**Environmental psychology and environmental protection**

**Environmental values, attitudes and behaviour**

## Philosophical perspectives on the environment

- Biocentric - ecologic - economic (Petulla, 1980)
- Ecocentric - technocentric (O'Riordan (1980)
- Materialistic - quality of life (Inglehart (1977)

**HEP versus NEP**

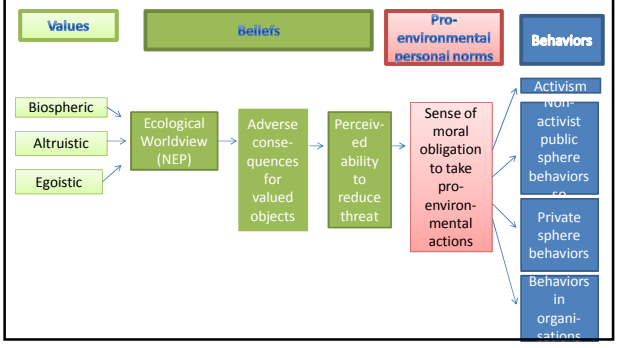
**(Dunlap & Van Liere, 1978; Dunlap *et al.*, 1992)**

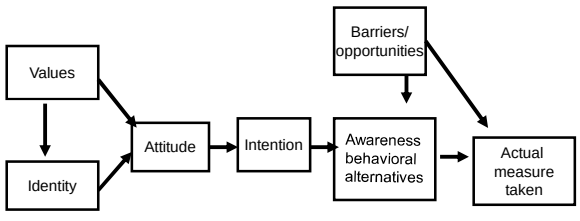
- **"Human Exemptionalism Paradigm" (HEP):**
  - Human beings are exempt from the laws of nature and rulers over the physical world.
- **New Environmental (or Ecological) Paradigm:**
  - Today, the HEP is assumed to be replaced by a new world view more compatible with environmental limits, hereafter NEP

## Environmental value-orientations as basis for action

- **Stern & Dietz (1994): a tripartite model**
  - ***Egoistic:***perceived personal threat from environmental problems is most important
  - ***Altruistic:***negative consequences for others is most important
  - ***Biospheric:***perceived consequences for the biosphere

## The value-belief-norm thery of environmentalism (Stern et al, 2000)




Factors assumed to influence choice of environment- friendly measure (adapted after Biel & Grankvist, 2005)

## General environmental attitudes and values as predictors of behaviour

- In general relatively weak relations between environmental attitudes and behaviour
  - Scott & Willits (1994): acceptance of parts of the NEP concept is associated with the enactment of both consumer and political behaviours focused on protecting the environment
  - Widegren (1998): personal norm a better predictor of proenvironmental behavior and willingness to pay than the NEP scale
  - Bamberg (1996): General attitudes towards traffic-policy have no direct impact on car-using behavior, but a strong direct impact on the situation- and behavior-specific cognitions

## General attitudes/motives: Ecocentrism/Anthropocentrism scale

- **Thompson & Barton (1994):** Different *reasons or motives* for acting environment-friendly.
- **Anthropocentrism:** protection of nature related to maintaining or improving the quality of life for people
  - includes egoistic and social-altruistic values (cf. Stern & Dietz, 1994)
- **Ecocentrism:** valuing nature for it's own sake
  - Nature should be protected because it has intrinsic value

## General attitudes/motives: New Environmental Paradigm (NEP)

- Dunlap & Van Liere (1978):
  - First version of the NEP-scale (twelve items)
- Three broad themes:
  - *Humanity's ability to upset the balance of nature*
  - *Limits to growth for human societies*
  - *Role of humans relative to the rest of nature*

## NEP-R (Dunlap *et al*.,1992)

- 15 item scale
- Five facets
  - Limits to growth
  - Anti-anthropocentrism
  - The fragility of nature's balance
  - Rejection of exemptionalism
  - The possibility of an ecological catastrophe

## Specific environmental attitudes

- Schahn & Holzers (1990) 21 item scale:
  - Theoretical concepts: Affective evaluation, attitudes (in a narrower sense), and self-reported behaviors.
  - Content areas: Reduced energy consumption, energy used for transportation, environmentally responsible purchases, societal involvement, recycling, water consumption, protecting own health.

## Specific environmental attitudes as predictors of behaviour

- Diekman & Preisendörfer (1998):
  - Considerable inconsistencies between specific environmental attitudes and behavior
- Lober (1995):
  - Attitudes towards the siting of a recycling center differed significantly from behaviour in a study of behavioural and attitudinal dimensions of public opposition using inperson surveys and observed measures of behaviour.
- Steel (1996):
  - Attitude intensity was correlated with self-reported environmental behaviour and political activism in environmental issues.

## Responsibility as predictor of behaviour

- Kals, Schumacher & Montada (1998):
  - Ecologically relevant decisions based on responsibility related beliefs and emotions, and on attributions of responsibility

## Knowledge as predictor of behaviour

- Diekman & Preisendörfer (1998):
  - Ecological knowledge affects environmental behavior directly and indirectly
  - Higher inconsistency in young people

## Culture as a predictor of behaviour

- **Laroche, Toffoli, Kim, & Muller (1996): Determinants of environmental behaviours may vary across cultures**

## Methods strengthening the relation between attitudes and behaviour

16

## Reminders

- Overcomes internal barriers for action such as lazyness, forgetfulness etc
- Must be:
  - Specific
  - Close to the target behaviour in time and space
  - Tailored to suit it's audience

17

## Influence internal barriers by a focus on attitudes and norms

- Make people aware of the attitudes and norms they already have, but do not relate to the present situation
- When people's attitudes already are in favour of environmental protection, it is useful to remind them about this in a subtle way
- Campaigns are well suited for this purpose

18

Strategies strengthening the relation between attitudes, information, attitudes and behaviour

| **Increasing participation in a recycling project: Four experimental conditions** | |
|---|---|
| **Control group (not contacted)** | **2% participation** |
| **Information (folder describing project)** | **10% participation** |
| **Information + reminder before pick up** | **21% participation** |
| **Information + reminder + personal contact** | **28% participation** |

19

Information has more effect when it attracts attention through:

- a personal approach
- rumours
- making the invisible visible
- using a powerful medium
- careful design of the message
- message close to behaviour in time and space
- message designed to match the target group
- using the local groups

20

## Credibility

- It must be possible to check the information
- Use of social networks
- Use of opinion leaders to introduce desired behaviour

21

## Create engagement

- Commitment increases engagement
- Norm activation increases engagement
- Crises can increase engagement

22

## Behavioral knowledge from intervention studies

*Lehman & Geller (2004):review of the applied **behavior analysis** approach to encouraging proenvironment behavior*

- Argues that **behavior analysis** can play a greater role in solving environmental problems through
  - (a) reexamination and expansion of intervention targets,
  - (b) increased focus on long-term maintenance of pro-environment behavior, and
  - (c) more effective dissemination of intervention strategies and research findings.

## INTERVENTION STRATEGIES.

- *Antecedent Strategies*
  (a) information/education
  (b) verbal or written prompts
  (c) modeling and demonstrations
  (d) commitment
  (e) environmental alterations.

## Consequence Strategies

- Rewards
  – Notable behavior change, but behaviors drop to baseline levels when the reward was removed
- Feedback: providing information to participants about their environment-relevant behaviors
  – modest but consistent energy savings

## Problem: Long-term behavior maintenance

- **Solution startegies**
  – focus on behaviors that do not need to be maintained
  – implement intervention evaluations of appropriate length and design, so factors which increase response maintenance can be discovered
  – design interventions that can continue indefinitely

**Boyce and Geller (2001): three key factors related to behavioral maintenance**

- Reward schedules should be large enough to get a behavior started, but not so large as to serve as complete justification for performing a behavior
- Representations of the kind of behavior required to earn a reward should be more general than specific
- When a behavioral commitment is requested, it should be accompanied by information that provides a sound rationale for the behavior.

Information campaigns: Can they increase ecological behaviour?

- What can psychology tell us about the the effects of information campaigns?
  - Which type of campaign works best? When does information work?
  - What are the conditions for strong relations among attitudes and behaviours?
  - Are attitude campaigns sufficient for attitude change?
- Changing environmental attitudes: Effective strategies

29

Information Campaigns: one of the basic interventions proposed by The Norwegian Commission on Low Emissions (**NOU 2006:18: A climate-friendly Norway)**

”Good and factual information on the problems and on what can be done”

Reflects a conviction that information campaigns work. But do they?

30

## Information- and attitude campaigns: Possibilities and limitations

- + May increase people's awareness and change attitudes
- - Lead only occassionally to behavioural change
  - How can we increase the effectiveness of campaigns?

31

## Information alone has very limited effect, because:

- Removes only information related barriers
- Does not remove external barriers (such as economic ones)
  - Increases at best only low cost/less demanding behaviours

32

## When is information effective?

- Feedback:
  - Via the energy meter at home
  - Via electronic devices (feedback every minute, hour, etc…)
- This works, because:
  - The information is directly related to behaviour
  - Straight-forward application of behavioural psychology (operant learning theory): all behaviours leading to rewards will be repeated
- Feedback is at it's most effective when available immediately before and after the target behaviour (here: energy saving behaviour)
- Limitation: Participants must be highly motivated

33

## Modeling/observational learning

- *Ex.: Video of a young couple demonstrating how they can save energy in the home*
  - Combines behavioural psychology and communication research
  - Experiments have demonstrated energy savings of more than 20%
  - Cost-effective: video is a one-time cost that may be used in an unlimited number of households
  - Limitation: Participants must be motivated

34

**The potential of information campaigns**

- Works when the most important barriers are internal to the individual
- May have important indirect effects over time
- Influences only attitudes and behaviours compatible with people's more fundamental values
- The effect increases if one builds upon psychological principles of communication and focuses the campaign directly towards relations between attitudes and behaviours
- Works best in combination with other strategies (such as organisational change, economic incentives, etc)

35

## Environmental attitudes and behaviour

Some examples of empirical evidence

**Environmental concern and the prediction of environmentally responsible behaviours: Results from a pilot study and a national survey**

Einar Strumse

## Background

- Popular environmental concern is important in itself
- Environmental problems are complex
- Environmental behaviour is determined by many factors

## Attitude – behaviour relations: level of specificity

- Specific Environmental Attitudes (Schahn & Holzer (1990) Umwelt-Gesamt-Kurzskala): Closer to equally specific behaviours
- Environmental behavior items adapted from various sources, ( cf. Smith-Sebasto's (1994) ERBI (Environmentally Responsible behavior Index) , De Young (1993)

## Research questions

- Are some behavioural domains more clearly determined be environmental concern than others?
- Are specific attitudes always better predictors of environmentally responsible behaviours?
- Is general environmental concern a useful predicor of specific environmental concern?

## Method:Pilot study

- *Participants:* 243 voluntary male (n=140) and female (n=103) social science (n=99) and technology (n=143) students
- Questionnaires completed immediately on hand-out and handed in to a research assistant (spring 1996)

## Method: National survey

- Representative national survey (autumn 1999) in Norway
- Random sample +15 years. Questionnaires mailed to a total of 3845 participants.
- Response rate:net 37%, n=1413
- 713 or 50,5%) women, 646 or 45,7%male participants

## Predictors of responsible consumer behaviours

- New Ecological Paradigm scale (NEP)
- Materialistic value orientation (MVO)
- Ecocentrism (ECO)
- Anthropocentrism (ANTHRO)
- Specific attitude scale (SEA)

## Criterion variables

- Responsible consumer behaviour scale
- Transportation behaviour scale
- Environmental involvement scale
- Waste reduction behaviour scale

## **Results**

Hierarchical regressions of environmental concern variables on environmental behaviors

## Design

- Block 1: NEP & MVO
- Block 2: Adding ECO & ANTHRO
- Block 3: Adding SEA

## Predictors of responsible consumer behaviour

- Variance explained:
  - **Pilot study: 25%**
  - **National survey: 30%**
- Stat. Significant predictors:
  - Block 1: NEP (Pilot), NEP &MVO (Survey)
  - Block 2: NEP & MVO (Pilot); NEP, MVO & ECO (Survey)
  - Block 3: MVO & SEA (Pilot); ECO & SEA (Survey)

## Predictors of transportation behaviour

- Variance explained:
  - **Pilot study: 6 %**
  - **National survey: 9 %**
- Stat. Significant predictors:
  - Block 1: ---- (Pilot), NEP (Survey)
  - Block 2: ANTHRO (Pilot); NEP, ECO & ANTHRO (Survey)
  - Block 3: ANTHRO % SEA (Pilot); ECO, ANTHRO & SEA (Survey)

**Predictors of environmental involvement**

- Variance explained:
  - **Pilot study: 25 %**
  - **National survey: 26 %**
- Stat. significant predictors:
  - Block 1: NEP & MVO (Pilot), NEP (Survey)
  - Block 2: NEP & MVO (Pilot); NEP & ECO (Survey)
  - Block 3: SEA (Pilot); ECO & SEA (Survey)

**Predictors of waste reduction behaviour**

- Variance explained:
  - **Pilot study: 9 %**
  - **National survey: 6 %**
- Stat. significant predictors:
  - Block 1: ---- (Pilot), NEP (Survey)
  - Block 2: ECO (Pilot); ECO & ANTHRO (Survey)
  - Block 3: SEA (Pilot); ANTHRO & SEA (Survey)

## Tentative conclusions

- Different environmental behaviors ARE differently related to environmental concern
- Consumer behaviour and involvement depend clearly more on concern than transportation behaviour and waste reduction behavior
- Specific attitudes are in most cases more strongly related to behaviour
- For some environmental behaviors, concern is an important determinant

## Diverging attitudes towards predators: Do environmental attitudes play a part?

Kaltenborn, B.P. & Bjerke, T & Strumse, E.(1998)

## Theme

- Environmental beliefs and attitudes towards large carnivores among sheep farmers, wildlife managers and research biologists in Norway

## Human ecology

- Managing the interaction of population, social organisation and technology in response to the environment
- The ability of humans to cope and adapt to a changing environment

## Resource management issues

- How various interest groups perceive the environment
- Values and beliefs attached to the env.
- How environmental beliefs affect the position different actors take in conflict situations

## Wildlife as conflict issue

- Human dominion versus concern over negative effect of human activity on ecological processes
- Norway: Sheep farmers demanding extermination of large carnivores versus groups supporting protection

## Kellert's typology of attitudes toward wildlife

- Positive attitudes
  - Ecologistic: Interest in ecological value of species and its rel to env
  - Naturalistic: Interest in direct outdoor contact w. species
  - Moralistic: Opposition to harm toward spoecies
- Negative attitudes
  - Dominionistic: Interest in mastery over animals
  - Negativistic: Fear, dislike
  - Utilitarian: Interest in use for the benefit of humans

## Earlier results (Norway)

- Wildlife managers and research biologists:
  - High on Ecologistic and naturalistic attitudes
- Sheep farmers:
  - High on dominionistic, negativistic and utilitarian attitudes

## Main research questions

- How strong is the support for an ecological world view in sheep farmers, wildlife managers and research biologists in Norway?
- Are differences in attitudes towards wildlife related to more fundamental differences in environmental values or beliefs?

## Method

- Participants:
  - 1129 sheep farmers, wildlife managers and research biologists (response rate = 66.5%)
- Instruments:
  - 35 statements measuring attitudes towards large carnivores
  - 15item NEP scale
-

## Results

- Eight items expressing the ”New Ecological Paradigm”(NEP) received the highest mean ratings
- Seven items expressing the ”Human Exemptionalism Paradigm” (HEP) received weakest support

## Results

- **NEP: Group differences**
- Sheep farmers: higher than other groups on HEP-items. Lower than other groups on NEP-items
- Support/rejection of HEP and NEP

## Results

- **HEP**
- Research biologists:
  - Clearest rejection
- Wildlife managers
  - Rejection, yes, …but less strong
- Sheep farmers
  - Close to a neutral pos.

- **NEP:**
- No distinction betw. wildlif man. and res. biol., who agree with the NEP.
- Sheep farmers:
  - Significantly lower

## Relations between NEP, HEP and the six attitude scales

- Overall sample: NEP correlates pos. w. the positive attitude domain, and neg. with neg. attitudes
- HEP: opposite pattern: neg. corr. with pos. attitudes, pos. corr. with neg. attitudes
- Relations between NEP, HEP and the six attitude scales

## Relations between NEP, HEP and the six attitude scales

- Sheep farmers:
  - Pos. corr. between NEP and ecologistic, moralistic and naturalistic att.
  - Pos. corr. between HEP and dominionistic, negativistic and utilitarian att.
- Wildlife managers:
  - NEP correlated pos. with positive att. and neg. with neg. att.
  - HEPcorrelated neg. with positive att. and pos. with neg. att.
- Research biologists:
  - Pos. corr. between NEP and ecologistic, moralistic and naturalistic att.
  - HEP correlated neg. with positive att. and pos. with neg. att.

## Conclusions

- Respondents tended towards pro-ecological beliefs
- Negative attitudes towards carnivores are most typically found in groups whose economic interests are threatened by these animals
- The three groups express similar structure of environmental beliefs, but there is a difference of degrees: Sheep farmers' ecological beliefs are weaker
- Sheep farmers: Carnivores are perceived as an outgroup cognitively dissociated from other animals and the ecosystem: Thus, pro-ecological beliefs go together with neg. attitudes towards predators
-

## Psychological factors in energy consumption behavior

- Lessons from meta-analyses and literature reviews within environmental psych/environment and behaviour research
- Conclusions from selected recent empirical studies

## Intent-oriented versus impact-oriented research on behaviroral responses to climate change (Stern, 2000)

- Impact-oriented research
  - Focus on actual impacts of behaviour on the environment
- Intent-oriented research
  - Focus on the motivation of the actor
- Overlap: When inteded actions are effective
- It is important to understand the divergence between intent and action
- Relatively little is known about proenvironmental intentions related to climate change

## Meta-analyses on psycho-social determinants of pro-environmental behaviour.

- Hines, Hungerford & Tomera's (1987) meta – analysis of 128 studies - Results from a subset of studies focusing of psycho-social variables: mean correlations with pro-environmental behaviour (PEB)
  - Proenvironmental attitudes: r = .38
  - Locus of control/self-efficacy: r = .37 (15 studies)
  - Felt moral obligation to behave in a pro-environmental way: r =.33 (6 studies)
  - Pro-environmental behavioural intention: r =.49 (6 studies)

Bamberg & Möser (2007): New meta-analysis of psycho-social determinants of pro-environmental behaviour

- Based on 57 samples/studies
- Results:
- Mean correlations similar to those reported by Hines et al.
- Structural equation modelling (SEM): Meta-analytic SEM (MASEM)
  - Pro-environmental behavioural intention mediate the impact of all other psycho-social variables on pro-environmental behaviour (27% explained variance).
  - Attitude, behavioural control and personal moral norm all predict pro-environmental behavioural intention (52% explained variance)
  - Problem awareness: important indirect determinant of pro-environmental intention mediated by moral and social norms, guilt and attribution processes.

Lutzenhiser, L. et al. (2009): Behavioral Assumptions Underlying California Residential Sector Energy Efficiency Programs

- *Real-world energy use*: extreme *variability due to consumer demographics, cultural backgrounds, and local social influences.*
- "Unconscious" use of energy: *habitual action and habit-based routines*
- *Energy use is collective – performed in and by groups living together; and always social (oriented to socially-sanctioned goals and often under the indirect scrutiny of social others.*
- *Routine action is cultural – i.e., behaviors, appliances, devices, personal possessions, houses, and so on, have meaning to persons and groups.*

Stern (2008): Review of the *social psychological literature on how consumer choices are affected by various intervention approaches*

1. The influences on environmentally significant behavior are more varied than reflected in most psychological or economic research.
2. The pattern of influences can vary greatly across behaviors and places.
3. The strongest influences are often contextual. Psychologists rarely examine more than a few of these
4. The more a behavior is shaped by technology, infrastructure, regulation, financial cost, convenience, and other contextual factors, the weaker the effect of personal variables
5. Choice models apply only in limited situations: the favored variables of psychologists and economists have limited importance

## Key conclusions by Stern (2008), and their implications

6. Choices, when they are made, are not often carefully considered
7. The effects of many psychological causal variables on specific behaviors are highly indirect, but can potentially influence a wide variety of behaviors
8. Practical applications of psychological interventions to behavior in the home: niches between powerful contextual variables, when behavior is not strongly constrained by regulation, habit, matters of economic cost and convenience, and the like. This may be very important, because some choices determine the environmental impact of future behaviors.
9. The most productive approach is interdisciplinary focusing on full range of causes of behavior

## Karpiak & Baril (2008): Moral reasoning and concern for the environment

- Ecocentrism, previously found to
- correspond with environmentally friendly behavior, was predicted by principled moral reasoning, gender, and college major.

## Homburg & Stolberg (2006): Explaining pro-environmental behavior with a cognitive theory of stress

- Theoretical assumption:
  - Environmental stressors (e.g. pollution in domestic and work contexts), mediated via appraisal processes (demand appraisal, self-efficacy), activate problem-focused coping. This in turn leads to pro-environmental behavior in various behavioral domains (social engagement, private sphere and workplace)

Results:

- Four studies lent support to the basic idea that appraisal processes activate problem-focused coping, which in turn leads to pro-environmental behavior, (however collective efficacy replaced self efficacy)

Fielding, McDonald & Louis (2008): incorporating identity constructs into the theory of planned behaviour (TPB) to investigate intentions to engage in environmental activism

- Environmental group membership and self-identity were positive predictors of intentions
- More positive attitudes toward and a greater sense of normative support for environmental activism were related to greater intentions to engage in the behaviour.

Information: Energy efficiency and conservation messages (Lutzenhiser, 2009)

- Should be intelligible to the consumer
- Should be concrete, vivid and impactful, personalized, action-oriented, and offering advice about choice and behaviour that is perceived to be fair, just, and equitable.
- People process information in different ways
- The messenger affects the perceived legitimacy, credibility, and trustworthiness of the information.

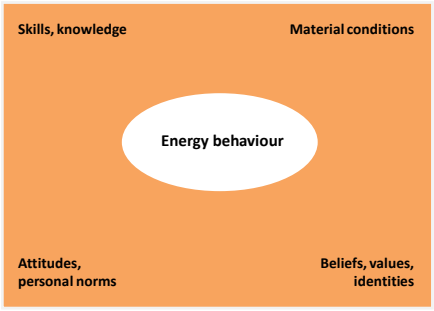
Pichert & Katsikopoulos (2008): Information presentation and choice of elctricity (green or not)

- The format of information presentation assumed to have a strong effect on choice of electricity
  - People choose the electricity offered as the default
- Results:
  - In a field study, people did choose green el. when it was the default
  - This was also the result in one experiment

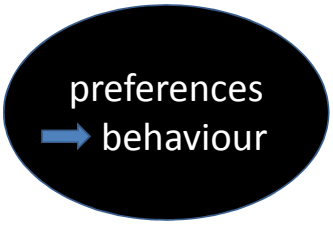
## Addressing fields of rationality – a policy for reducing household energy consumption?

H. Westskog, CICERO, Oslo
T. Winther, SUM, University of Oslo
E. Strumse, Lillehammer University College

## Factors influencing behaviour on the individual level




## What conditions people's



## Preferences: A psychological perspective

- Descriptive approach: preferences as the likes or dislikes the individual may have in a certain domain,
- Reasonable Person Model:
  - People are satisficers, not maximizers
  - People can be reasonable, depending upon the circumstances
  - People often possess extremely limited information.
  - People's needs are many and varied

## Focusing selected cognitive, affective (and material) factors

- Underlying factors for understanding preferences in economic theory
- Factors partly accounting for the motivations pushing or pulling the individual to perform various measurable behaviours:
  - Skills and knowledge
  - Attitudes and personal norms
  - Beliefs, values and identities

## Important findings on predictors of environmental behaviors

- A strong intention to act can be seen as resulting from a large variety of environmentally relevant thoughts and emotions, such as
  - Attitudes
  - Perceived behavioural control
  - Personal norms
  - Problem awareness
  - Feelings of guilt
  - Attributions: Beliefs about responsibilities and causes

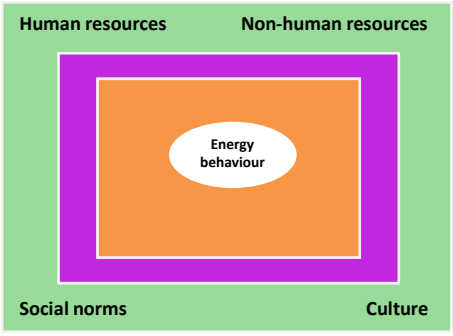
## How strong are the influences of psychological factors?

- The more a behaviour is shaped by contextual factors, the weaker the effect of personal variables (Stern 1999)
- Often highly indirect effect- can potentially influence a wide variety of behaviours
- Some specific psychological factors(Stern 2009)
  - Personal commitment
  - Perceived personal costs and benefits of actions
  - Behaviour-specific beliefs and norms

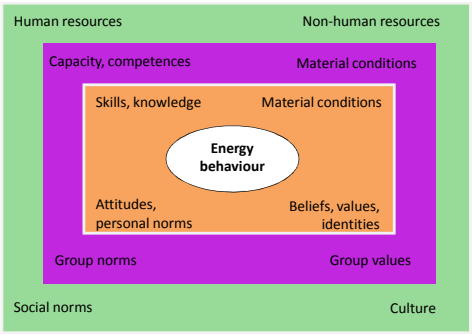
## Psychological interventions

- Should target the 'niches' between powerful structural variables: when the people – environment configuration is particularly open to change
  - when behaviour is not strongly constrained by regulation, habit, matters of economic cost, convenience, and the like.

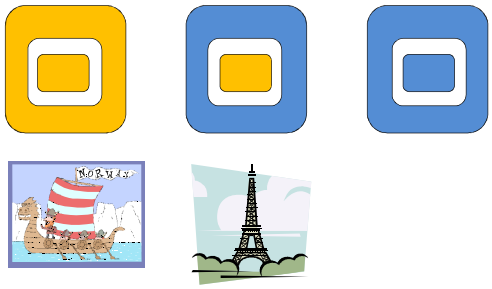
## Structures



## Field of rationality: configuration of factors influencing behaviour




## Example: moving from Norway to France



## Example of fields of rationality: consumers versus citizens

- Sagoff (1988), Sen (1985) and Nyborg (2000)
- Rationalities exist in paralell
- Ex. Parents picking up children in the kindergarten (Gneezy and Rustchini 2000)
- Policies may change the ”logic” for behaviour: field of rationality

## Example: Appeal to ”the citizen”:
Renewable certificates, Barents Energi

- Treatment A → Five sentences + link to NVE
  Confusion, suspicions
- Treatment C → Emissions = car use
  ”Bad consciousness, good”

- Treatment E → The story of a role model
  ”I think she has a point”

## Strategies for change

- Regulations: shifts in norms and relevant values (incandescent light, smoking)
- Taxes: know how they co-work with other factors
- Information: potential shift in field of rationality, but requires clear ”translation”

➢ Policies must take into account the logic with which people act (made up of more factors than material constraints)

## Interdisciplinarity

Economics!

Psychology!

Socal anthropology!

## Research project (NFR 2009-2011):

**Do customer information programs influence energy consumption?**

First article: Westskog, Winther and Strumse: "Addressing fields of rationality: A policy for reducing household energy consumption?" In Markandya, A. et al. (forthcoming), *Handbook of Sustainable Use of Energy.* Edward Elgar Publishing Ltd.