

# **Climate change: Societal/behavioural opportunities & barriers**

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## **At Copenhagen, in March 2009 scientists said they:**

- **Were worried that people could not psychologically deal with the enormity of the problem and were reverting to doing nothing**
- **Had failed to convey how close Earth is to climate catastrophe**

**"At first, I thought that we could convince people. But there is a terrible inertia" "I fear that society is not up to the challenge of a crisis like this. Today, as a human being I am pessimistic."**

*French glaciologist Claude Lorius*

**"Perhaps society has realised the seriousness, but it certainly hasn't realised the urgency" "But even if you are pessimistic - and sometimes I am - it does not help. What are you going to do? Chop off your hands and give up? That's not a solution either"**

*John Church Antarctic CRC*

**"The risk is that when science pumps out more and more evidence that we are facing dangerous tipping points" - triggers that would make climate change irreversible - "that you put your head in the sand and move from denial to despair"**

*Johan Rockstrom, Stockholm Environment Institute*

**"Efforts to stabilise carbon dioxide and temperature are no better than planetary alternative medicine" We have already passed a point of no return, and that it is now impossible "to save the planet as we know it."**

*James Lovelock*

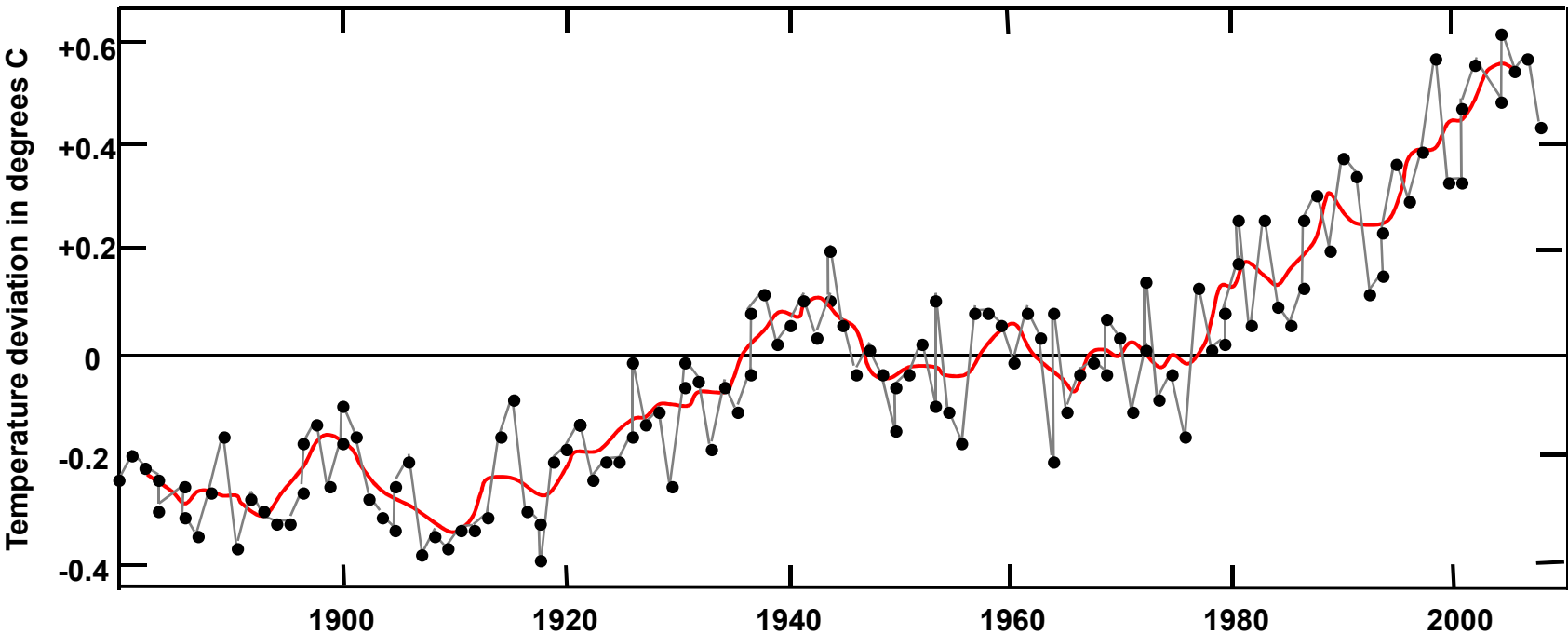


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- **People's perception**
- **The gap between science and policy**
- **Social and behavioural barriers**
- **Conclusions**

# Global annual average temperature over land and oceans as deviation from the 1951-1980 average

Source <http://data.giss.nasa.gov/gistemp/2008/>



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- “ ‘truth’ is the pursuit of the scientific approach and thus definitive conclusions from the scientific community are typically *lagging indicators* aimed at providing certain explanations of what caused something to occur
- In contrast, the risk management approach adopts a pragmatic and proactive stance (*leading approach*) aimed at sensibly balancing the probabilities of an event occurring against the impact of that event should it occur
- This disparity of purpose, we argue, often leads the general community to underestimate the practical risks implicated by scientific conclusions”

Sector	Nature of impact	Probability attached by IPCC
Water	Runoff increases at high latitudes and some wet tropics, decrease over much of mid latitudes	>80%
	Increased drought affected areas. Augmented flood risk	80%
	Water volumes in glaciers to decline	>80%
Food	Increase crop yield at high latitudes	>50%
	Decreased crop yield at lower latitudes- increased hunger	>50%
	Lower local production especially in subsistence sectors at low latitudes	>80%
Ecosystems	Loss of resilience of many ecosystems	>80%
	Net source of carbon	>80%
	20-30% of species are at high risk of extinction if >1.5-2.5°C	>50%
	Changed structure	>80%
Coastal systems	Exposed coastlines	>90%
	Major decline in corals, salt marshes and mangroves	>90%
	Hundreds of millions of people vulnerable to flooding, especially in mega delta and small island regions	>90%
Industry, settlement and society	Will vary widely- in aggregate net effect negative	>80%
	Most vulnerable are those in coastal and river flood plains, linked to climate-sensitive resources, exposed to extreme weather events	>80%
	Poor communities most vulnerable	>80%
Health	Likely to affect millions of people, particularly with low adaptive capacity, through malnutrition, increased deaths, disease and injury (fire, floods, storms, droughts, water-related disease)	>80%
	Mixed effects such as expansion and contraction of malaria range	>80%
	Some benefits through lower cold exposure	

# How well do we assess risk?

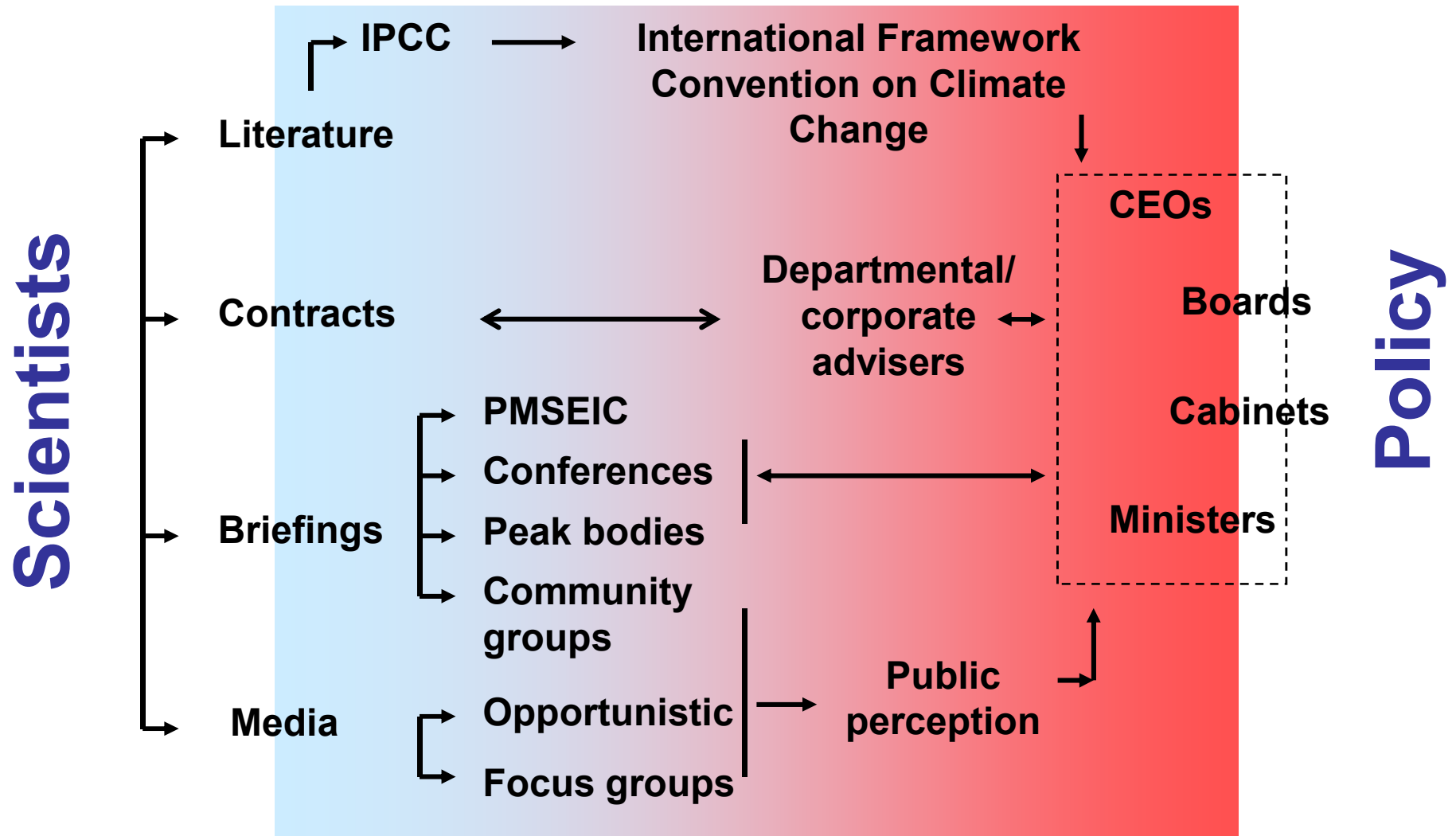
- **IPCC concluded that there is a 50% chance of a 20-30% of all species being at risk with a warming of 1.5-2.5°C**
  - There has been virtually no media or public attention to this risk
- **There are 6 million parts in a Boeing 747**
  - How many could be removed or rendered inoperable before you would decide not to fly?
- **What are the consequences of inoperable ecosystems?**



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# Science-Policy Interface



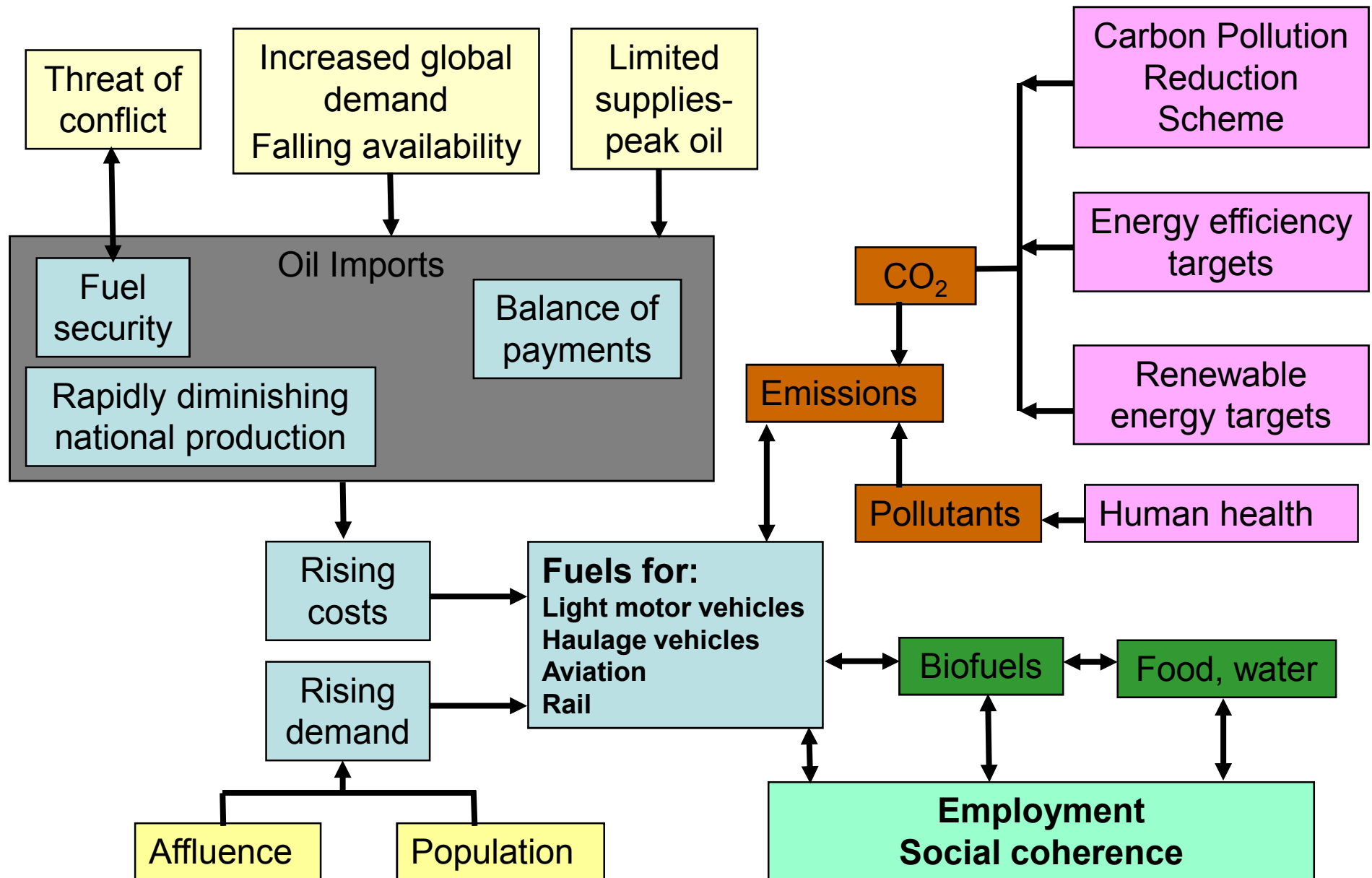
# Science-Policy Interface

- **Connection is *ad hoc***
  - Ill-defined pathways
  - Conditions of engagement
- **Pathways are numerous**
  - Intended or accidental
- **Interface is soft**
  - Requires crossing of both sides
- **Each pathway has strengths and weaknesses**
  - Potential for misuse

# Barriers to a functioning interface

- **Gatekeepers**
- **Purchaser-provider model**
  - Capture
  - Media
  - Independence
- **Emergence of the non-reality world**
  - Role of narratives
- **Time scales**
  - Immediate single solutions or strategic
- **Complexity**
  - Personal experience versus advice
  - Purpose and system

# Future motor vehicle fuel security

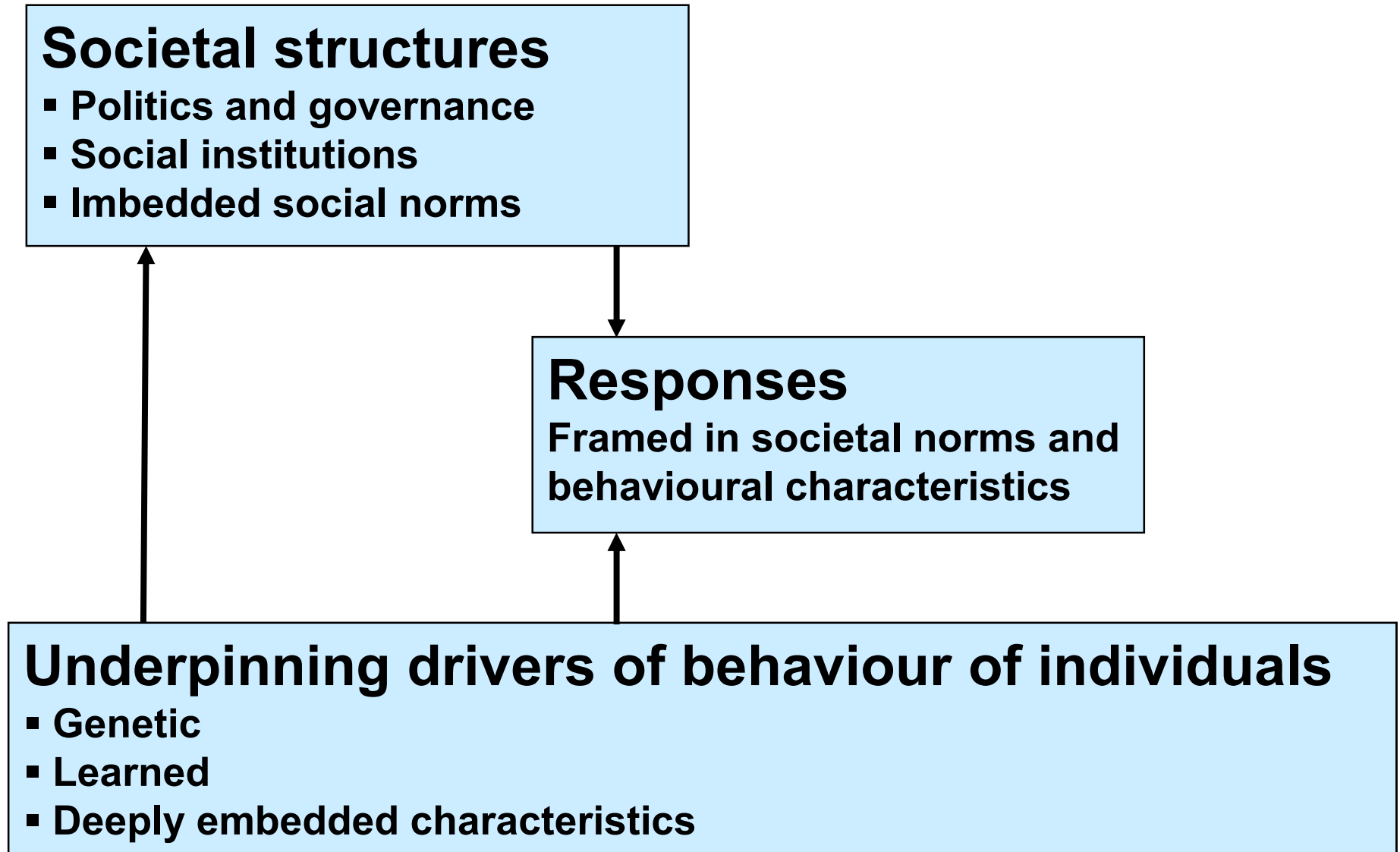


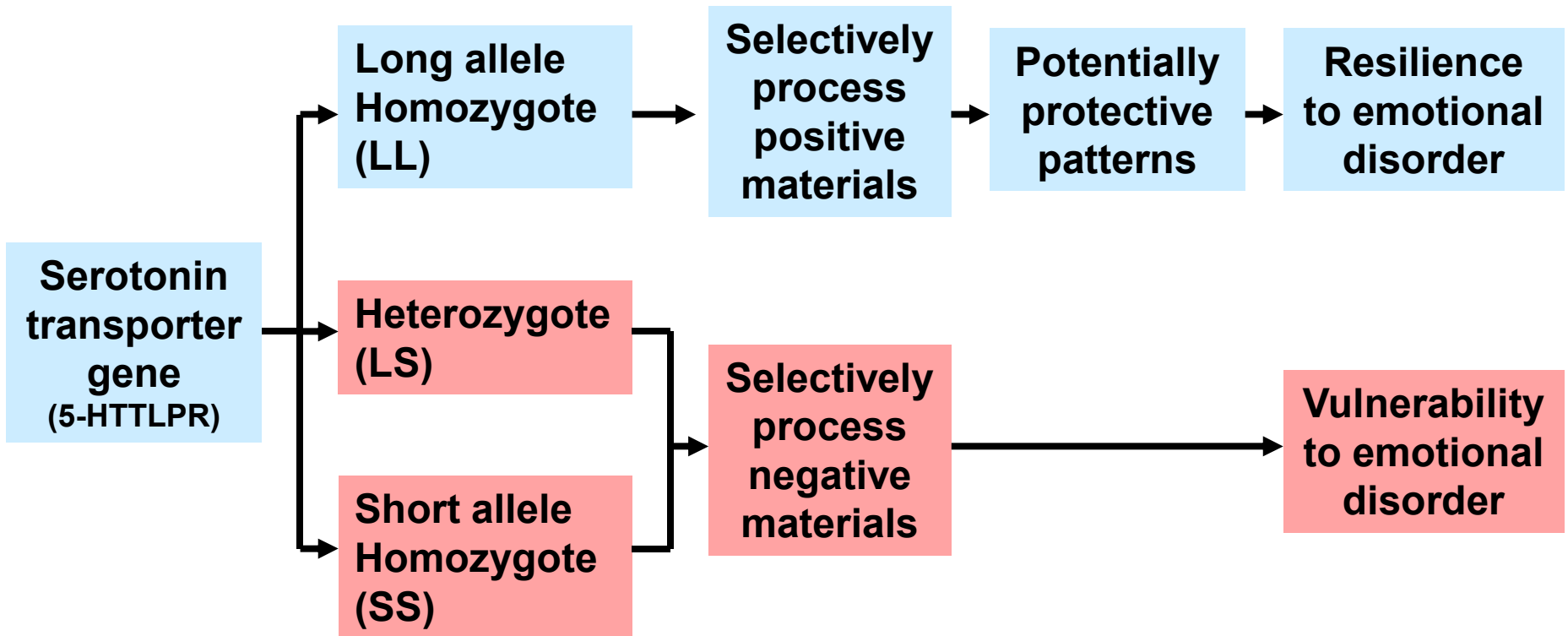


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# Human behavioural response determinates



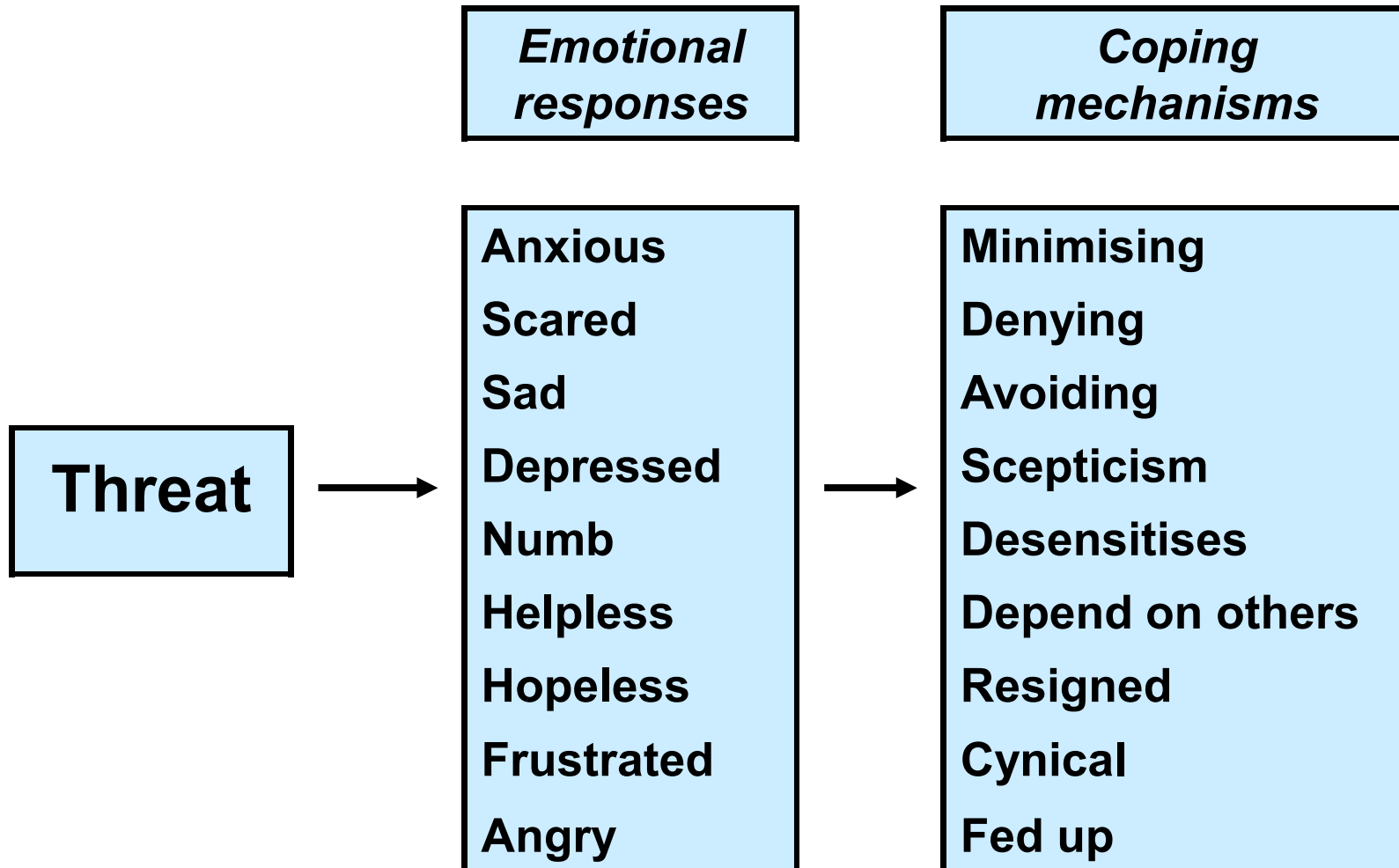


Based on: Fox et al. (2009), *Proc.Roy.Soc.B*, doi: 10.1098/rspb.2008.1788 March 01

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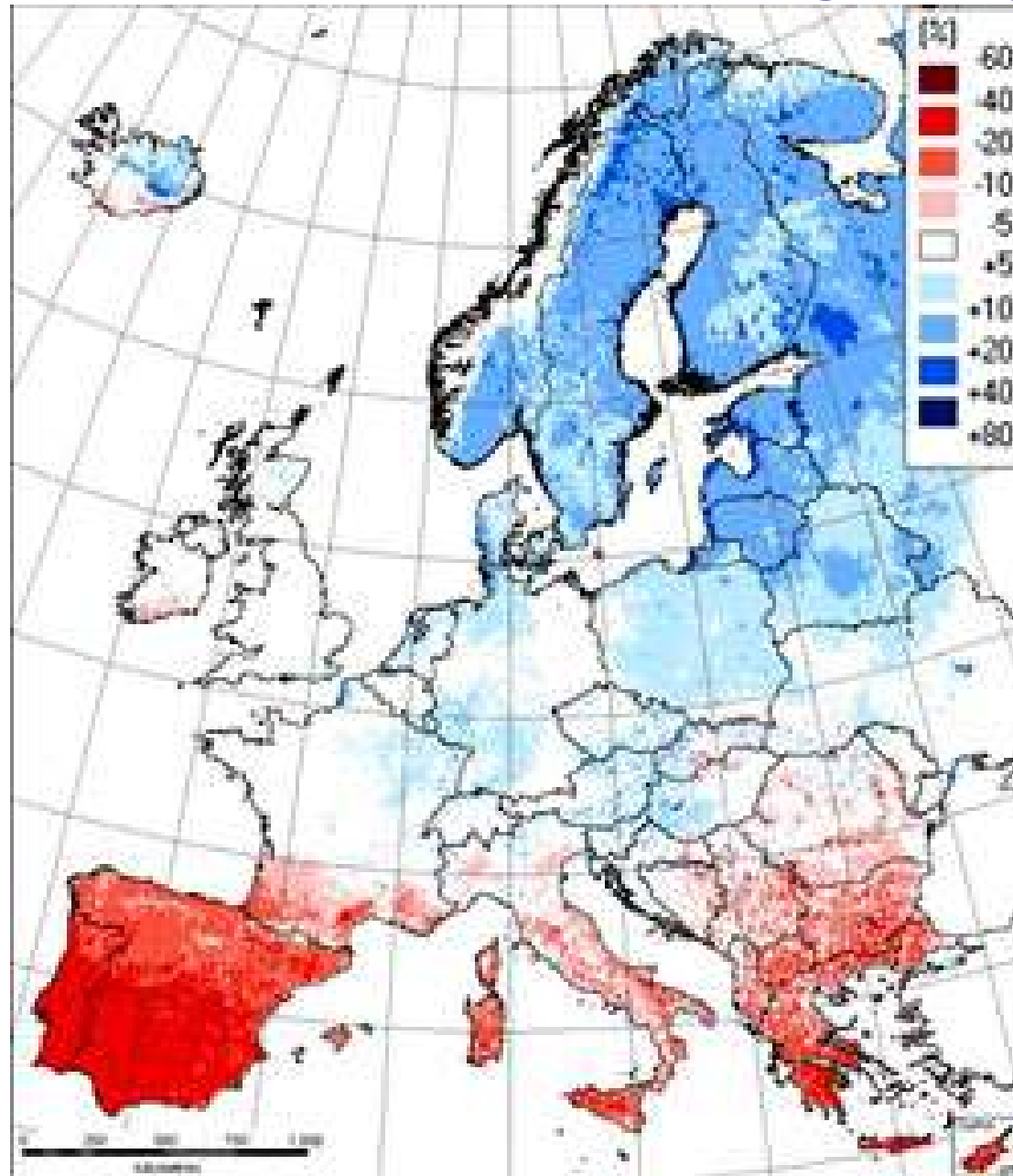
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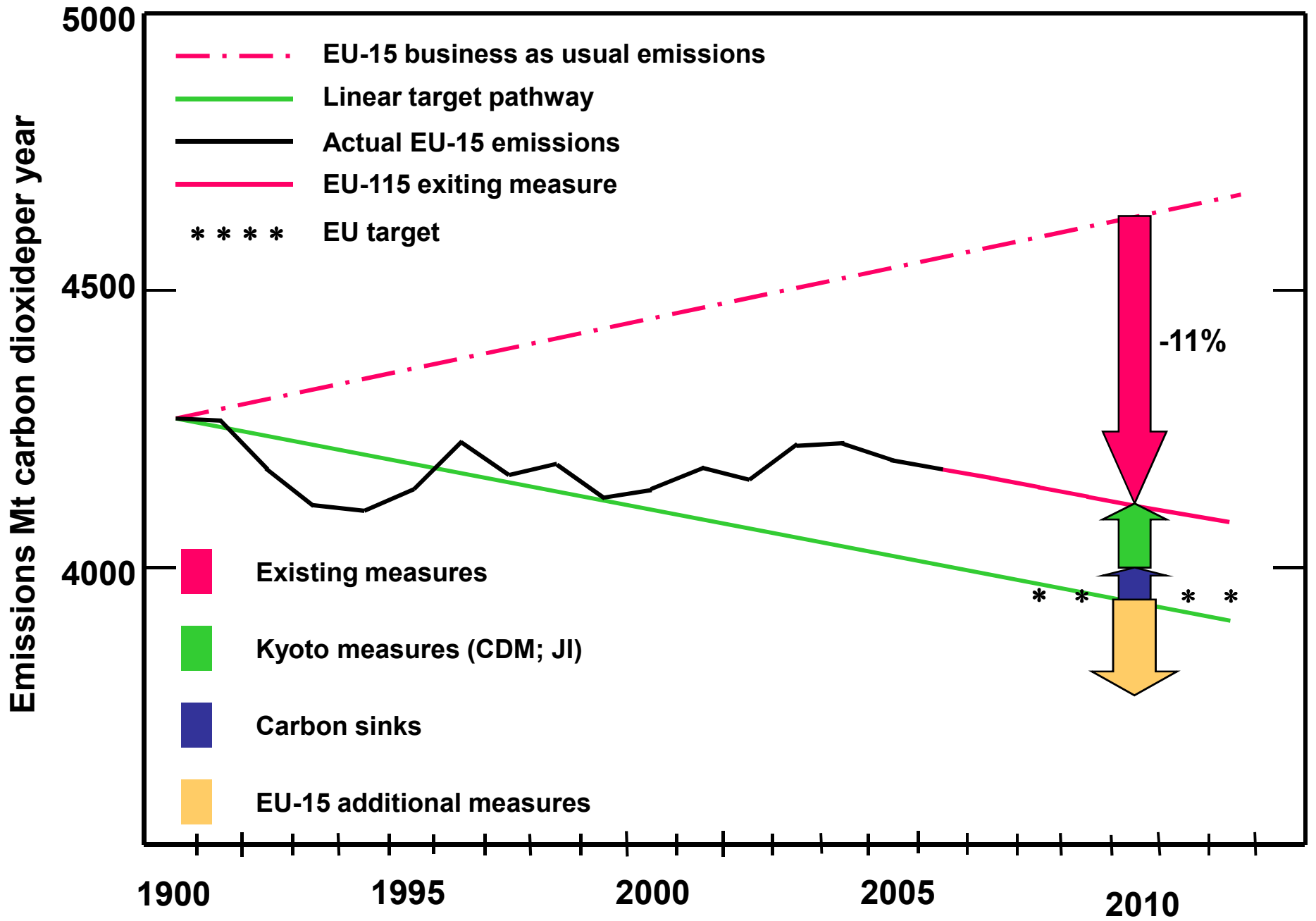
# Common reactions to learning about severe environmental problems



Based on Australian Psychological Society (2008) *Climate Change: What You Can Do*.  
[http://www.psychology.org.au/publications/tip\\_sheets/climate/](http://www.psychology.org.au/publications/tip_sheets/climate/)

# Best estimate of rainfall changes by 2100





Source; EU Insights, December 2007

# Dimensions of *What is Possible?*

Knowledge generation	Physical science of the climate system				Economics and energy technology				
	Biogeo-chemistry of greenhouse gases	Physics of radiation exchange & the hydrologic systems; fluid dynamics of the atmosphere and oceans		Biological feedbacks		Future human energy use			
		Dynamic response of the Earth's biology in turn affecting the physical climate		Future energy demand related to population growth, affluence & technological development		Anticipate global climate change for alternative human societal futures			
Past/future levels of atmospheric greenhouse gases	Other factors affecting climate change and variability	Explanation of observed change to the physical climate system	Complexity of ecosystems, limited predictability & the changing role of conservation	Population growth & immigration policy	Available technologies & current infrastructure investments	Economic costs of new technologies including impact of carbon trading on international agreements			
Behavioural science areas	Capturing complex, uncertain yet important expert advice for policy development & community understanding	Scepticism its role in Science & in the wider community	Factual versus emotive drivers of uptake or otherwise of expert advice	Emotive connections to land & biodiversity		Paradigms of success & drivers of emissions growth: Consumer behaviour, materialism, post materialism	Drivers and constraints on community attitudes towards threats	Growing ethos of sustainability & social/environmental responsibility of corporations, conservation	
		Attitudes towards population growth as a related to demography, wealth, religion, education		Risk perception	Dealing with probabilities				Attitudes to wealth generation as paradigm of success and driver of emissions growth
		Acceptance of change							
Behavioural issues	Role of Science in modern societies	Commitment to experiential evidence of reality versus descriptions based on rationale argument		Construction of attitudes based on fact, manipulation & perception		Role of markets in selection of strategic options & maintenance of resilience			
	Purpose, funding and management of Science, impact of purchaser-provider model	Role of the Media in transference or distortion of knowledge		Religious demography of beliefs/attitudes		Role of government intervention in the maintenance of resilience		Nature & role of leadership	
		Role of Education in public awareness and policy development			Perceived value of heritage, environmental protection & international responsibly				
		Role of Vested Interests in stifling or promoting change of wider community value			Holism in the determination of options		Modification of consumerism		
Complex, largely ad hoc processes; exposure to weaknesses & manipulation		Role of governments, management of diabolical problems: uncertainty, complexity, timescales, equity			Management of responsibilities across competing economic sectors, self interest and jurisdictional regions				

# Information, behaviour and rationality

## *Common assumptions*

- People are essentially rational
- Reason and logic is only one form of rationality. Everything else is irrational
- Rationality is conscious (we choose)
- Rational decisions are better than irrational ones
- Denial is a kind of irrationality
- Irrationality and denial can be overcome by more information

## *Alternative assumptions*

- Human reasoning is specific to particular context, culture & time
- There is no single “reason” but many different rationalities
- What is rational in one context may be irrational in another
- Most rationalities are “stored” in the unconscious
- There is no such thing as emotion-free reasoning. Every rationality is guided by emotion
- Every emotion, including fear, denial, hope and commitment, is a kind of rationality

De Kirby *et al.* (2007): *In what can you do to fight global warming and spark a movement*, Island press, Washington DC

Fien *et al.* (2008): personal communication

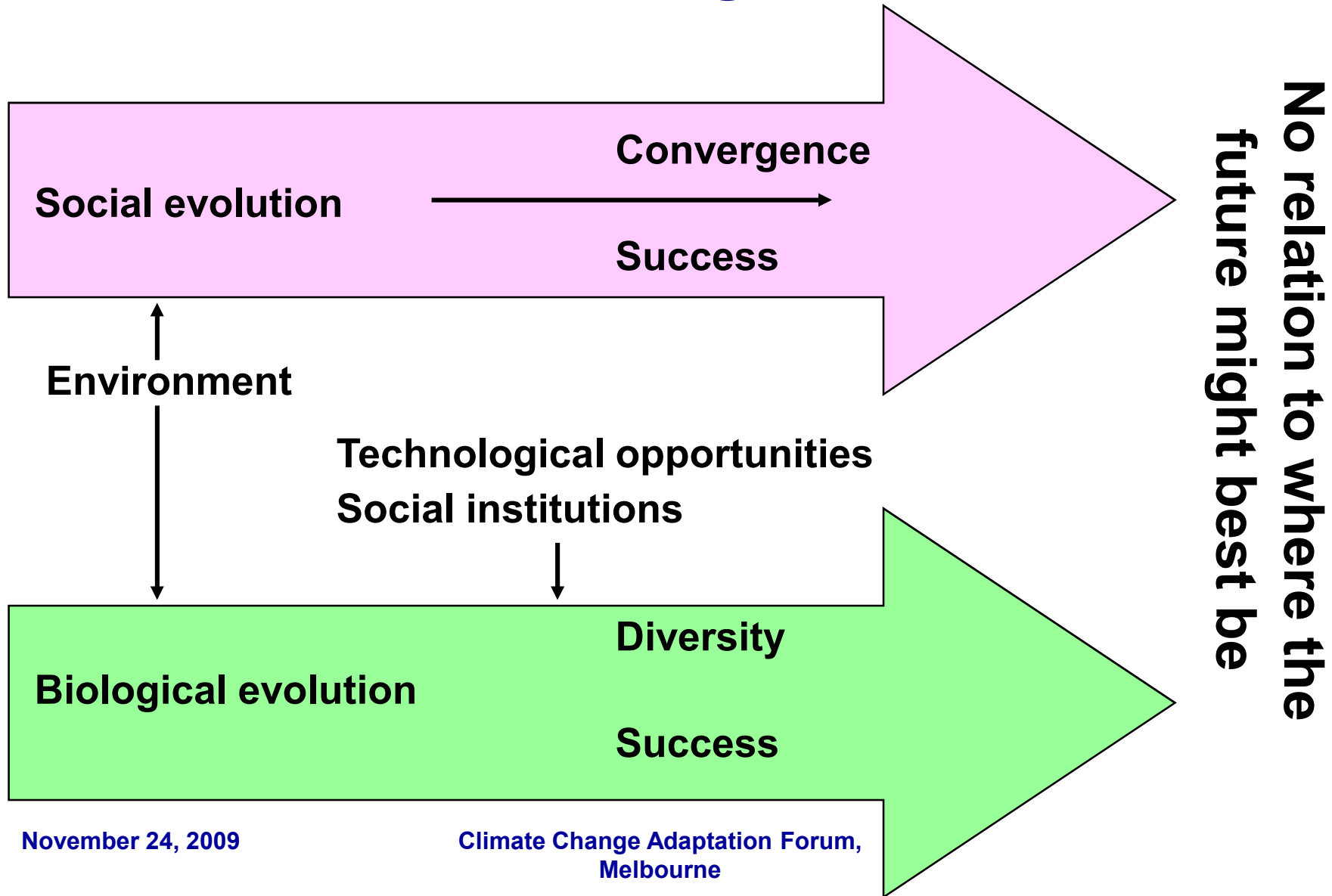
# Human dimensions of *What is Acceptable?*

- **Dealing with uncertainty and probability**
  - Weighing probabilities, reality & the non-reality world
  - Acceptance of change vs protection of *status quo*
- **Risk assessment**
  - Capturing opportunities, reluctance to act/change
  - Concerns/perceived responsibilities for culture & environment
- **Sharing responsibility**
  - Government &/or personal or corporate responsibilities
  - Behavioural &/or institutional change
  - Technologies &/or behavioural change
  - Mitigation &/or adaptation
- **Perceptions of danger**
  - Value of present &/or future
  - Perceived values of biodiversity
- **Personal responsibility and empowerment**
  - Given “rights”, cultural connections, loss of identity and place
  - Strategic-ness vs conservativeness

# Human dimensions of *What is Equitable?*

- **Recognising personal/regional differences in:**
  - Exposure, capacity to adapt mitigate & fund responses
  - Understanding/awareness of CC & available options
  - Matching differential exposure to aspirational needs of wider community
- **Responding with**
  - Formal, workforce & public education
  - Improved/new management & energy practices
  - Balance across all sectors & jurisdictions
  - Changes to personal lifestyles & expectations
  - Protections in transition for exposed sectors/persons

# Social evolution is opportunistic and devoid of strategic direction



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	<b>Dominant view of society</b>	<b>Alternative view of society</b>
<b>Goals</b>	Productivity	Nourishment, shelter
	Profit	Fulfilment
	Power	Sustainability, maintenance
<b>Objective</b>	More (no limit)	Enough (limit)
<b>Means</b>	Growth	Balance
	Competition	Cooperation
	Centralisation	Decentralisation
<b>Non-renewable resources</b>	Wasted, exhausted	Limited, prioritised users
<b>Renewable resources</b>	Degraded	Require balance management
<b>The Human Condition</b>	Stressed	Joyful
	Detached	Integrated
	Degenerating	Evolving

Hill (2006 p8): What Are Rational Goals For Development?

	<b>Dominant view of society</b>	<b>Alternative view of society</b>
1.	<b>Maintenance or evolutionary change of status quo</b>	<b>Radical change</b>
2.	<b>Maintaining social order, existing systems un-questions</b>	<b>Transforming social systems, analysing structural conflicts and contradictions</b>
3.	<b>Greater efficiency of current systems</b>	<b>Creating more just and equitable systems</b>
4.	<b>Trying to maintain impressions of harmony, integration and cohesion of social groups</b>	<b>Acknowledging contradictions between social ideals and reality</b>
5.	<b>Ways top maintain cohesion and consensus</b>	<b>Ways to dismantle systems of domination</b>
6.	<b>Solidarity</b>	<b>Emancipation</b>
7.	<b>Identifying and meeting individual needs within existing social system</b>	<b>Current systems incapable of equitably meeting basic human needs</b>
8.	<b>Actuality, discovering and understanding “what is”</b>	<b>Potentiality: providing a vision of “what could be”</b>

**Hill (2006): Key Concerns of Dominant and Alternative Paradigm Views of Society**, Adapted from Burrell and Morgan (1979), Paulson, (1976), Maguire, P. (1987) and Hill (2006). [Adapted from Hill (2006), Key Concerns of Dominant and Alternative Paradigm Views of Society, Center for Child Ed. UMass, Amherst.]

# **Difference between a world in which:**

- Independence of individuals and sectoral enterprises is maximised to favour their successes**
- Connection between the purpose and functioning of individuals and sectors in light of the totality of human values and directions**



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# **Climate change is telling something important about us**

- **“ that societal evolution, as devoid of direction and long-term strategy as it is, has led our behaviour and societal institutions in directions that are unsustainable not only through changing climate, but in many other ways”**

**Pearman and Härtel (2009)**

# Some questions about us. To what extent:

- Are behavioural propensities dependent on:
  - Genetics, culture, education?
- Are these propensities consciously understood or unconsciously obeyed?
- Is communication dependent on differing:
  - Views of what is rationale
  - Emotional responses and coping mechanism?
- Is CC an indication of societal evolution with broader messages about sustainability?
- Is adaptation that simple?

