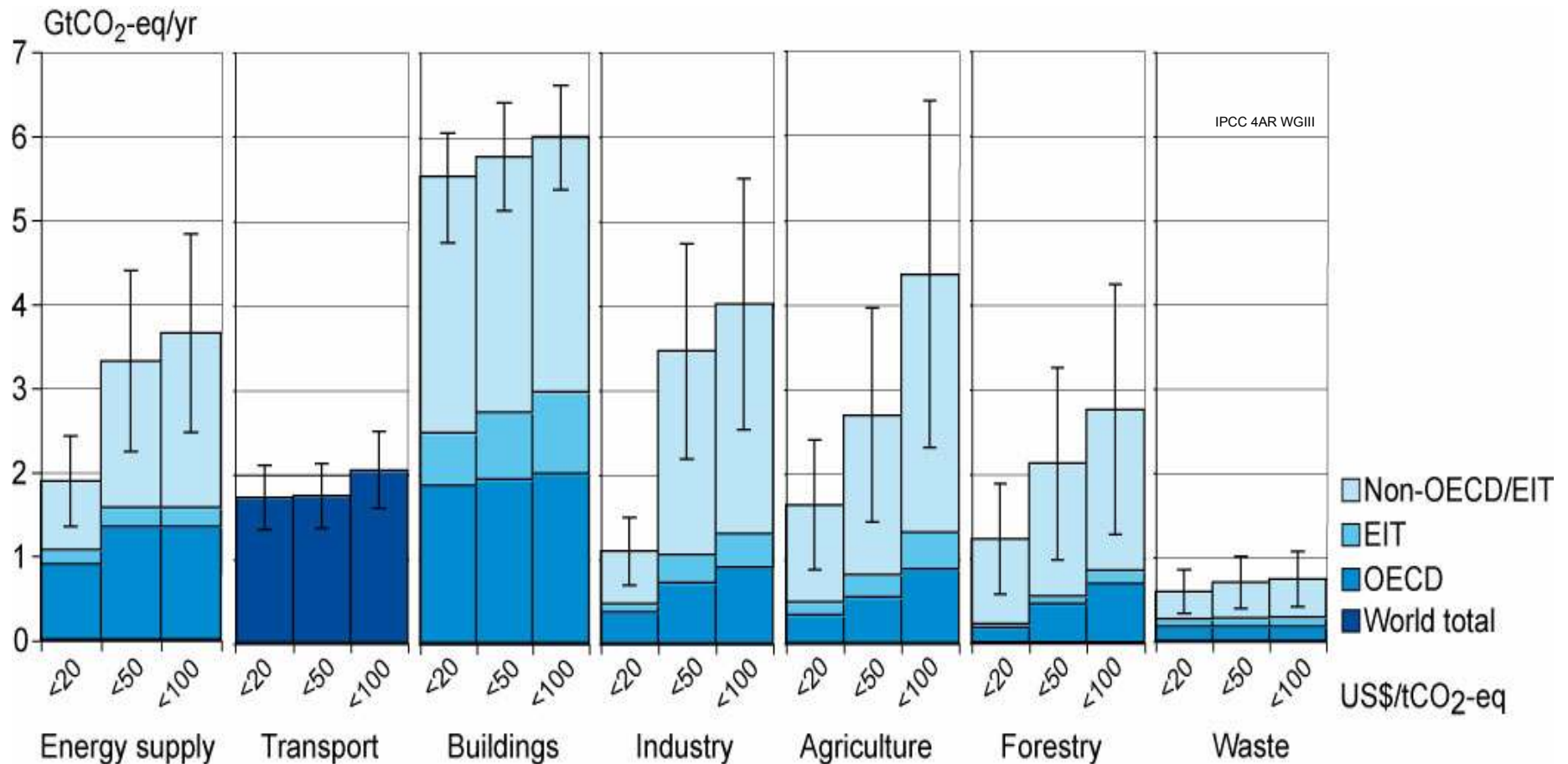
Source: Millennium Ecosystem Assessment

Direction and magnitude of selected health impacts of climate change

	Negative impact	Positive impact
Very high confidence Malaria: contraction and expansion, changes in transmission season		
High confidence Increase in malnutrition		
Increase in the number of people suffering from deaths, disease and injuries from extreme weather events		
Increase in the frequency of cardio-respiratory diseases from changes in air quality		
Change in the range of infectious disease vectors		
Reduction of cold-related deaths		
Medium confidence Increase in the burden of diarrhoeal diseases		

Mitigation Potential Exists For All Sectors & Regions

- At least a 50% reduction global greenhouse gas emissions by 2050 is needed for a chance of meeting the EU 2°C target



Overall Climate Change Conclusions

- Climate change is an additional stress on an already highly stressed world
- Climate change undermines most of the Millennium Development Goals
- There are cost-effective and equitable solutions, but political will and moral leadership is needed
- The future is not pre-ordained - we can limit changes in the Earth's climate, but substantial changes will be needed in current policies, practices and technologies
- Public and private sector decision-makers need to take a long-term perspective

Provocation

- We tend to concentrate on ways of describing objects (trains, cars, weather) rather than interactions (journeys, congestion, flooding)
- We confuse diagnostics (hypothesis loaded) and observation (hypothesis free) as methods of gathering data about reality
- The concept of policy actions that have provably unpredictable outcomes is hard for politicians (and others) to understand – how do we do better?
- Effective representation and communication of findings is an underdeveloped element of complexity research – discuss!
- Observation of or interaction with ‘the system’ changes it in an unpredictable way (road user charging, climate change adaptation, teleworking, identity management)
- How do we feed real time data into large scale complexity models in a ‘stable’ manner to inform operational decision makers