

# Climate Change



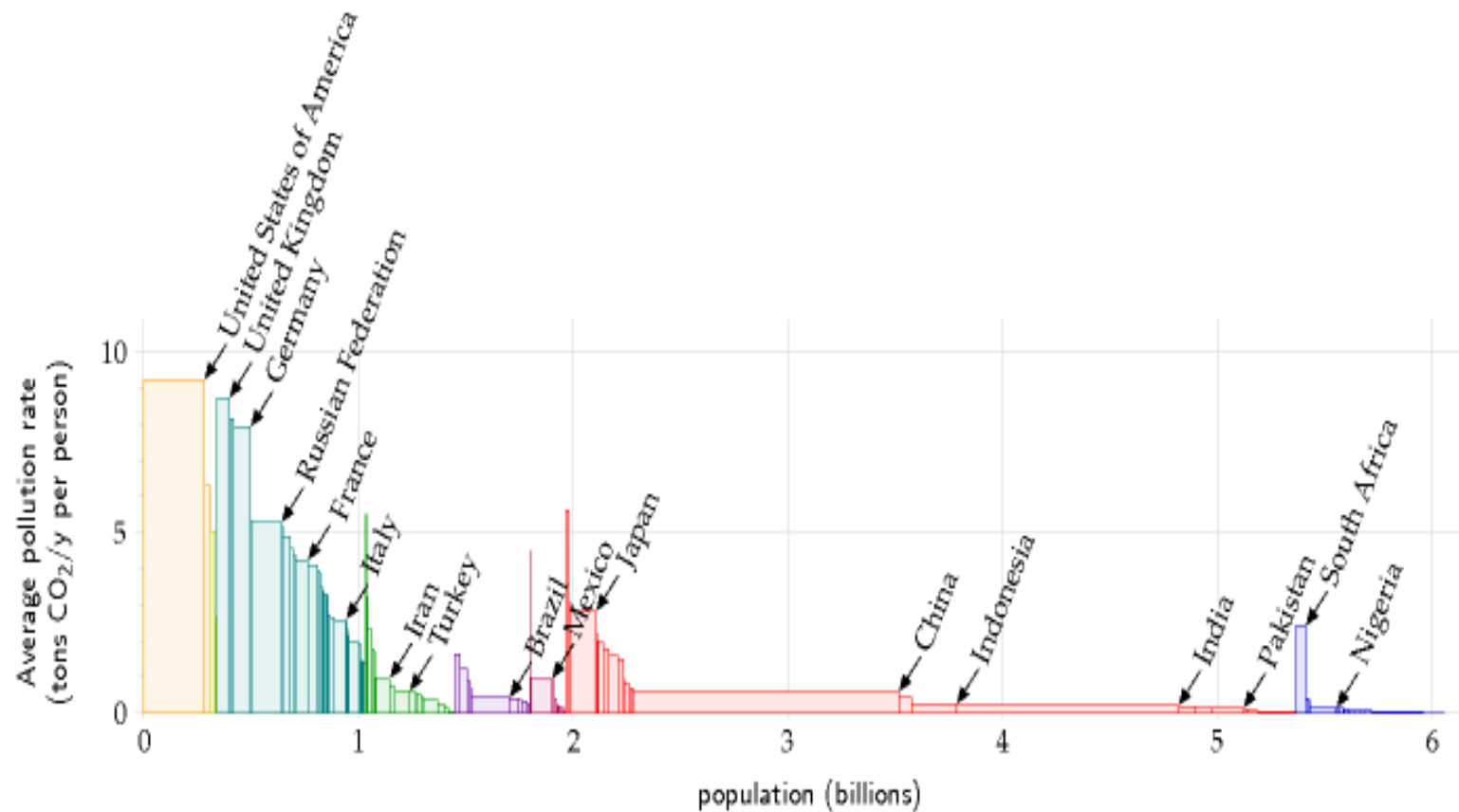
**CHANGING BEHAVIOUR TO REDUCE GREENHOUSE GAS  
EMISSIONS**

# Who's Responsible? Who's Most Vulnerable?



- Developed nations – most responsible; but poor will suffer most.
- Industrialised world – 20% world's population;
  - uses 80% world's resources;
  - produces 80% planet's waste.
- Australia – higher income earners use more energy, produce more greenhouse gases (GHGs) – CSIRO work suggests they may be least willing to change.

# Selected country's cumulative emissions of CO<sub>2</sub>, - average emission rate -1880–2004.





*"Okay – it's agreed; we announce  
– 'to do nothing is not an option!'  
then we wait and see how things  
pan out..."*

# Action On Numerous Fronts



- Legislation and regulation to control emissions
- Investment in alternative, low-carbon technologies
- Economic instruments to alter prices
- Information to inform and persuade
- Behaviour change interventions – social change

# Social Change Is Crucial To Modify:



- Transport use
- Food consumption
- Energy use
- Settlement patterns
- House designs
- Rates of reproduction
- Acceptance of higher prices
- Support for GHG reducing policies

# Individual Behaviour



- Sectoral analysis : household sector contributes 40% to GHG emissions.
- Consumer Lifestyle Approach – 80% energy used and CO<sub>2</sub> emitted is the result of individual *decisions*.
- Netherlands – direct energy (heating, electricity, motor fuel) = 80% country's energy flows.
- Energy use is continuing to rise in households – large variations.

# Need to investigate:



- **Values** relevant to environment & to the consumption of resources;
- Judgement of **seriousness of the risks and responses**;
- How **attitudes** are formed & changed;
- Best methods of **persuasive communication** – which backfire;
- Best techniques-rapid and widespread **behaviour change**;
- **Barriers and habitual modes of thinking**; and
- Role of **incentives and social forces**.

# Public Opinion & Knowledge

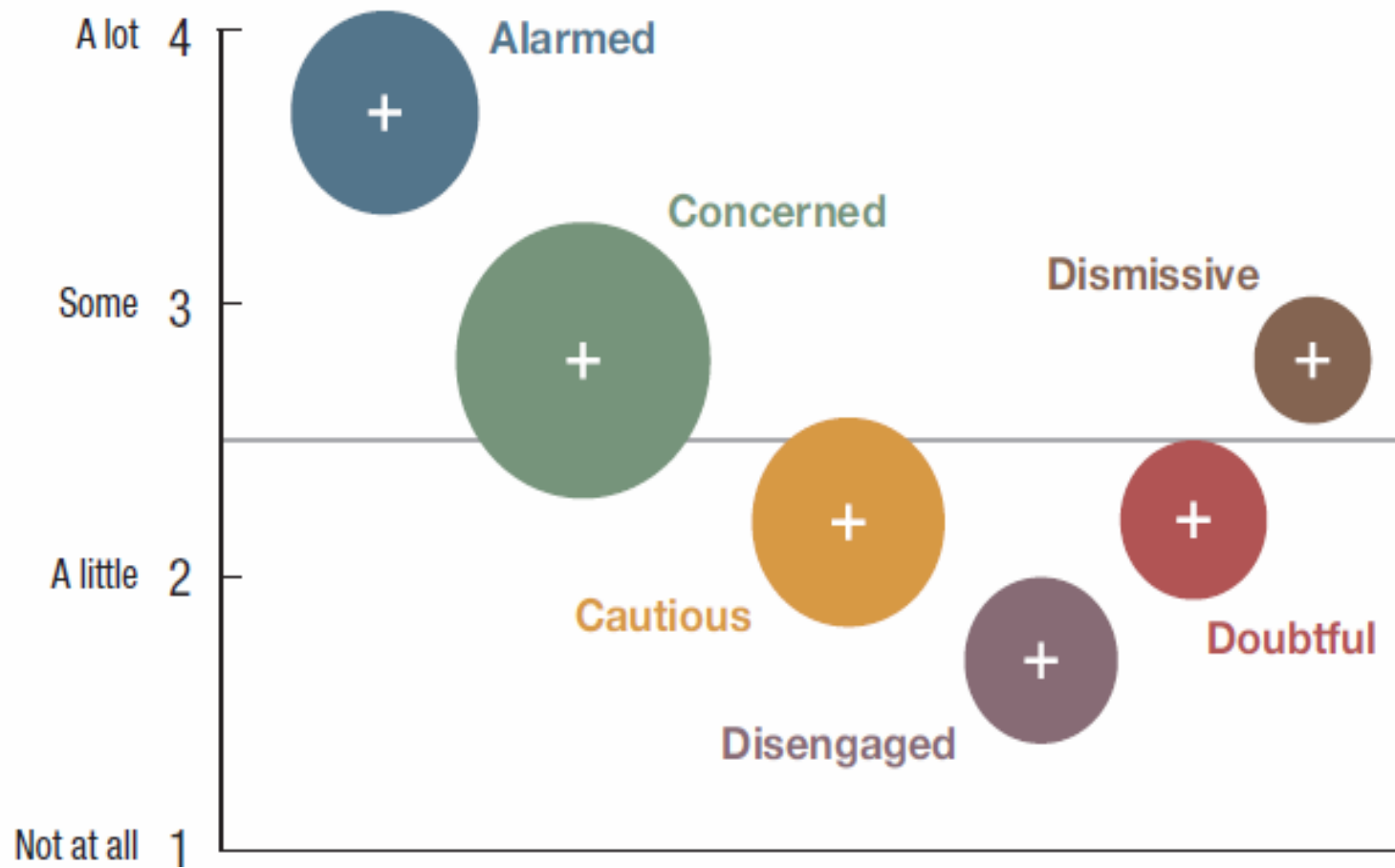


U.S surveys suggest six groupings:

1. The Alarmed
2. The Concerned
3. The Cautious
4. The Disengaged
5. The Doubtful
6. The Dismissive

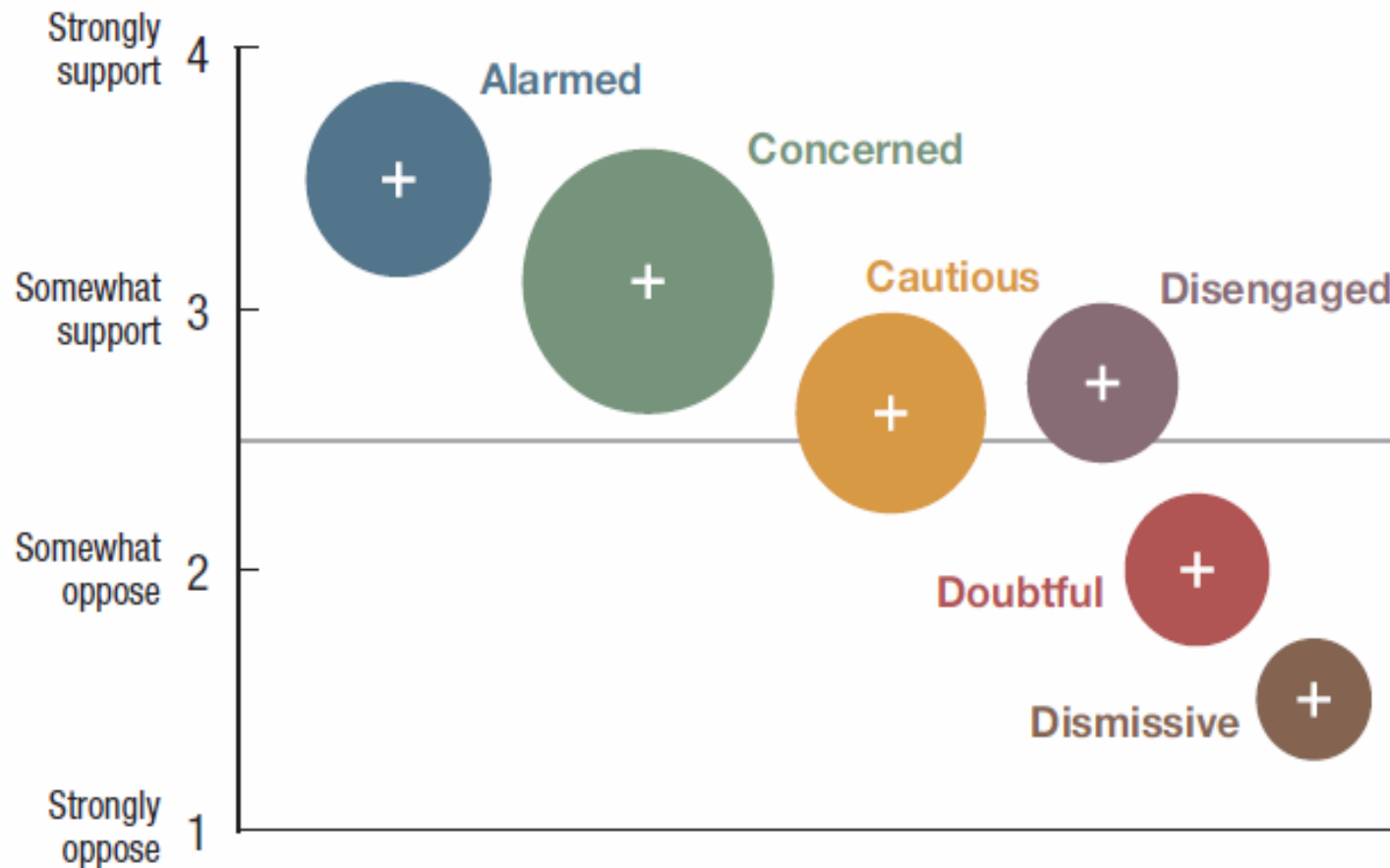
.....but no straightforward relationship  
between concern and reported action.

*How much had you thought about global warming before today?*

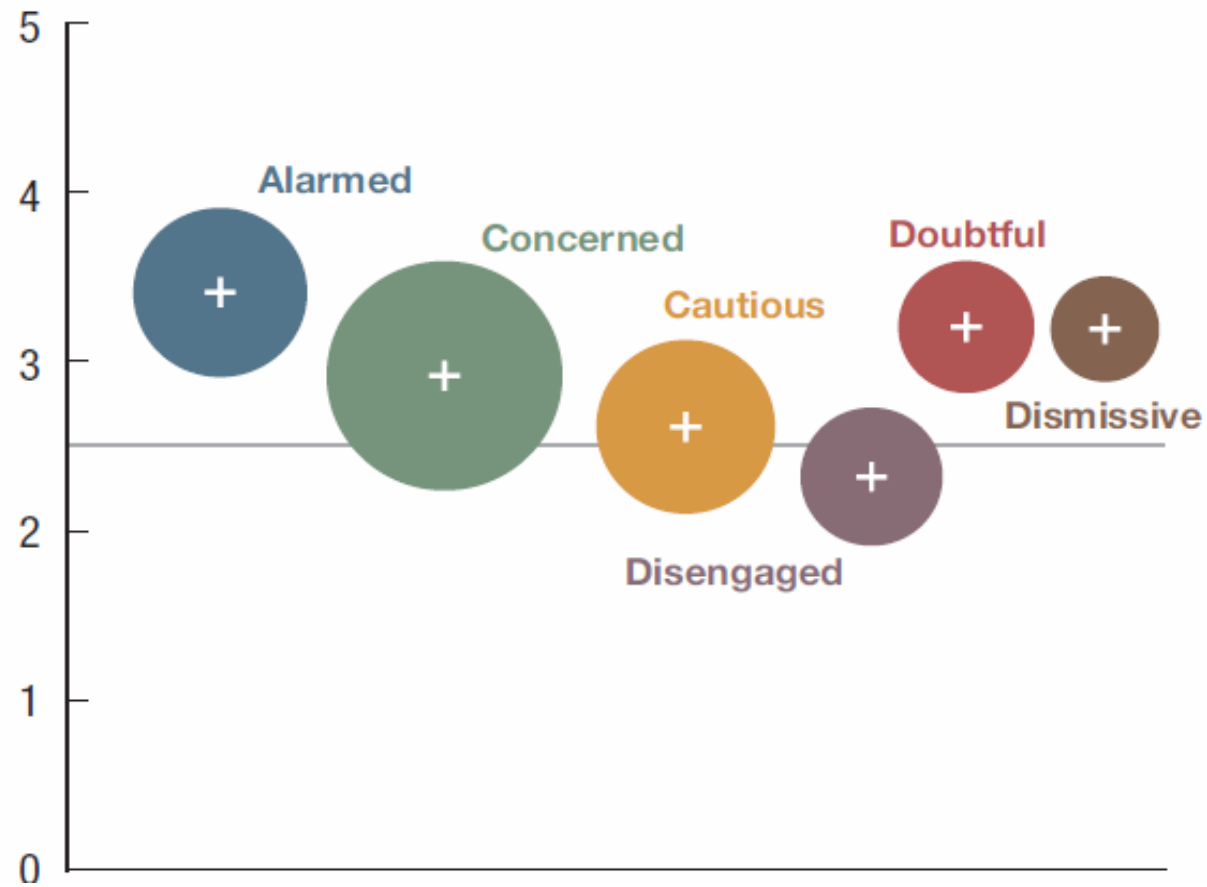


How much do you support or oppose the following policies?

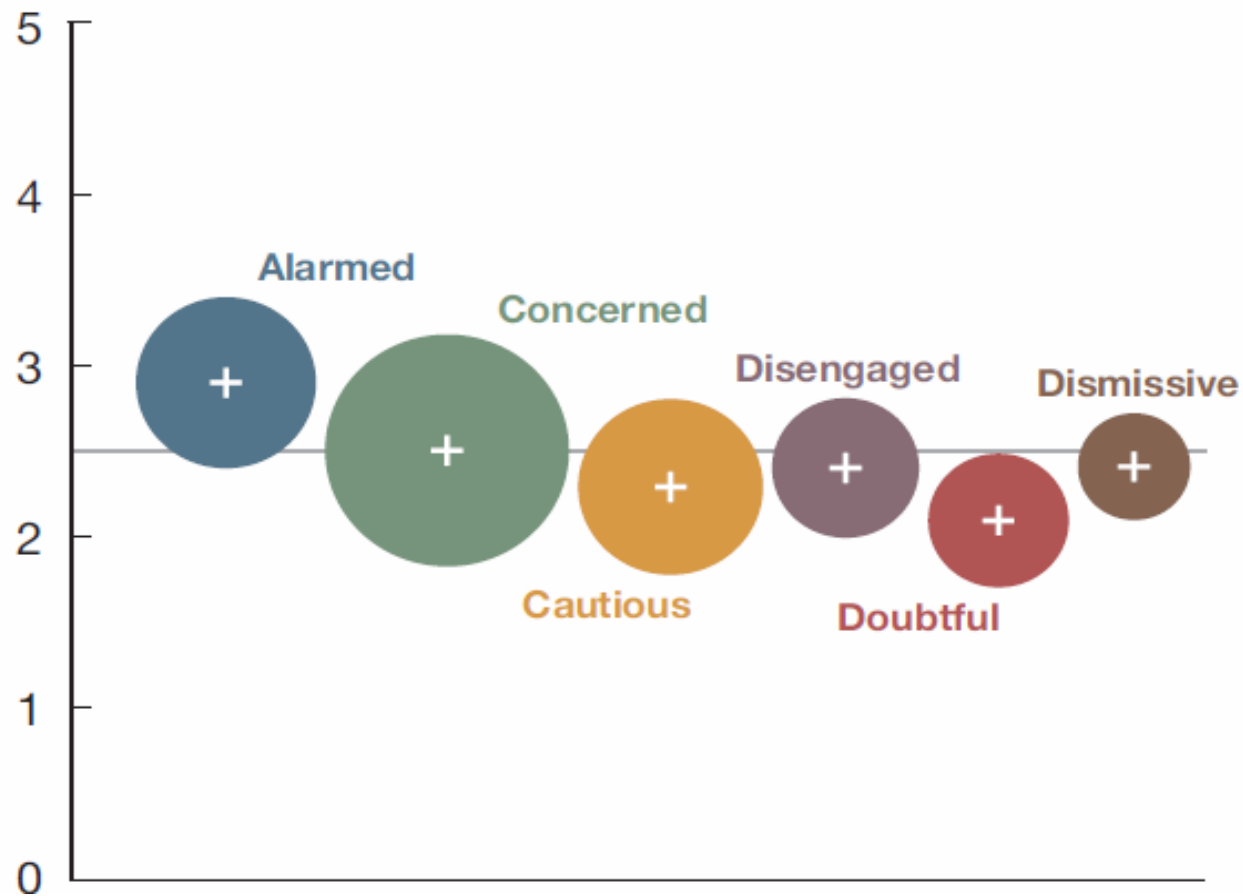
- Sign an international treaty that requires the United States to cut its emissions of carbon dioxide 90% by the year 2050.



Number of improvements made from the following list of five:  
Insulating the attic; caulking and weather-stripping the home;  
installation of an energy-efficient water heater; installation of an  
energy-efficient furnace; installation of an energy-efficient air  
conditioner.



Number of actions that respondent does "always" or "often" from the following list of five: turning off unneeded lights; raising the thermostat to 76 or higher or using less air conditioning in summer; lowering the thermostat to 68 or cooler in winter; walking or biking instead of driving; using public transportation or car pools.



# Climate Change or Global Warming?



- Fewer people recognise *climate change*.
- *Global warming* is judged more serious than *climate change*.
- More are doubtful about *climate change* than *global warming*.
- Limited understanding of both – U.K. 50% did not understand connection between burning fossil fuels and CO<sub>2</sub> emissions.

# Attitude – Behaviour Gap



Information alone does not produce behaviour change

Barriers:

- Personal
- Social
- Economic

Influences – attitudes, values, emotions, risk analysis, sense of efficacy, habitual behaviours.

## Three major lines of research on pro-environmental behaviour



1. Motivation: perceived costs & benefits, moral & normative concerns & emotion;
2. Context;
3. Habitual behaviours.

## FACTORS INFLUENCING BEHAVIOUR AND CHOICE Adapted from Stern (2008)



- **Contextual Factors (constraint and facilitation)**
- Available technology
- Embodied environmental impact (e.g., energy efficiency of buildings, vehicles; materials in consumer products)
- Legal and regulatory requirements
- Material costs and rewards (payoffs)
- Convenience (e.g., of public transit, recycling)
- **Social norms and expectations**

# FACTORS INFLUENCING BEHAVIOUR AND CHOICE



## **Personal Capabilities**

- Financial resources
- Literacy
- Social status
- Behaviour-specific knowledge and skills

# FACTORS INFLUENCING BEHAVIOUR AND CHOICE



## **Habits and Routine Attitudinal Factors**

- Personal values (e.g. materialism)
- General environmentalist predisposition (abstract norms)
- **Cognitive biases - heuristics**
- Behaviour-specific (concrete) norms and beliefs
- Non-environmental attitudes (e.g, about product attributes)
- Perceived costs and benefits of action

# Conventional Rational Actor Assumptions



- People are basically rational, make informed, deliberative choices on the basis of assessed costs and benefits of various actions to themselves.

**BUT**

- People actually exhibit so-called irrational behaviours:
  - Bounded rationality
  - Bounded willpower
  - Bounded self interest

# Bounded rationality



People have limited capacity to process information necessary to make rational choices; employ rules of thumb (heuristics), exhibit systematic biases.

- Status quo bias (inertia)
- Availability
- Future discounting
- Egocentrism
- Loss aversion
- Unrealistic optimism

# Bounded willpower



People do not always act in their long term interest -  
lack self control:

- Eat & drink too much;
- Exercise too little
- Save too little
- Postpone decisions
- Waste resources
- Continue environmentally destructive actions

# Bounded self-interest



Contrary to premise of classical economics, people are not always self-interested and can be:

- Selfless
- Concerned about others – “other regarding”
- Able to show reciprocity
- Altruistic
- Paternalistic
- Aversive to inequality (so are chimps!)

# Emotion



Meanings attached to material possessions:

- ✦ Status
- ✦ Identity
- ✦ Cultural meaning

Fear appeals common in trying to reduce GHG emissions:

- Increased worry – people pay attention **BUT**
- Denial
- TMT – retreat into materialism

# Low Impact



# High Impact - Personification



# GHG Reducing Actions



## Personal Transport

- Use more efficient vehicles
- Use car less for short trips
- Avoid unnecessary flights (short haul)

## Homes: waste

- Increase recycling
- Waste less (food)

## Homes: energy

- Install insulation
- Better energy management
- Install microgeneration

## Homes water

- More responsible water usage

## Eco-products

- Buy energy efficient products
- Eat more food that is locally in season
- Adopt lower impact diet

# Techniques for reducing GHG consumption



## Antecedent interventions:

- Commitment
- Goal setting (harder is better; self vs. other)
- Information & modelling.

## Consequent interventions:

- Feedback
- Rewards
- Eco-teams & comparison with others

# Social Norms



- Adoption of energy saving measures is influenced by contact with those who've already adopted measures.
- Greater effectiveness of social norms over other motives (money, environment, future)
- Importance of injunctive norms
- Importance of emphasising group identity

# Crowding Out or Crowding In

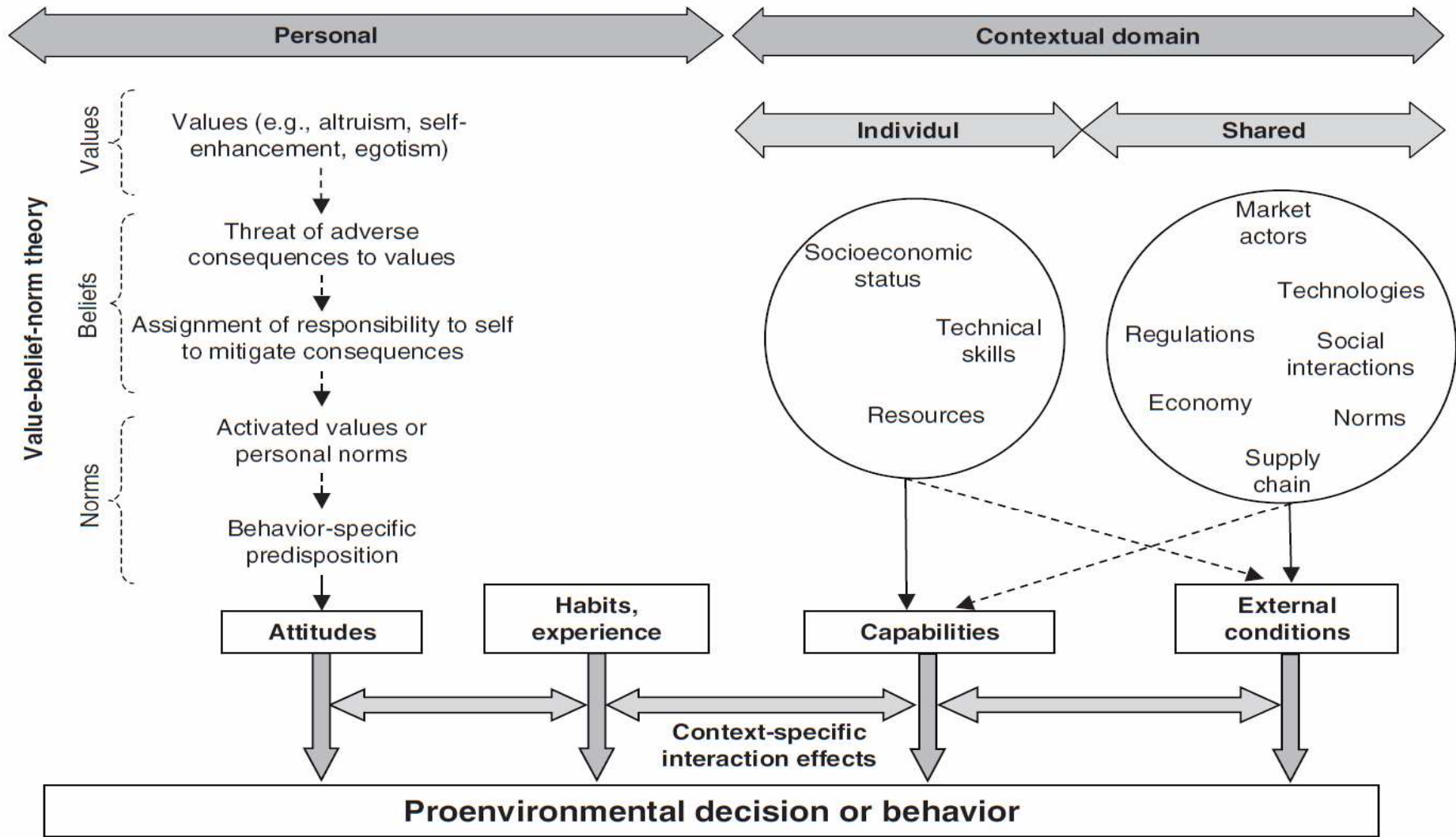


- Consumer or citizen?
- Market norms drive out social norms.
- Altruism vs. personal profit.
- Bystander effect.

<b>"Defence": 4</b>
<b>Transporting stuff: 12 kWh/d</b>
<b>Stuff: 48+ kWh/d</b>
<b>Food, farming, fertilizer: 15 kWh/d</b>
<b>Gadgets: 5</b>
<b>Light: 4 kWh/d</b>
<b>Heating, cooling: 37 kWh/d</b>
<b>Jet flights: 30 kWh/d</b>
<b>Car: 40 kWh/d</b>

**Geothermal: 1 kWh/d**

<b>Tide: 11 kWh/d</b>
<b>Wave: 4 kWh/d</b>
<b>Deep offshore wind: 32 kWh/d</b>
<b>Shallow offshore wind: 16 kWh/d</b>
<b>Hydro: 1 kWh/d</b>
<b>Biomass: food, biofuel, wood, waste incin'n, landfill gas: 24 kWh/d</b>
<b>PV farm (200 m<sup>2</sup>/p): 50 kWh/d</b>
<b>PV, 10 m<sup>2</sup>/p: 5</b>
<b>Solar heating: 13 kWh/d</b>
<b>Wind: 20 kWh/d</b>



- Private-sphere behavior (e.g., technology adoption, change in appliance usage, lifestyle/curtailment)
- Public-sphere behavior (e.g., environmental citizenship, support for environmental policies)
- Activism

**Figure 2**

An integrated model of proenvironmental behavior. Adapted from Reference 150 (PC Stern, "Towards a Coherent Theory of Environmentally Significant Behavior," *Journal of Social Issues*, with permission from Blackwell Publishing).