

# Nuclear Accidents and Public Opinion:

## *The Curious Case of Fukushima's Impact on Nuclear Attitudes in Britain*

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- **Nuclear Accidents and Public Opinion**

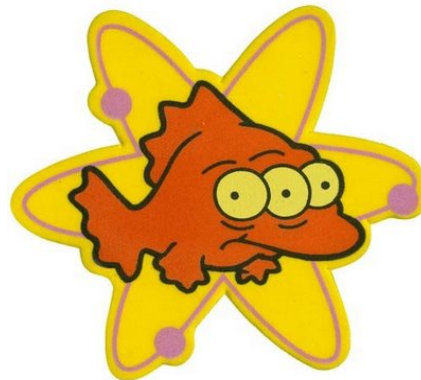
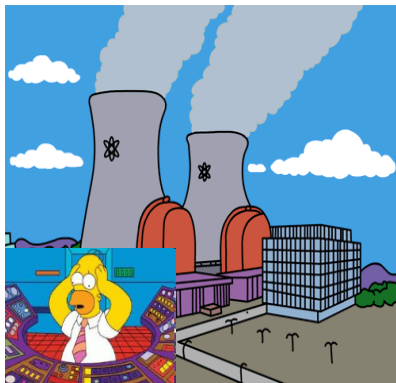
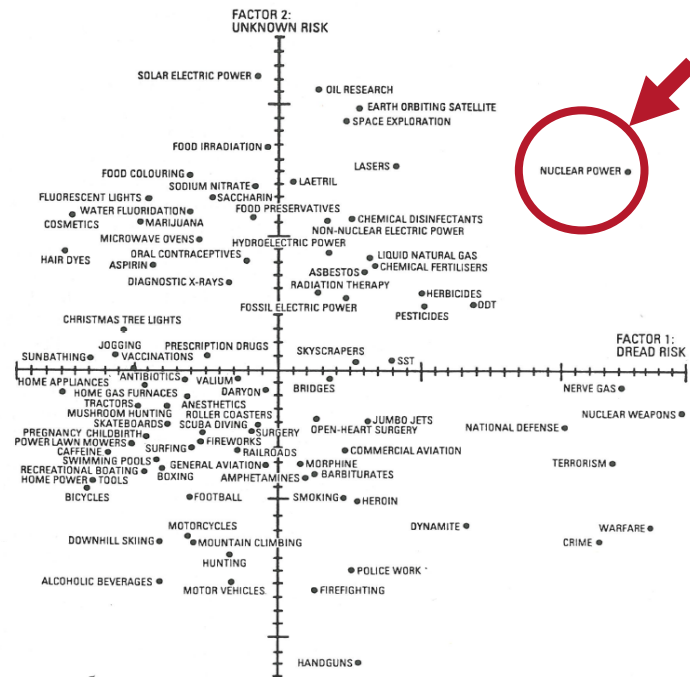
1. *Public Responses to the Three Mile Island and Chernobyl Accidents*

2. *The Reframing of Nuclear Power*

3. *The impact of the Fukushima Daiichi Accident on Nuclear Attitudes in the UK*

- **Historically highly negative connotations associated with Nuclear Power and Waste**
  - strong public opposition to NP in late 1970s and 80s
  - defining issue of the *environmental movement*
  - uniquely '*dreaded*' and '*unknown*' risk (Slovic, 1987)
  - mental association with *Nuclear Weapons*
  - public fears about radiation – cancer, mutations
  - Three Mile Island (1979) and Chernobyl (1986)

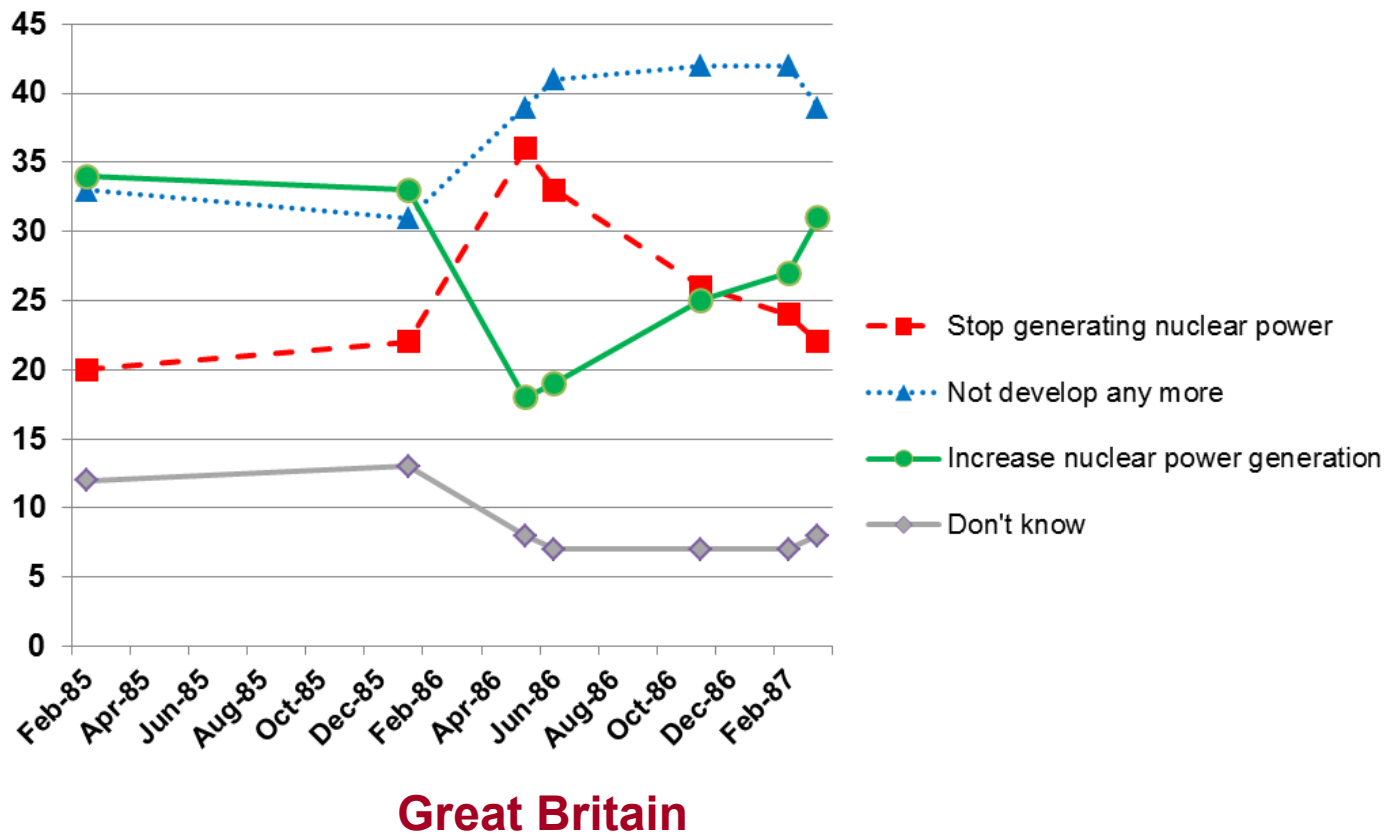
# Public Attitudes to Nuclear Power



# Public Responses to Nuclear Accidents

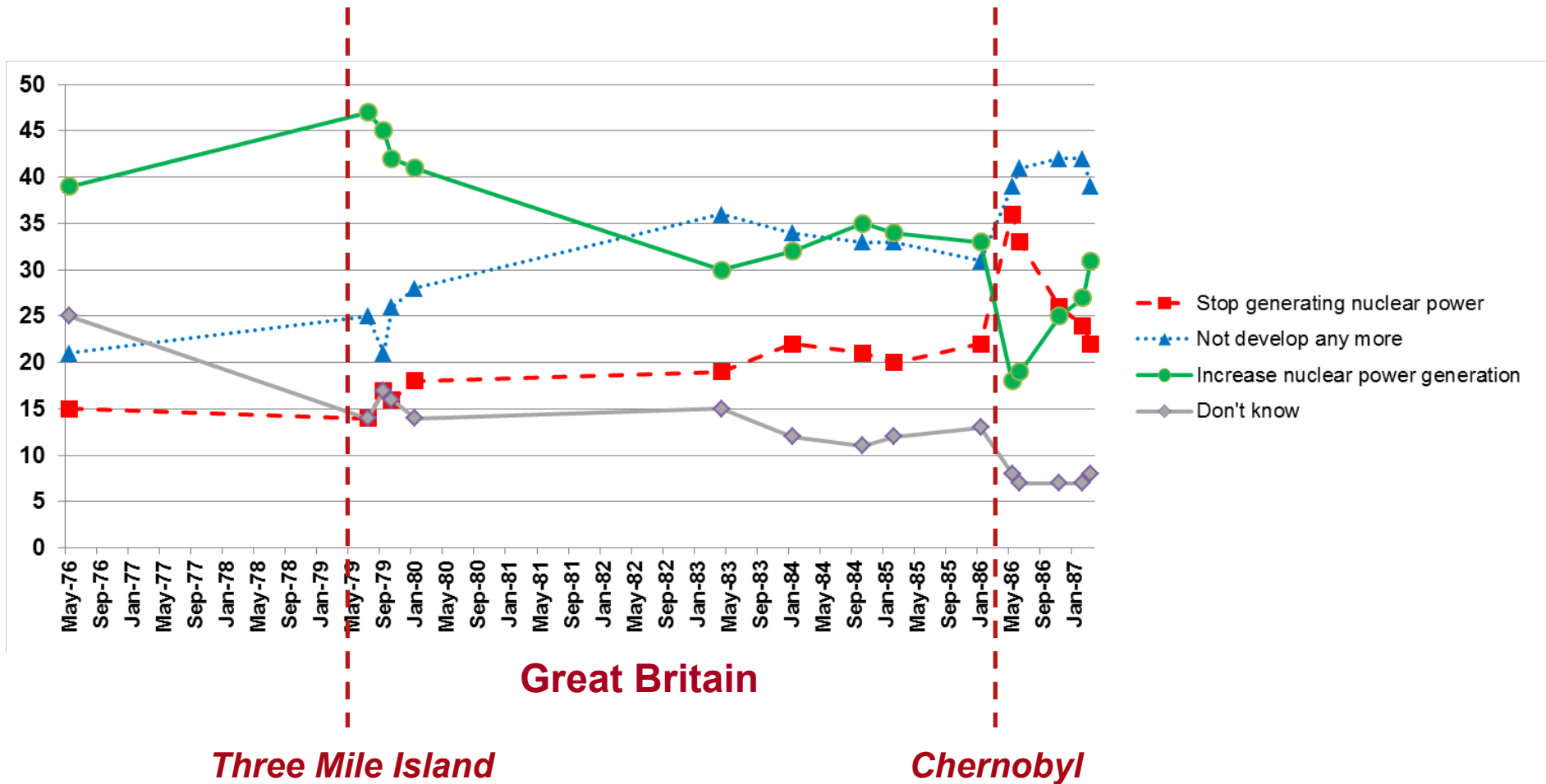
- **Temporal aspects**
  - rebound effect –*quick return to 'normal'* (De Boer & Catsburg 1988)
  - accidents as long-term game changers –(Rosa & Dietz 1994)
  - atrophy of vigilance –*less attention over time* (Freudenburg 1992)
- **Geographical aspects** (*also: psychological distance*)
  - proximity effect –*more impact in closer/more affected areas* (Renn 1990)
- **Social aspects**
  - causal attributions –*technology or specific conditions* (cf. Weiner 1985)
  - social judgment theory –*confirmation bias* (Eiser et al 1989)
  - **amplification effects** –*impacts dependent on media reporting / representations by 'amplification stations'* (Kasperson et al 1988)
  - **context** –*social benefits (Energy Security), greater risks (Climate Change), availability of alternatives (Renewables)*

# Rebound Effect



De Boer & Catsburg 1988

# ..or long-term change?



De Boer & Catsburg 1988



# The Proximity Effect

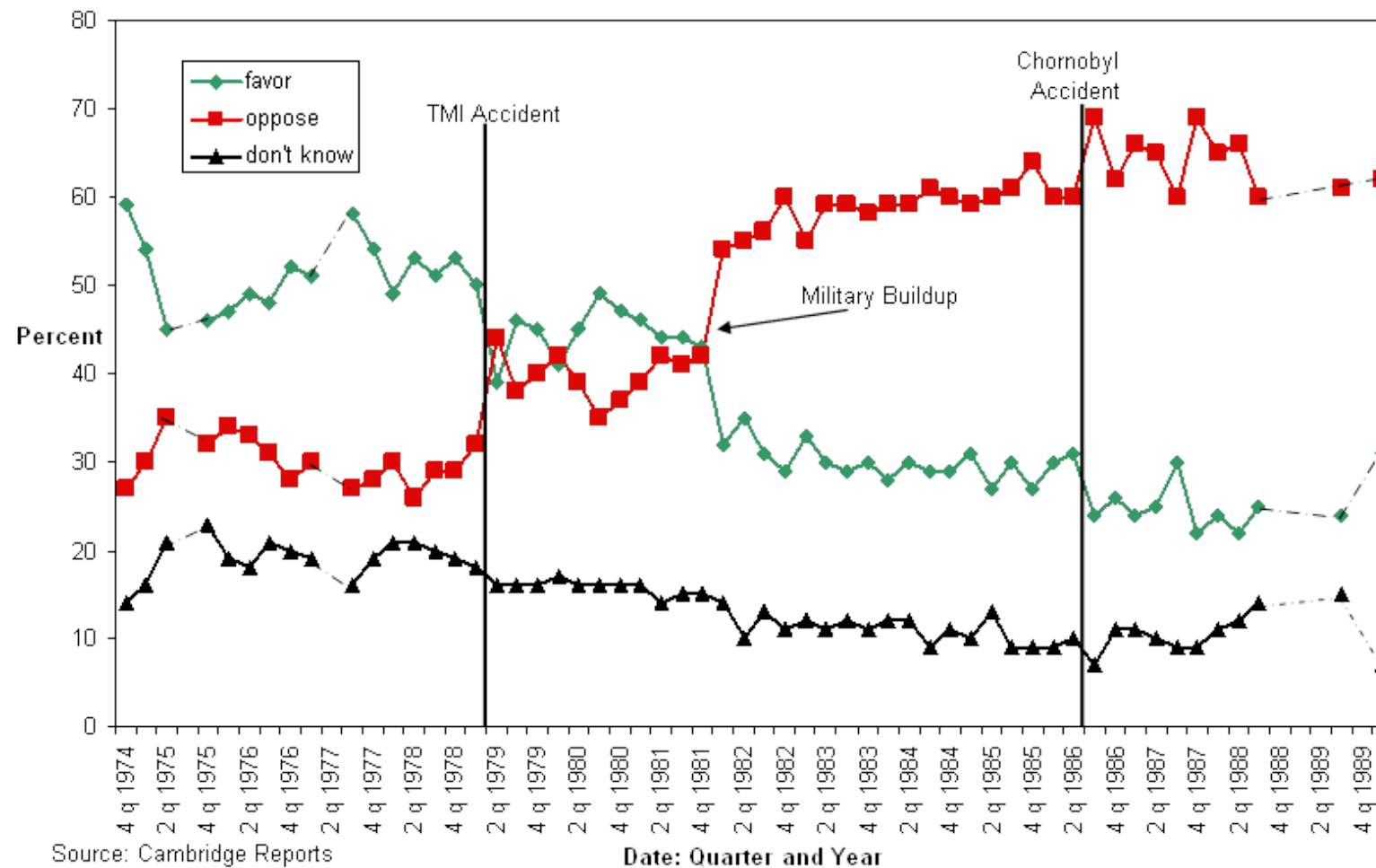
- *Three Mile Island, Pennsylvania, US, 1979*
- *Chernobyl, Ukraine, USSR, 1986*
- *Fukushima Daiichi, Japan, 2011*



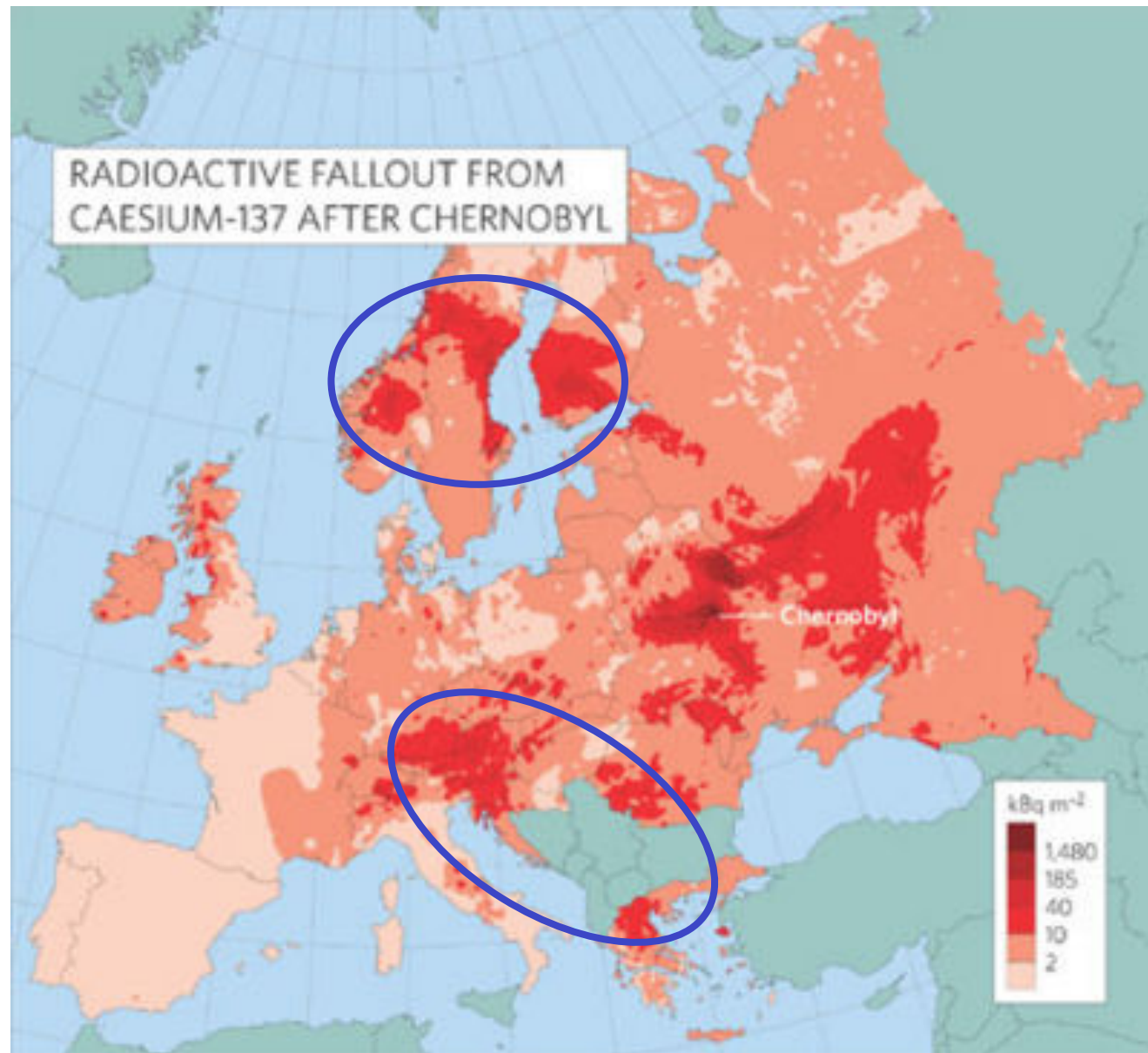


# The Proximity Effect

## Public Attitudes Toward Building Nuclear Power Plants in the United States 1974-1990



# The Proximity Effect



# The Proximity Effect

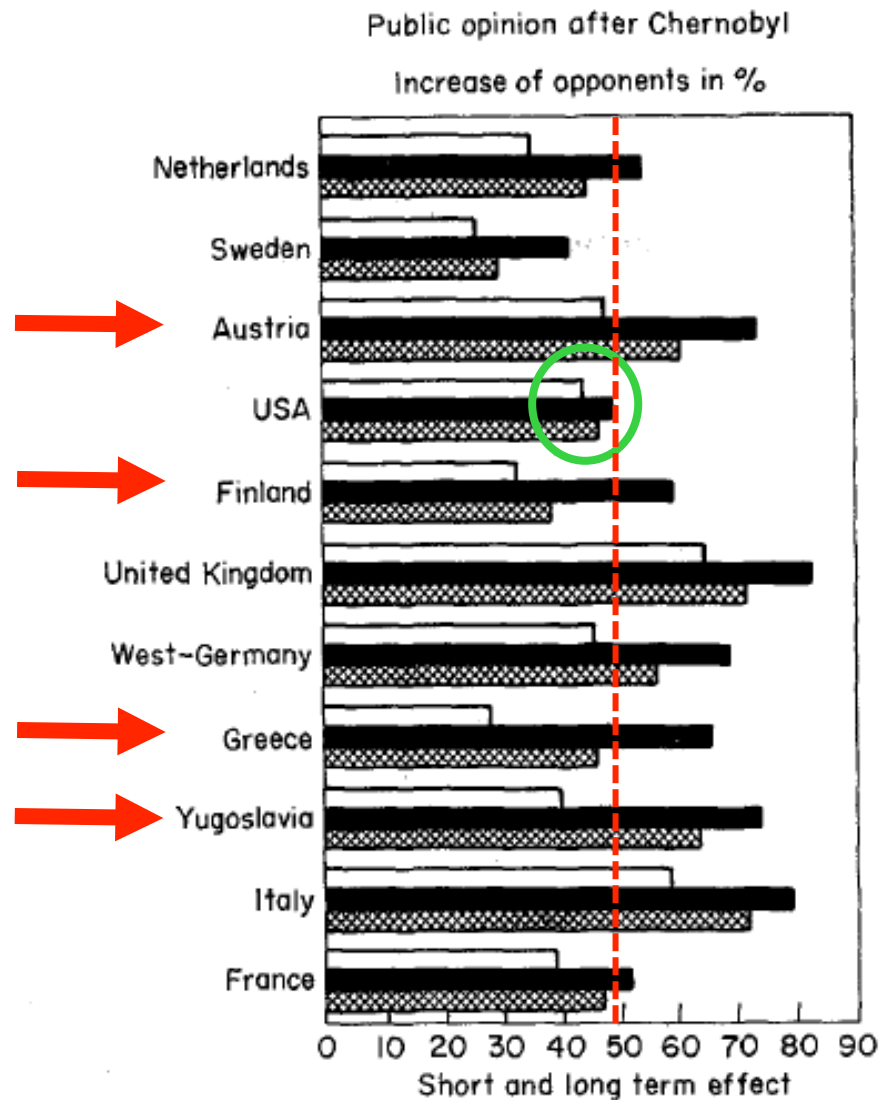


FIGURE 1. The changes of public opinion before, directly after, and one year after the Chernobyl accident in selected countries. ▨ = 1987; ■ = after; □ = before.\*

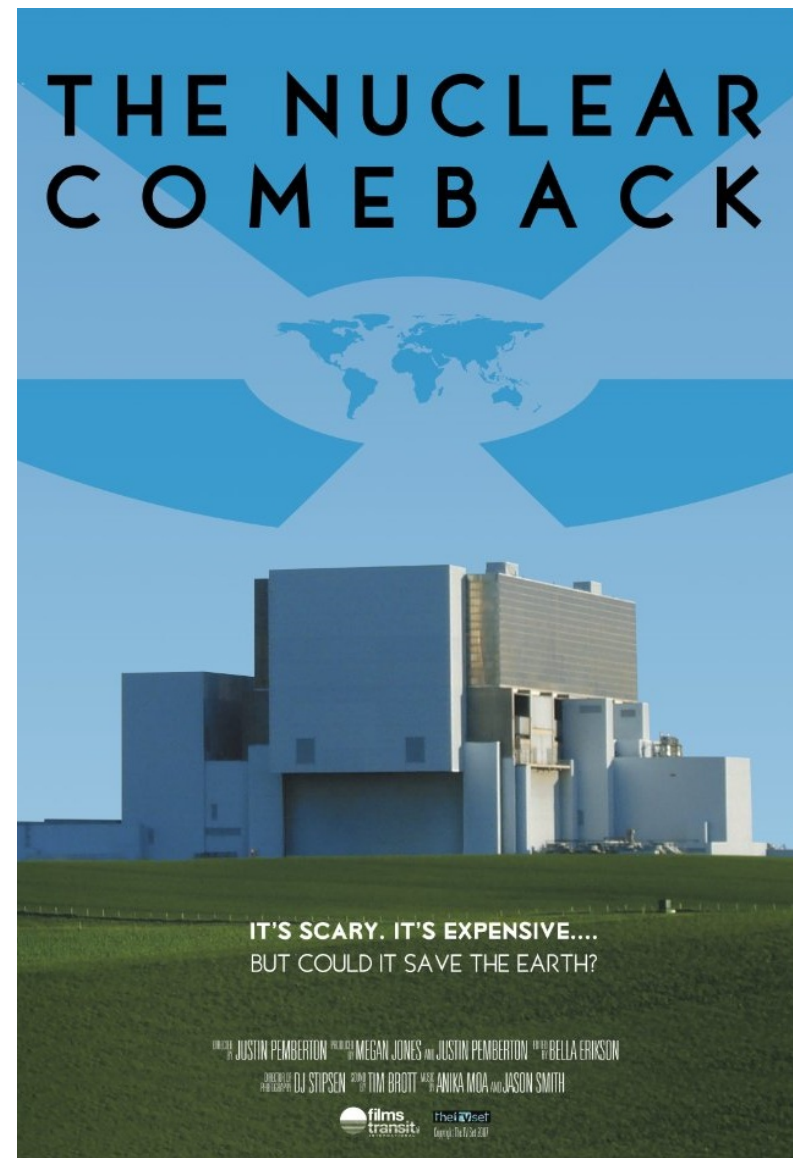
Renn 1990

## Social Judgement & Causal Attribution

- **Eiser et al. (1989):** impacts of *Chernobyl accident* moderated by people's *prior attitudes in line with social judgement theory*
  - **Pro-nuclear individuals** less likely to change their attitudes to NP after accident
    - saw Chernobyl as *isolated event* or attributed to specific condition
  - **Anti-nuclear individuals** became even more negative after the accident
    - saw Chernobyl as *evidence* that technology is *inherently unsafe*.
- **Attribution may part-explain the proximity effect**
  - the farther away the accident, the easier it is to attribute accident to different conditions

Eiser et al 1989

# Reframing of Nuclear Power



- **2002 Focus Groups (*Understanding Risk Project*)**

→ **Resistance by participants to simple framing of ‘nuclear versus climate change’**

*“You know, ...having a head-on collision with a truck or a tree, (...) the best option is possibly the tree but I still wouldn’t want to do it.” (Mark, Norwich)*

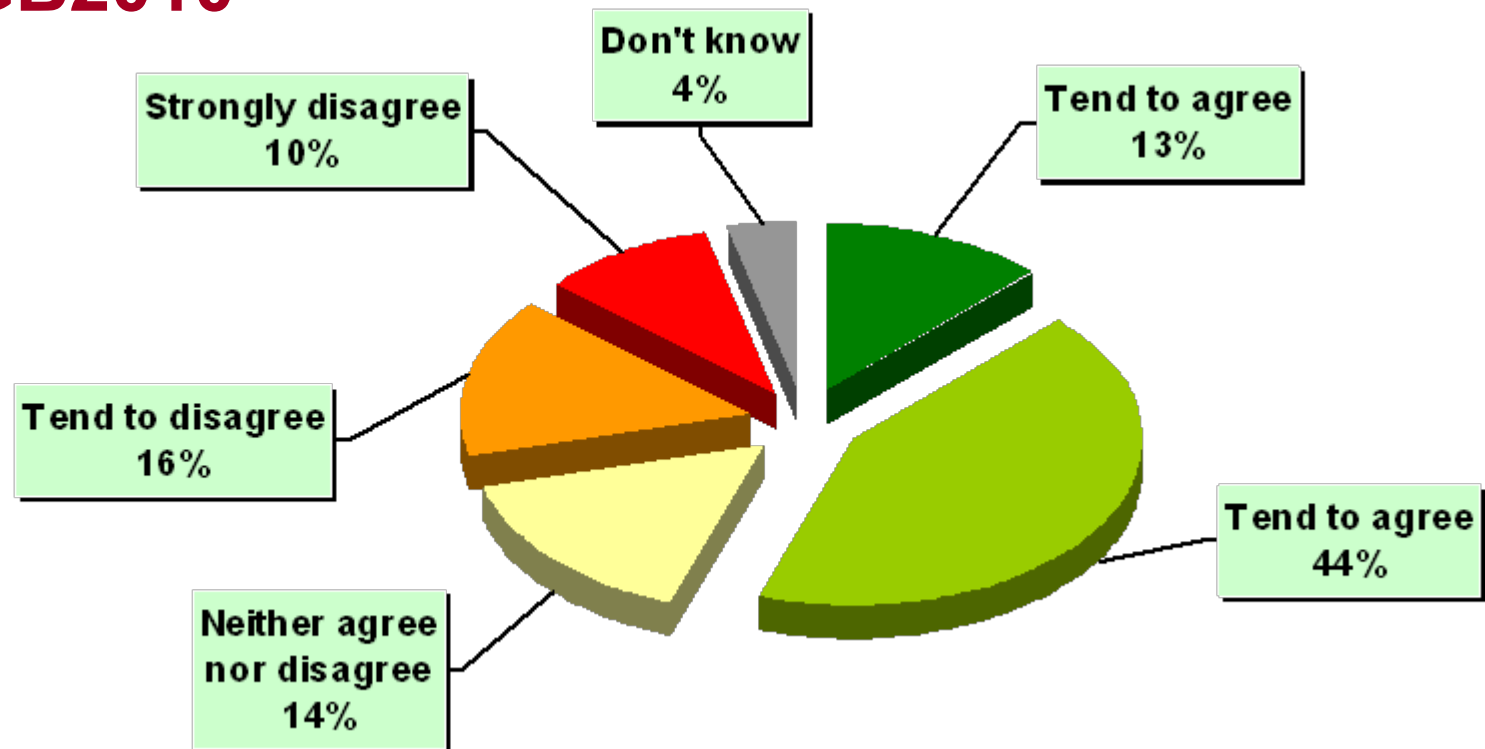
→ **Reluctant Acceptance**

- great dislike of NP
- would consider NP if it helps to combat CC
- but alternatives should be considered first



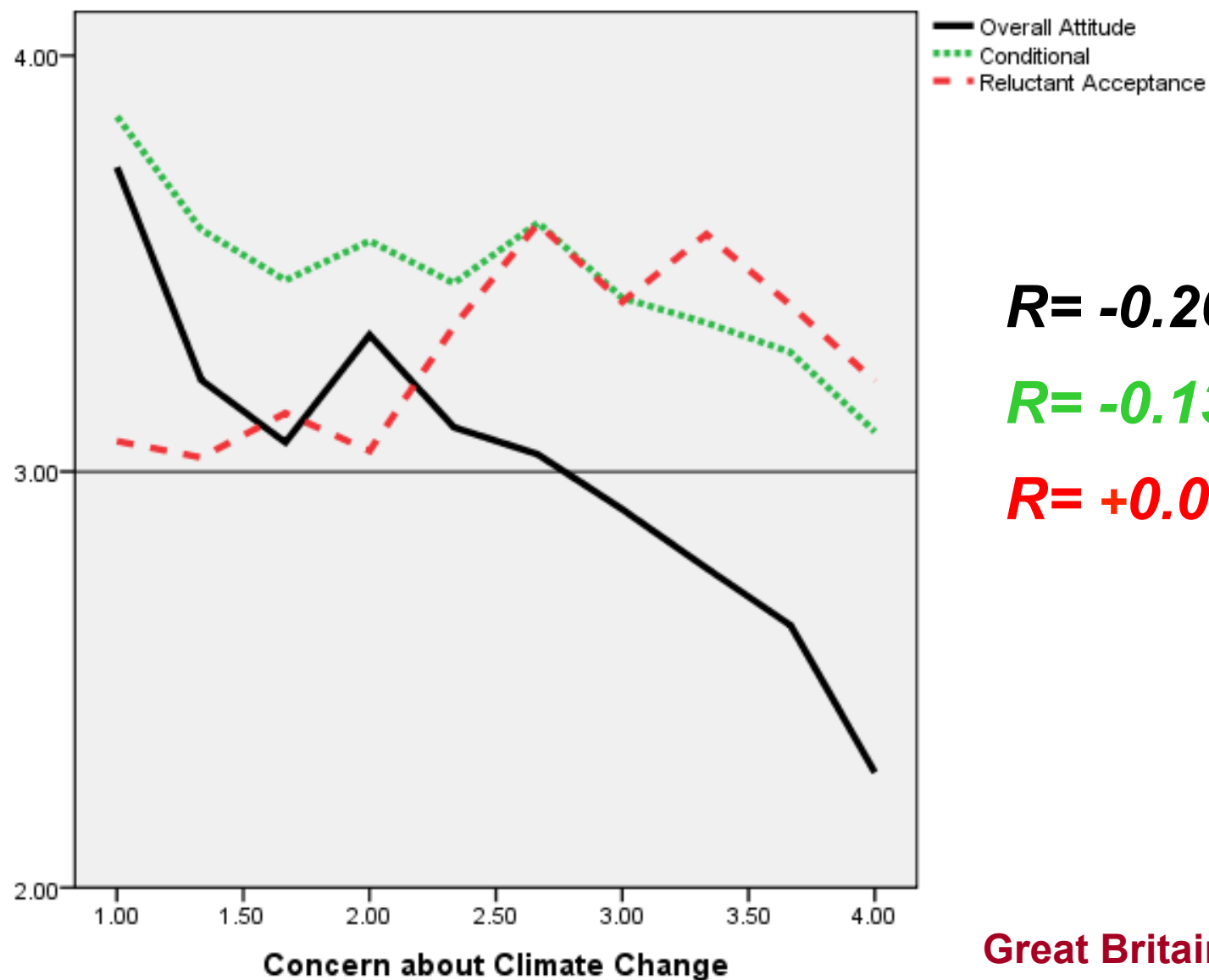
# Reframing of Nuclear Power

**GB2010**



***I don't really like the idea of nuclear power, but I reluctantly accept that we will need it to help combat climate change and improve energy security (i.e. a reliable supply of affordable energy) in the UK***

# Reframing of Nuclear Power



# Fukushima Daiichi



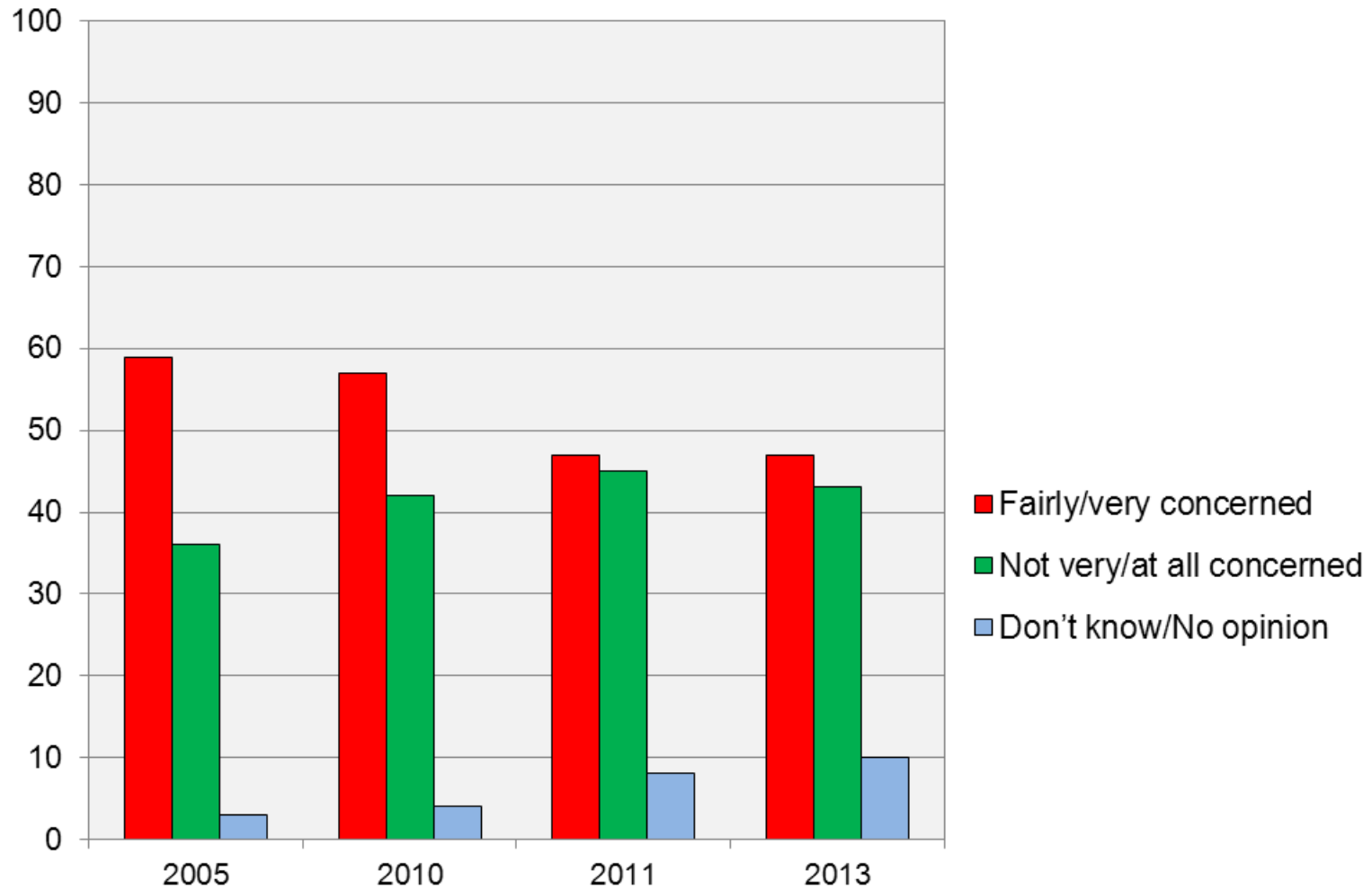
## British Responses to Fukushima

- **How did Fukushima accident impact on nuclear attitudes in Britain?**
  1. No changes, because Fukushima too far away?  
*(attribution to specific conditions: tsunami, culture, etc)*
  2. Short-term Fukushima effect with rebound effect?
  3. ‘Slow-burning’ long-term change towards opposition?
- **Our original prediction (Pidgeon et al. 2008):**
  - *“We would also argue that the level of support for nuclear renewal would change dramatically if there were to be any further major nuclear accident in any part of the world (...)”*  
*[because only reluctant acceptance of NP to help combat CC]*



# Unconditional Attitudes

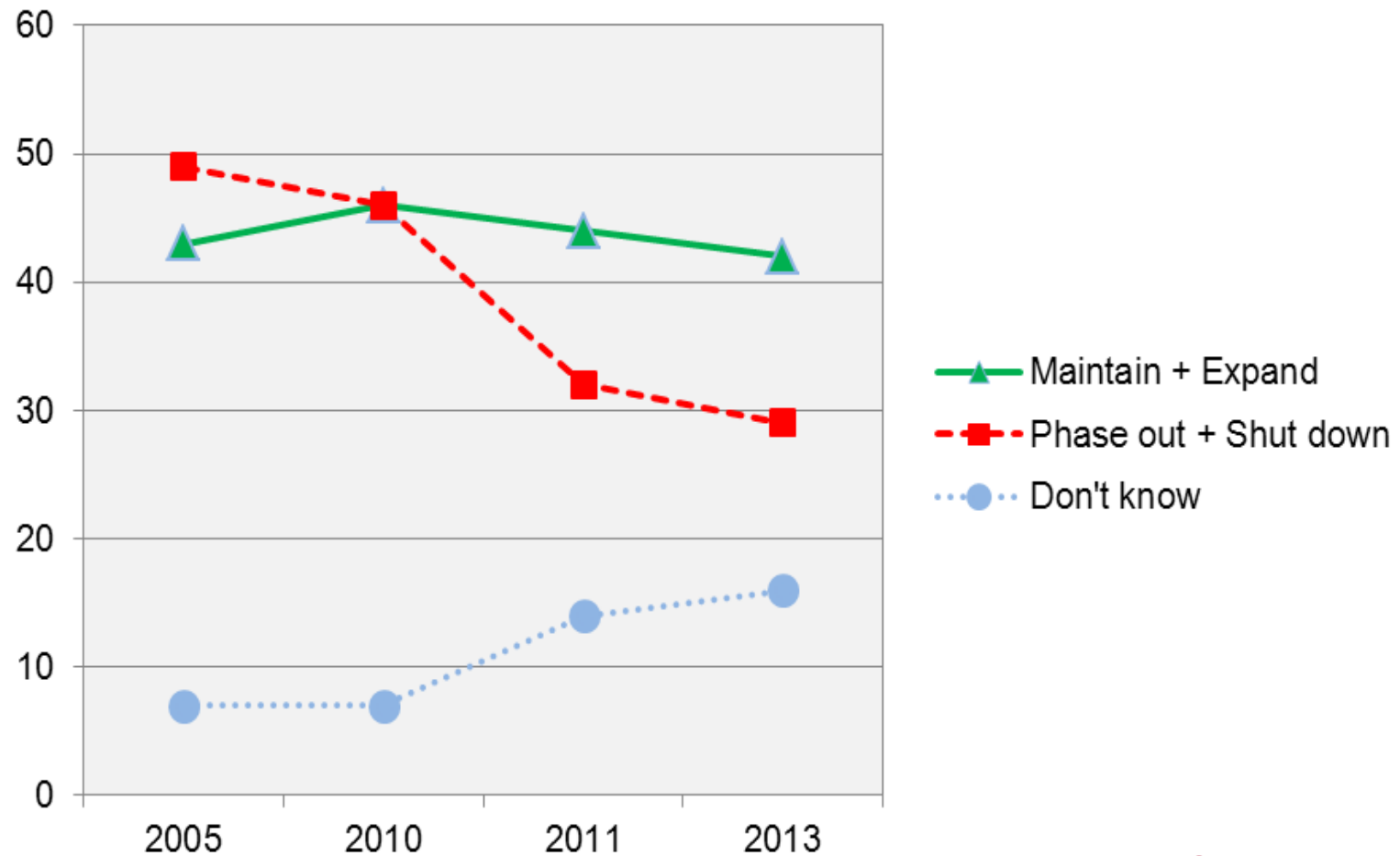
*How concerned, if at all, are you about nuclear power?*



**Great Britain**

# Unconditional Attitudes

*Which, if any, of the following statements most closely describes your own opinion about nuclear power in Britain today?*



**Great Britain**



# Alternatives to Nuclear Power

*We shouldn't think of nuclear power as a solution for climate change before exploring all other energy options*

2005

10

74

2010

15

69

2013

18

53

*Promoting renewable energy sources, such as solar and wind power, is a better way of tackling climate change than nuclear power*

2005

8

78

2010

13

70

2012

15

60

2013

14

62

Great Britain

# The Monbiot Effect

theguardian

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## Why Fukushima made me stop worrying and love nuclear power

Japan's disaster would weigh more heavily if there were less harmful alternatives. Atomic power is part of the mix

• Craig Bennett: Fukushima shows us the real cost of nuclear

Follow George Monbiot by email BETA



George Monbiot

The Guardian, Monday 21 March 2011 19.43 GMT

Jump to comments (1583)



Illustration: Daniel Pudles

You will not be surprised to hear that the events in Japan have changed my view of nuclear power. You will be surprised to hear how they have changed it. As a result of the disaster at Fukushima, I am no longer nuclear-neutral. I now support the technology.



Article history

### Environment

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#### Environment

Nuclear power · Energy · Nuclear waste · Waste · Renewable energy · Wind power · Solar power · Fukushima

### Nuclear power after Fukushima



## Why Fukushima made me stop worrying and love nuclear power



*“You will not be surprised to hear that the events in Japan have changed my view of nuclear power. (...) I am no longer nuclear-neutral. I now support the technology.”*

*“A crappy old plant with inadequate safety features was hit by a monster earthquake and a vast tsunami. The electricity supply failed, knocking out the cooling system. The reactors began to explode and melt down. The disaster exposed a familiar legacy of poor design and corner-cutting. Yet, as far as we know, no one has yet received a lethal dose of radiation (...)”*

- **‘Fukushima effect’ very short-lived in the UK**
  - If any, effects already disappeared within months
- **Opposition dropped in the wake of the accident**
  - attribution to specific conditions (*cf. Eiser et al 1989*)
  - earthquakes/tsunamis seen as unlikely events in the UK
  - reframing argument prevails (*cf. Monbiot, Lovelock*)
- **Public is sensitive to the ‘reframing’ argument**
  - appears to have split traditionally opposed groups
  - Fukushima acted as trigger to think about role of NP?
  - lower opposition reflects a nation-wide ‘*Monbiot effect*’?
- **Overall, nuclear power remains an unpopular form of electricity production**

Many Thanks

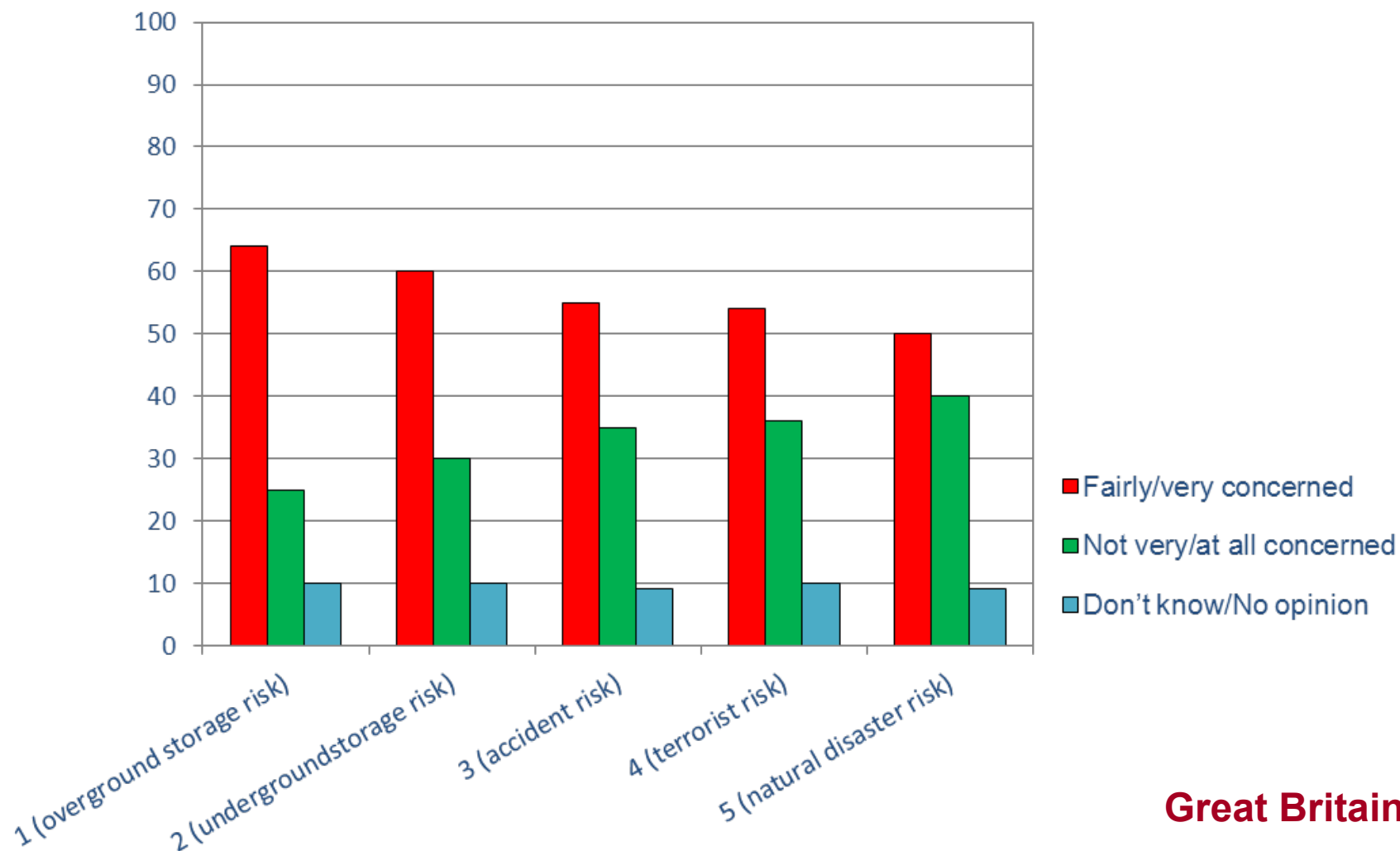
PoortingaW@cardiff.ac.uk

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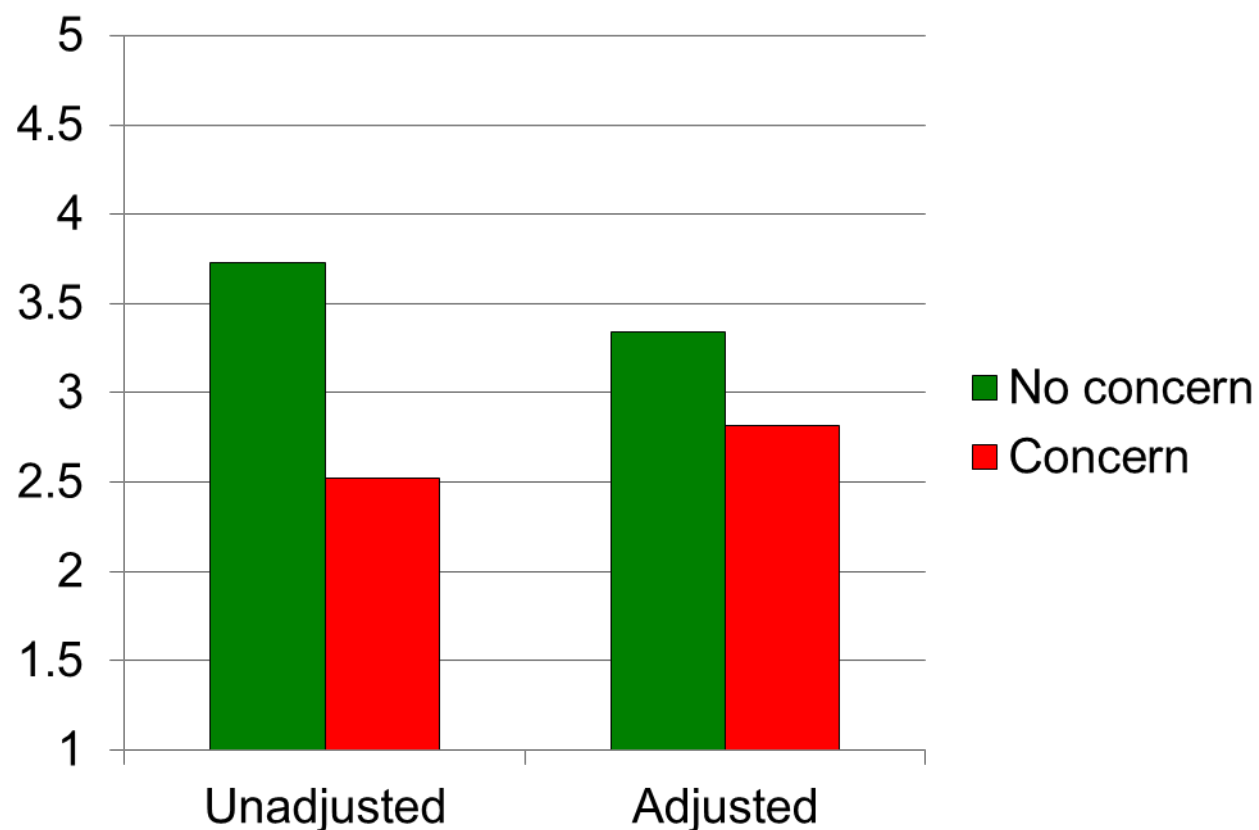
*Reserve slides*

*Thinking about the risks of nuclear power in this country. How concerned, if at all, are you about...*

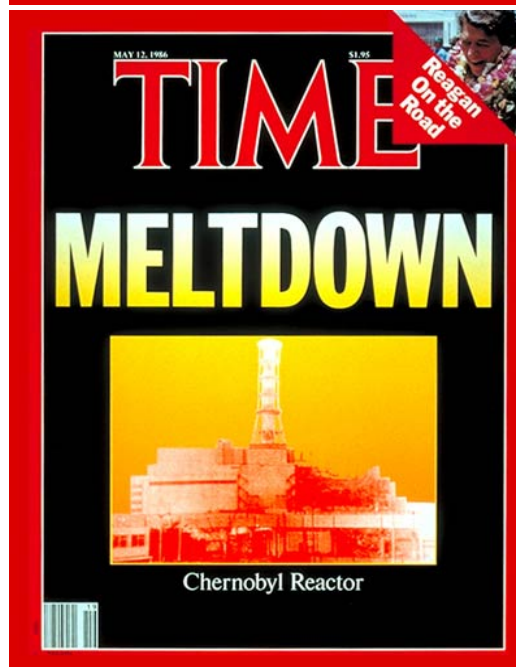
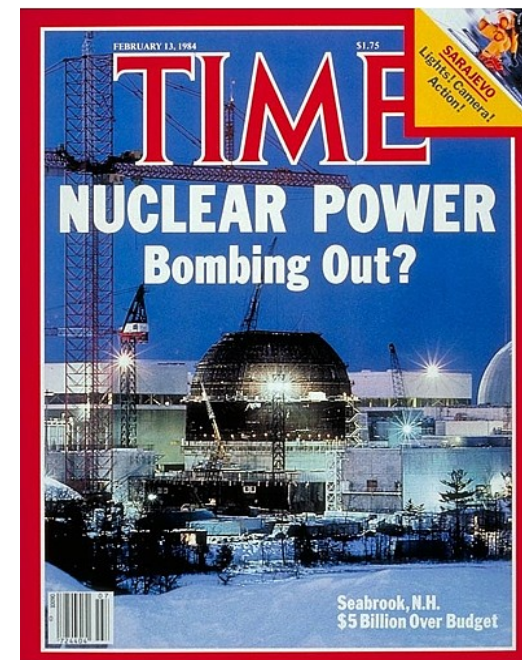
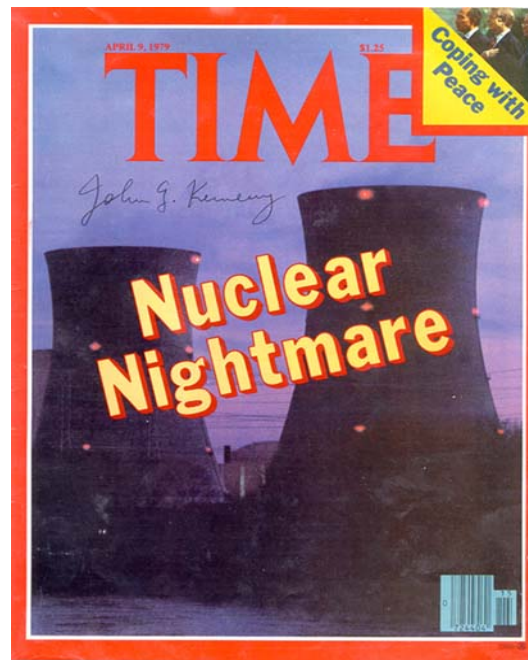




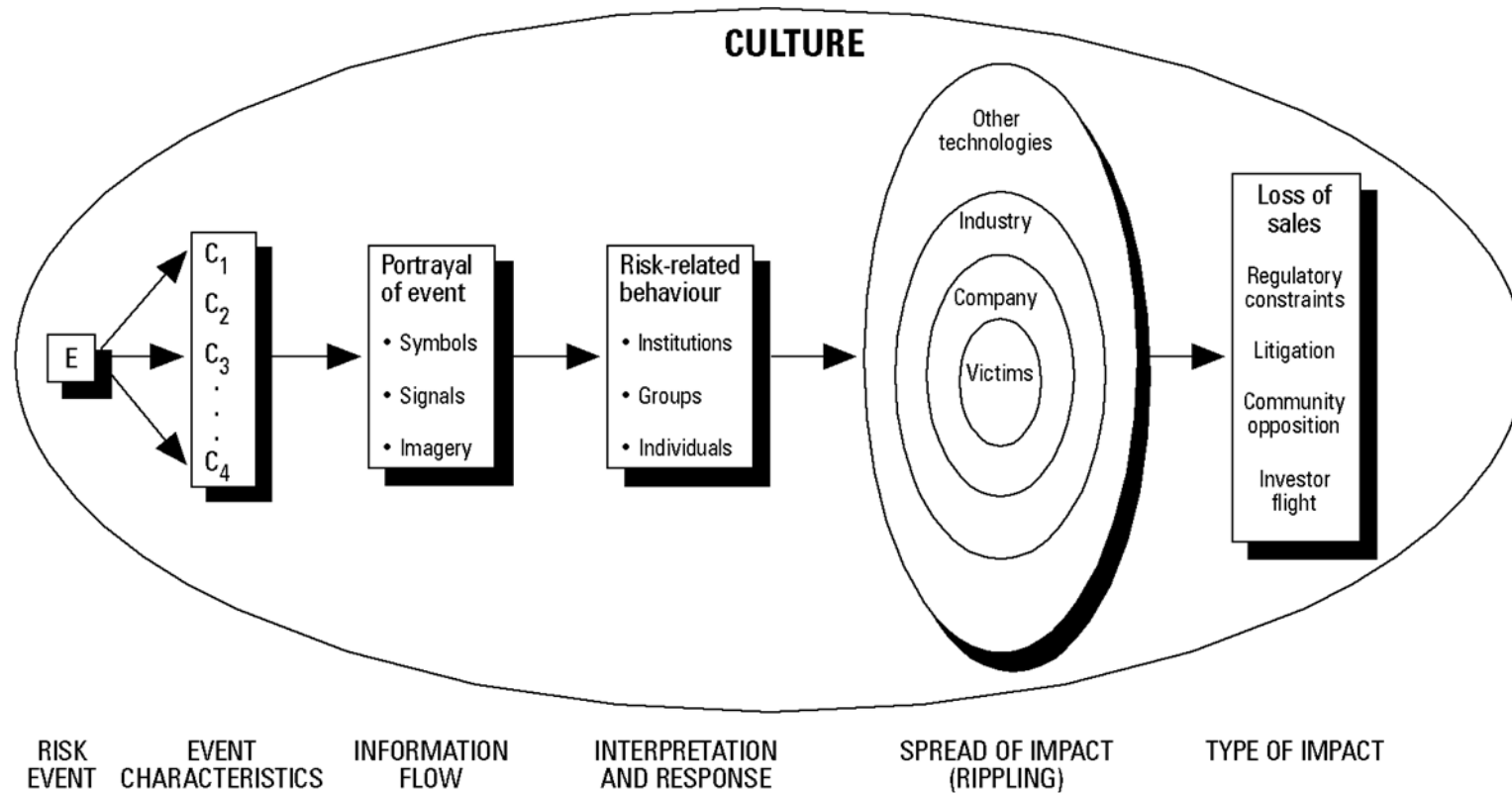
Acceptability as a function of concern about *natural disaster triggering accident*



Adjusted for general concern about nuclear power



# Social Amplification of Risk



Source: After Kasperson *et al.* (1988)

Kasperson et al 1988

- **Wittneben (2012): Responses in Germany**
  - imminent elections
  - intensity of media reports (*Kepplinger & Lemke 2012*)
  - trust in renewable energy (*i.e. there is an alternative*)
  - history of nuclear resistance (*cold war/nuclear weapons*)
    - *Greater political influence of environmental groups/Greens*
  - perceived cultural proximity (*cf. psychological distance*)
    - *Germans of the East: if the Japanese can get it wrong, anyone can...*



# Responses to Fukushima



Anti-nuclear demonstration in Germany, March 2011

# Responses to Fukushima



**Meanwhile in London**

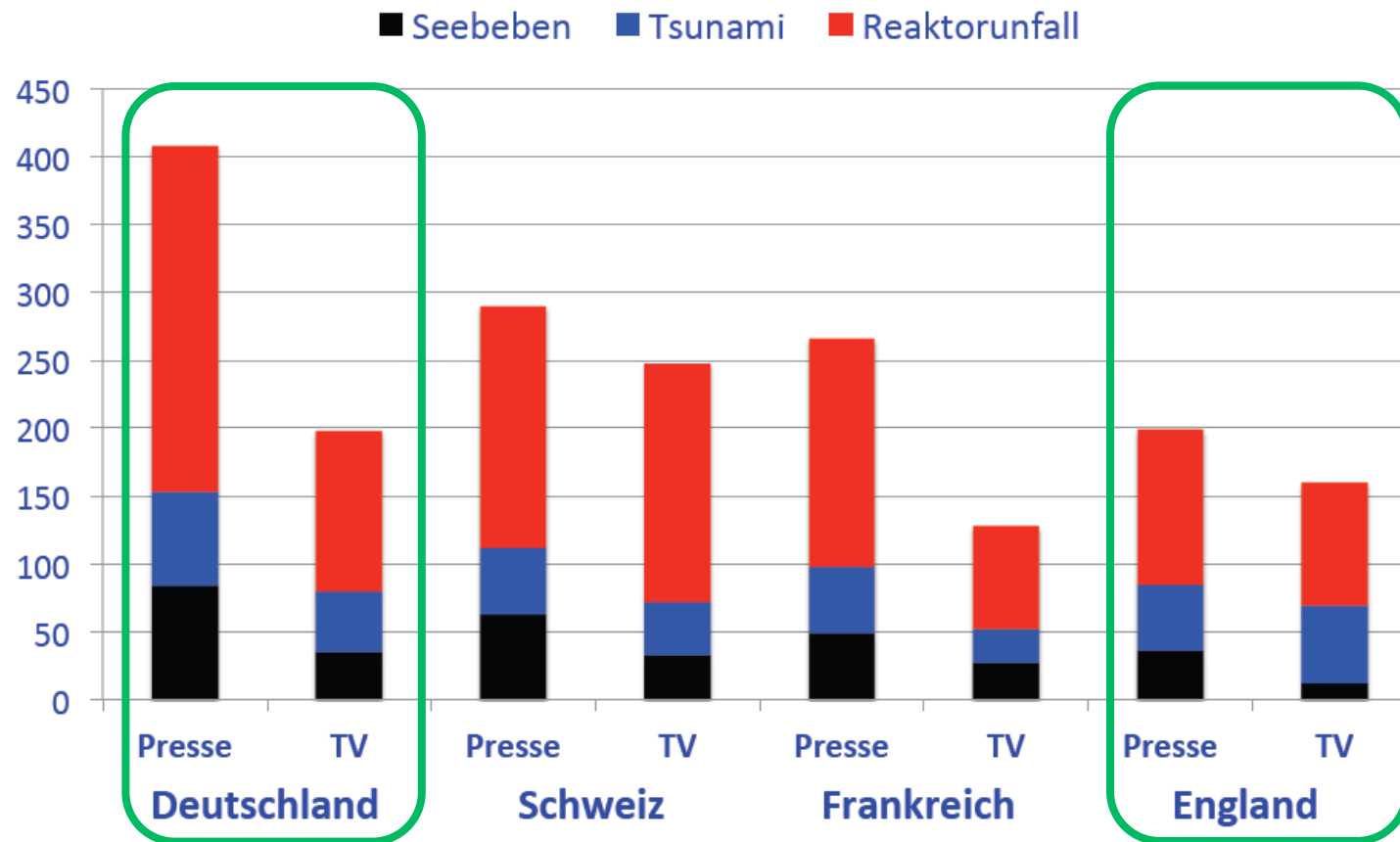


*Fukushima showing the uncontrollability of nuclear energy (# statements)*

	Germany		UK	
	Press	TV	Press	TV
True	32	10	8	-
Ambivalent	2	-		
False	1	-	1	-
Total	35	10	9	0

## Generelle Gewichtung der drei Geschehnisse

- Anzahl der Beiträge mit dem jeweiligen Ereignis als Hauptthema -



Quelle: Kepplinger/Lemke 2012

**Kepplinger & Lemke 2012**

Jan 2011 - Apr 2013 ▾ All categories ▾ Web Search ▾



Fukushima

Search term

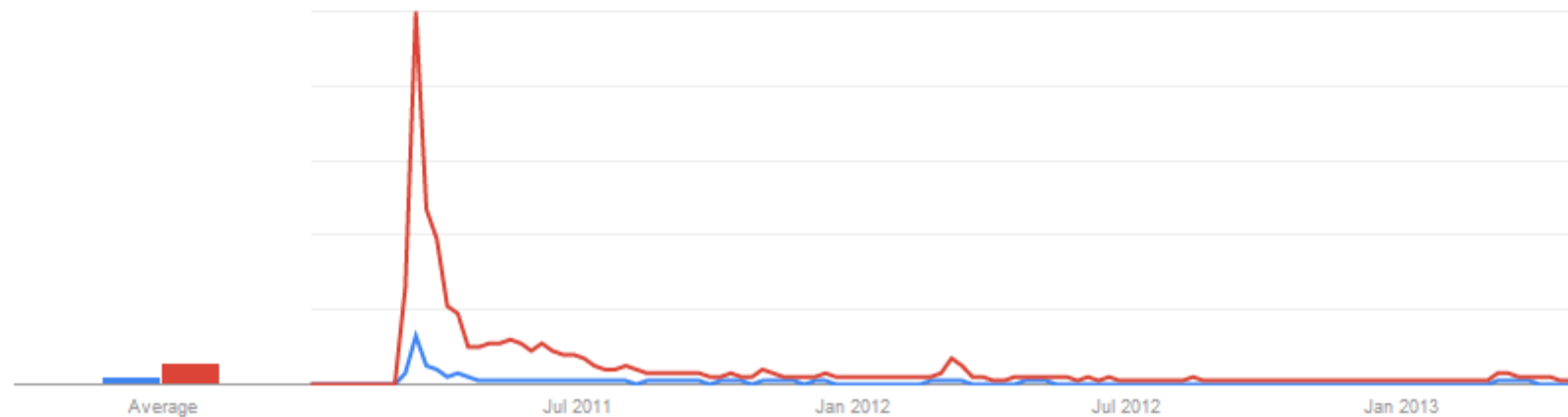
United Kingdom

Germany

+ Add location

Interest over time ?

☐ News headlines ☐ Forecast ?



- **What about attitudes in Japan?**

- major expansion in 1970-80s to fuel economic development
- 30% from NP before Fukushima
- 2010 Energy Plan: expansion NP to 50%



- Fukushima shown risks of NP in earthquake/tsunami prone zone
- anti-nuclear demonstrations in response to restart show strength of opposition



# Fukushima Daiichi

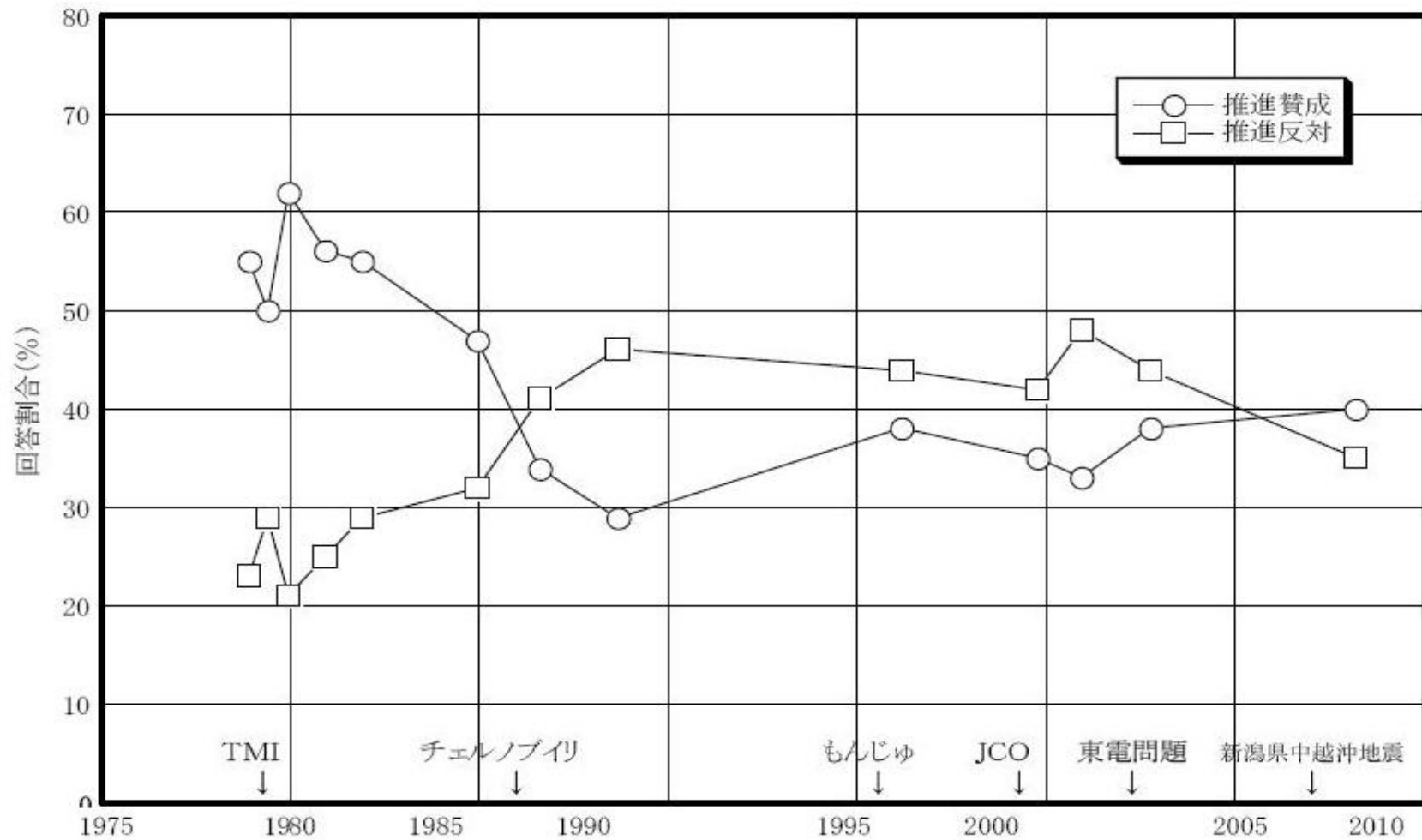


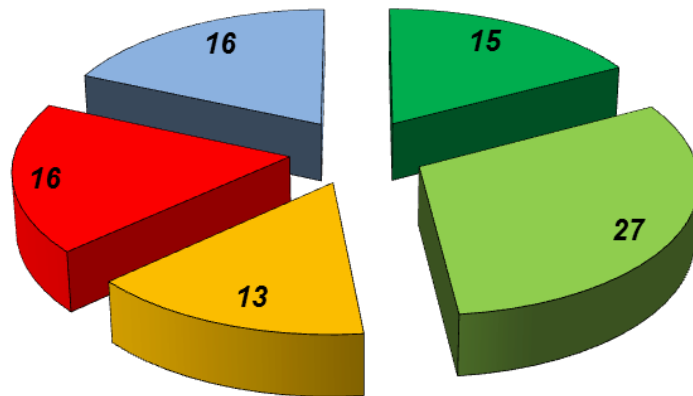
図1. 朝日新聞社による原子力発電に関するアンケート調査結果の時系列変化

(OECD/NEA, 2010)

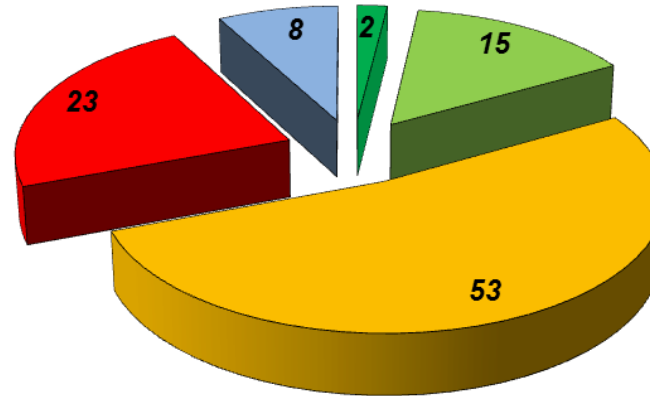
## Unconditional Support – Japan vs Britain

*Which, if any, of the following statements most closely describes your own opinion about nuclear power in Britain/ Japan today?*

**GB2013**



**JP2013**

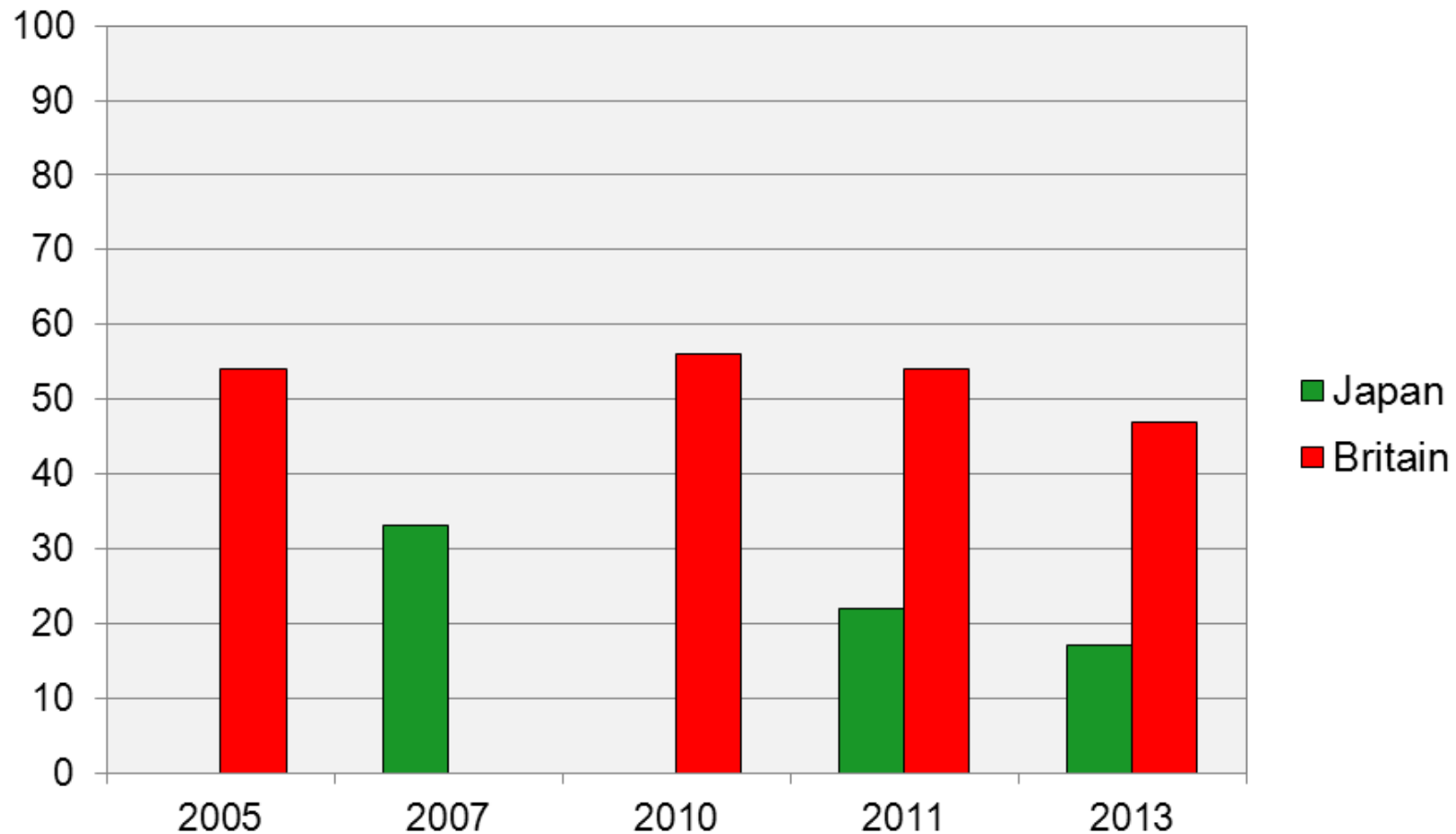


- We should increase the number of nuclear power stations
- We should continue using existing nuclear power stations and replace them (...)
- We should continue existing nuclear power stations but NOT replace them (...)
- We should shut down all existing nuclear power stations (...)
- Don't know/None of these



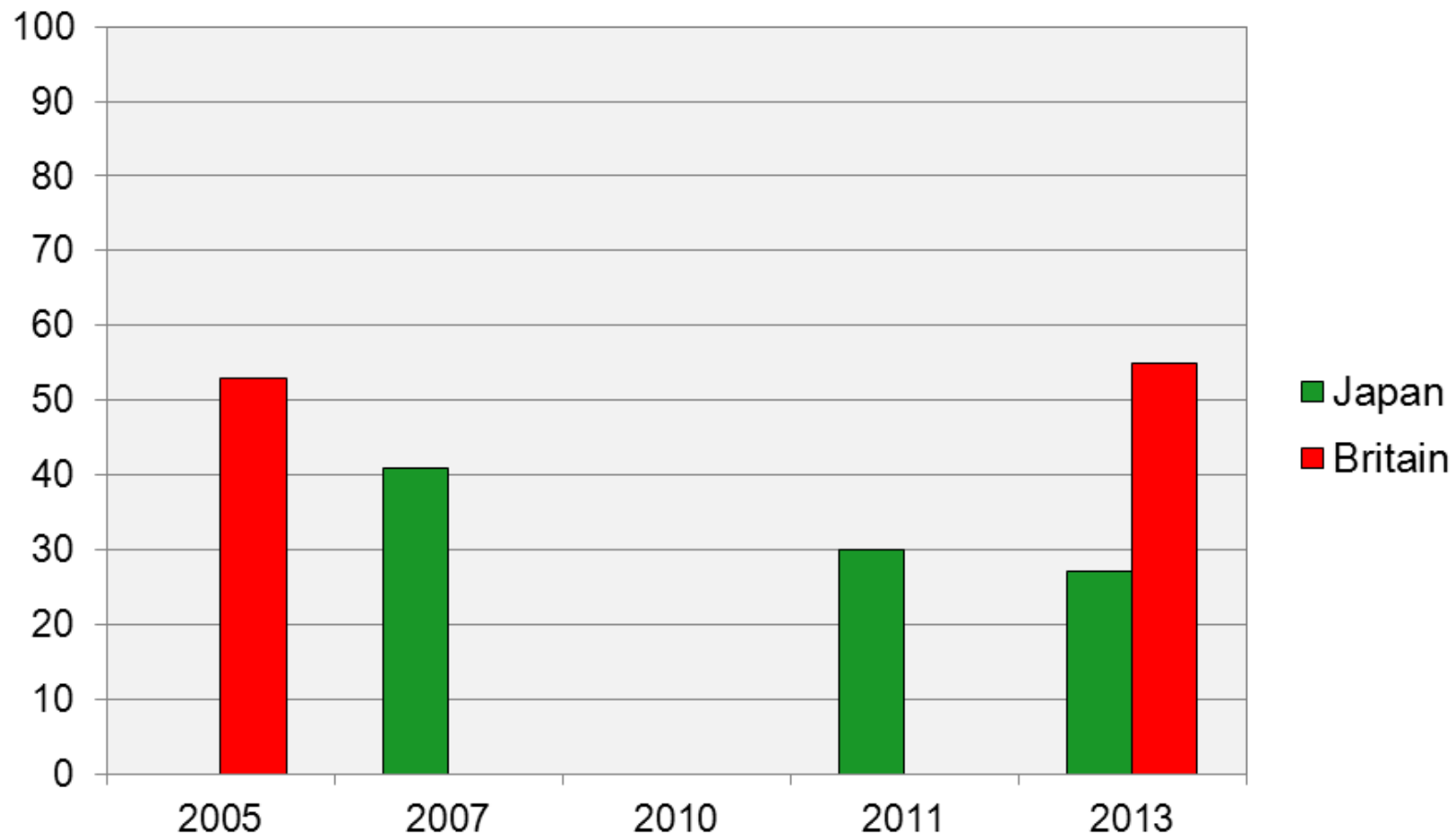
## Conditional Support – Japan vs Britain

*I am willing to accept the building of new nuclear power stations if it would help to tackle climate change*



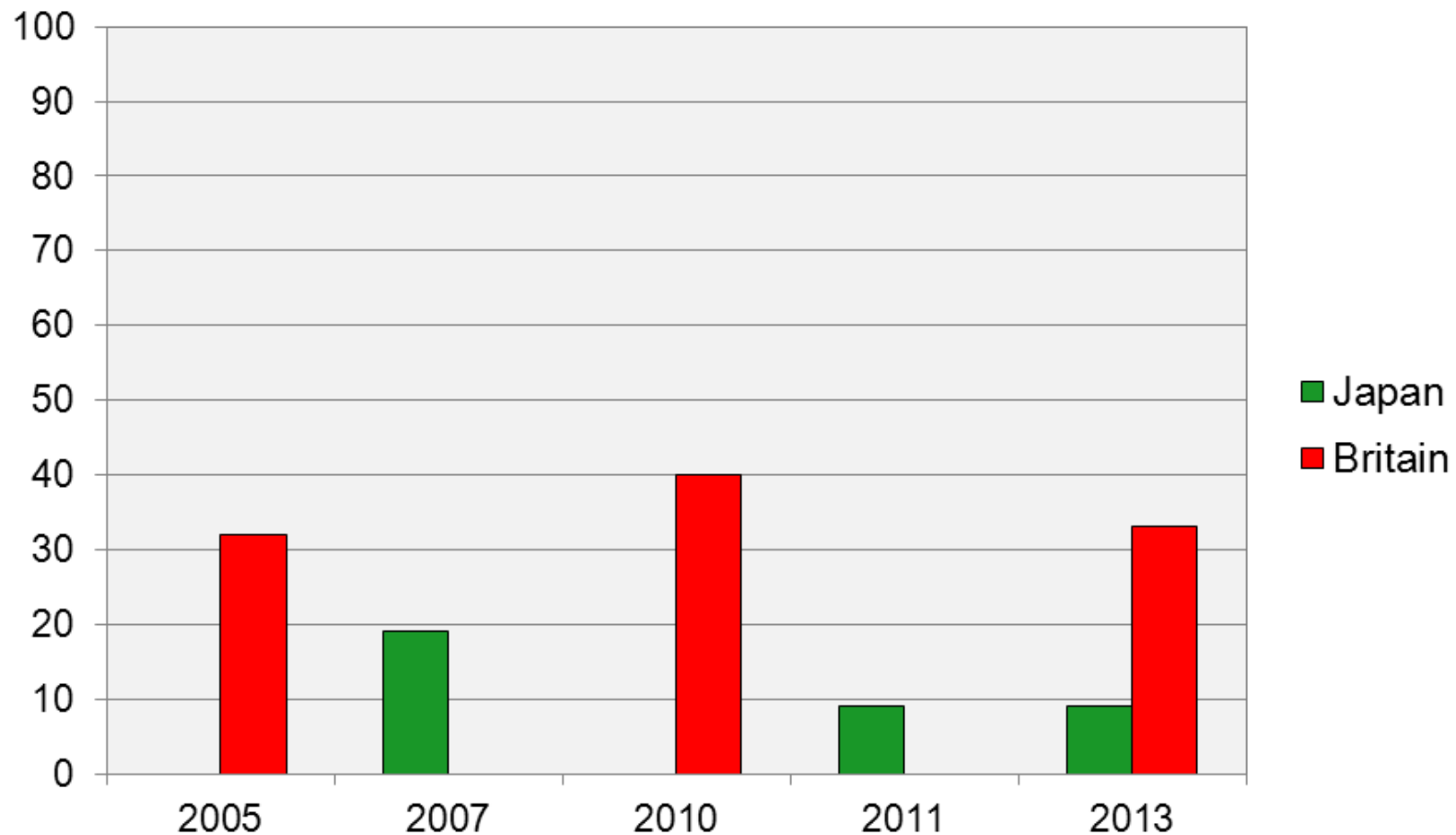
## Conditional Support – Japan vs Britain

*If we had safer nuclear power stations, I'd be prepared to support new ones being built*



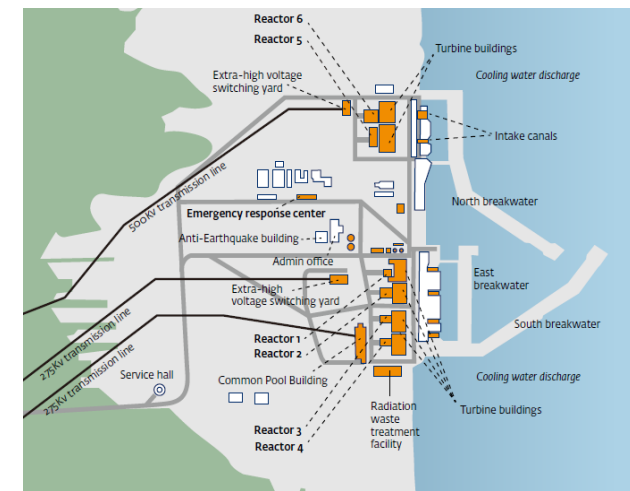
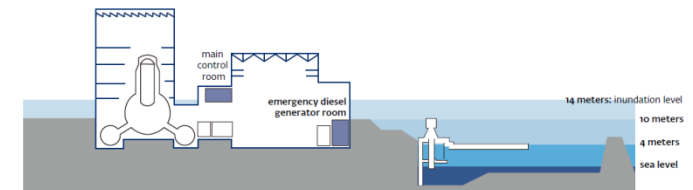
## Trust – Japan vs Britain

*I feel confident that the British/Japanese Government adequately regulates nuclear power*

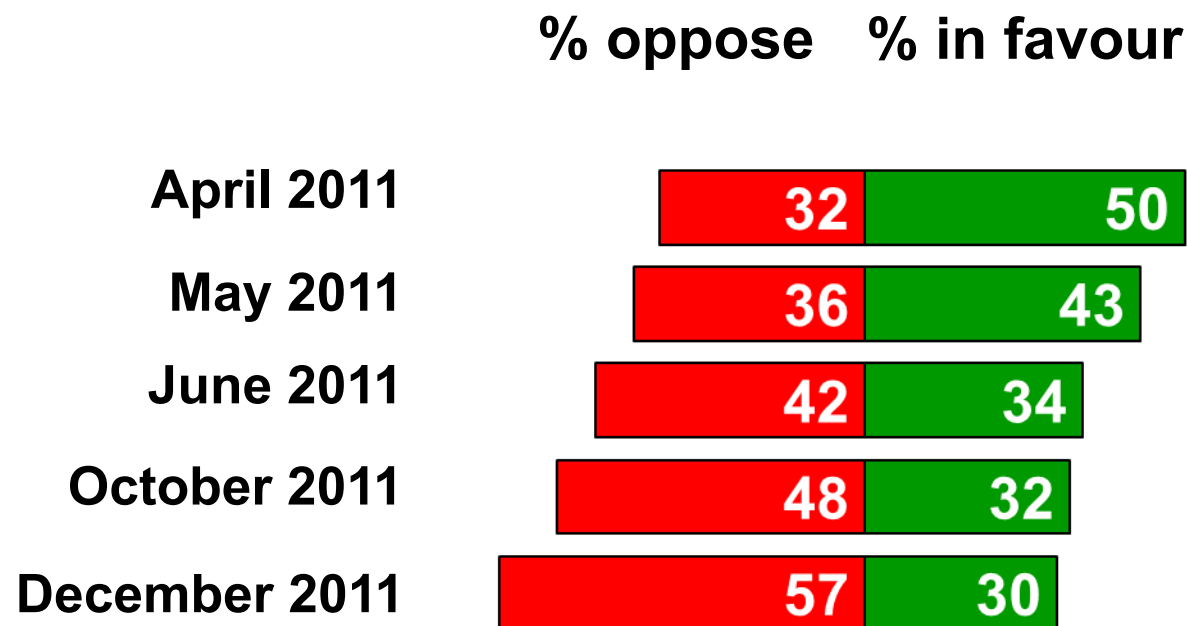


- **NAIIC Summary Report July 2012**

- Not caused by a ‘natural’ event – but was ‘clearly man-made’
- Collusion, culture of complacency at TEPCO, and a lack of governance
- There were some very familiar organisational failings and SAFETY CULTURE issues
- Crisis management system did not work
- Public rightly lost trust the nuclear industry – (*“betrayed the nation’s right to be safe from nuclear accidents”*)



## Fukushima Daiichi - Trust



**(Asahi Shimbun, 2011)** - AFTER Fukushima BEFORE Publication Investigations