Everyday thinking about electricity supply failure

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Introduction

- 'Keeping the lights on‘
  - primarily used by policy makers and technologists
  - symbolises a constant, secure electricity supply
- Despite system reliability, supply failure does occur

Context

- UK government target to increase renewable energy generation
- Few studies on public understanding of electricity supply, and supply failure
- Public perception of increased renewable energy generation on the likelihood of supply failure
- Supply failure caused by combinations of human, technical, and institutional factors

Research aims

- Perceived likelihood of supply failure
- Public beliefs about the impacts of increasing renewable energy (wind farms) on the likelihood of blackouts
- Public understanding and perceived causes of electricity supply failure in the UK

Social representations theory

- Draws attention to words and images exchanged in daily conversations and the mass media
- Provide ways to frame what people think and informs decision-making
- Helps to identify consensual ways of thinking
- Used by groups to understand and respond to different events
- Two processes of representation:
  - anchoring and objectification

Research methods

- Mixed-method approach
  - discussion groups
  - UK online survey
- Discussion groups
  - exploratory method used to inform the survey
  - initial drawing task about electricity use, transportation & generation followed by discussion
- UK online survey
  - carried out in September 2007
  - 1041 respondents

Discussion groups

- Contrasting locations based on plans to upgrade electricity transmission lines
  - Beauly
  - Leicester

UK Survey

Four questions relevant to supply failure:

1. How likely or unlikely do you think it is that the UK will experience a major blackout in the near future?
2. Participants were asked to prioritise three of twelve national energy policies that included the option ‘avoid blackouts under any circumstances’
3. It is expected that, in the near future, more wind energy will be used in the UK. What impact, if any, do you think an increase in the number of wind farms might have upon the likelihood of blackouts occurring in the UK?
4. What do you think would be the most likely cause of a major blackout in the near future?

Analysis

- Thematic analysis
  - discussion group data
  - responses to the question on the most likely cause of blackout
- Process of categorisation helps to identify themes arising from the data
  - public understanding of the causes of supply failure
  - issues of acceptability

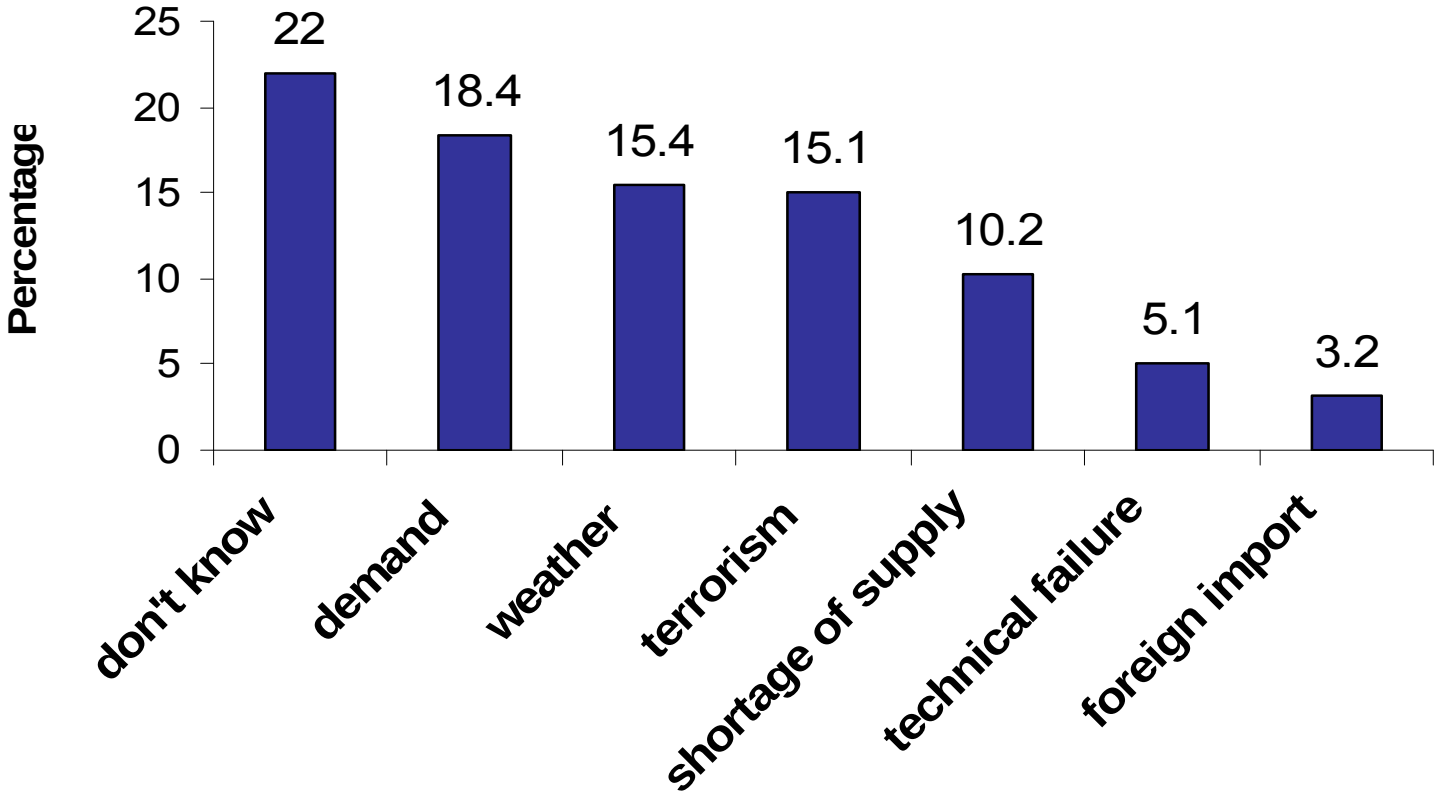
Likelihood of blackout

- 56.4% (N=587) of survey respondents thought it would be slightly, somewhat, or extremely likely that the UK would experience a major blackout in the near future
- 13.1% (N=137) respondents prioritised avoiding blackouts as a national energy policy option, and were more likely to prioritise:
  - keeping energy prices low ($\chi 2$ (1, N = 1041) = 11.67, $p < .001$)
  - supporting the provision of more information on energy saving ($\chi 2$ (1, N = 1041) = 5.01, $p < .05$)
- Those who did not choose avoiding blackouts as a policy option favoured an increase in renewable energy ($\chi 2$ (1, N = 1041) = 39.27, $p < .001$)

Wind farms and likelihood of blackout

- Survey responses
  - 46.6% (N=485) didn't think it would make any difference
  - 38.8% (N=403) thought it would reduce the likelihood of blackouts
  - 5.9% (N=62) thought it would increase the likelihood of blackouts
- Discussion group participants expressed concerns that electricity supply would be less consistent,
  - 'if we were willing to go for more renewable energy options like more wind and wave and solar would we also be willing to give up some of the convenience because the supply would not be as consistent?'

Likely causes of blackout



Demand causing blackout

- Demand expressed as:
  - over-demand, using 'too much', causing 'overload' and 'power surges'
- Housing developments contributing to rising demand
- Increasing use of electrical gadgets
  - taken-for-granted use of electricity
  - 'precondition for modern life' (Hutton, 1998, p.24)

Weather

- Poor weather was a consensual theme for both discussion group and survey respondents, anchored in
  - familiarity
  - personal experience
- Pylons, transmission lines, power stations and sub-stations seen as the primary targets for weather-related damage

Shortage of supply

- ‘running out of non renewable resources’
- ‘loss of energy supply from traditional sources’
- Loss of power generation
- Industrial action

Last coal dug in Doncaster as Rossington Colliery closes

FINAL PIT SHUTS AFTER 150 YEARS

End of an era: Rossington Colliery was the last pit in Doncaster

Terrorism

- Discussion group
  - A consequence of heightened media interest
- Survey respondents
  - ‘sabotage’ ‘attack’ ‘bombing’
  - Power stations, sub-stations, and pylons
- Previous terrorist attacks used as comparisons

Social responses to blackouts

- Negative social responses
  - ‘a big nuisance’ ‘annoying’ – convenience and comfort threatened
  - potentially damaging to self-image of nation as ‘first world’
- Positive social responses
  - ‘fun’ ‘exciting’ – challenges existing social norms, “the reprobate in me just thinks ahh everything has gone wrong great”
  - Absence of light associated with
    - Candles and romance
    - Restoration, getting a good night’s sleep
    - Getting a better view of the night sky

Policy implications

- Data suggests that, for domestic households, efforts to make the system completely reliable may not be necessary
- Ask not what people are willing to pay for the security of reliable electricity supply, but what benefits may they be willing to receive, e.g. reduced energy tariffs
- Recognition of rising demand as a likely cause of blackout suggests scope for demand-side management
  - load management and smart metering may be viable options

Thank you for listening.