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Public Understanding of Nuclear Energy:

It's not (just) about the science

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Rebuilding Public Trust in Nuclear Energy

JAIF Annual Meeting, Tokyo, April 15 2014

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What we need from our energy industries

Secure supplies

Economic supplies

Environmentally acceptable supplies

BUT ALSO

Politically (and socially) acceptable supplies.

'Public controversies' follow pretty much the same path irrespective of the science involved – in UK include Measles/ Mumps/Rubella vaccination, mobile phone masts, BSE ('mad cow disease'), Genetically Modified Organisms (GMO) in crops, low-level radiation.

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Progress of a public controversy: (it's not just about the science)

- Media-inspired panic based on a small number of alleged cases.
- Scientists misquoted or misinterpreted as saying 'there is no risk'.
- Politicians making unequivocal statements of 'comfort' and criticising 'scaremongering'.
- A few anomalies in the research, often based on analysis of casual clusters.
- Political panic.
- Commissioning of a Report.
- Report published – 'No real evidence of risk, almost certainly no significant problem … but new data may come along, science can't prove negatives etc.
- Media covers BUT and ignores the rest of the Report.
- More research called for, resulting in increased public concern.

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The developing relationships among the scientific/technical, political and public spheres

First phase – people broadly trust scientists and politicians, who broadly trust each other. (Early years of nuclear power in UK.) Decisions can be taken but are not well scrutinised by sceptics.

Second phase – people see some scientists and politicians getting it wrong or being dishonest, so transfer their trust to anti-scientists and anti-politicians (Green movement and other NGOs). At first industry often continues with its 'We Know Best' attitude to the public but can try to hide it by (bogus) 'consultations', 'listening exercises' etc. which just increase public suspicions. Then industry suddenly flips and starts bombarding the public with examples of errors. Decisions become practically impossible.
IS THIS WHERE GERMANY STANDS?

Third phase – people realise Greens are just as likely to lie and get things wrong as scientists and politicians are, so become healthily sceptical but open minded towards all – IF their messages make sense and they seem trustworthy. Industry becomes more humble. Decisions become possible if they stand up to scrutiny.
MAY BE THE EMERGING UK PUBLIC POSITION.

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Role of science – a UK story

Science (at least for a while) lost its (proper) unique position as a guide to action because it is (correctly) no longer perceived as being infallible.

'In its rush to be open about communicating risk to the public, the government has simply forgotten that there was no risk to communicate.' (Kaplinsky, 2000, re mobile phone masts.)

Overreacting to criticism – sometimes ironically called 'erring on the side of caution' – results in vastly inflated costs and decision paralysis (and further public concerns).

BUT there may be a sea change going on – the Greens are no longer trusted like they were ten years ago?

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A puzzle

Why is the safest large-scale energy source regarded as the most dangerous by significant numbers of people?

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So is it just a fear of radiation?

Country	Year	Number exposed	Number exposed to high doses	Number of deaths
Mexico (Mexico City)	1962	?	5	4
China (Anhui Province)	1963	?	6	2
Algeria (Setif)	1978	22	5	1
Mexico (Juarez)	1983	≈ 4,000	5	0
Morocco (Casablanca)	1984	?	11	8
Brazil (Goiania)	1987	249	50	4
Ukraine (Krematorsk)	1980s	?	17	6
China (Xinzhou)	1992	≈ 90	12	3
USA (Indiana)	1992	≈ 90	1	1
Thailand (Bangkok)	2000	?	10	3
UK (London)	2006	?	1	1
India (Mayapuri)	2010	?	8	1

Some non-power incidents involving radiation but no long-term panic

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So is it just a fear of radiation?

- As far as can be determined, these incidents, despite their severity, did not cause significant or long-lasting radiophobia. When Alexander Litvinenko, a former officer of the Russian Federal Security service who received political asylum in the UK, was murdered in London in 2006, allegedly by Russian secret agents, for example, polonium-210 could be detected in taxis, restaurants and hotel rooms, yet rarely was there any focus on the radioactivity angle – it was predominately a KGB story.

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So is it just a fear of radiation?

- In Budapest in late 2011 there was a brief public scare over the detection of iodine-131 in airborne samples, with fears that it might have come from the Paks nuclear plant or another further afield. After investigation, however, it was found that the material had been released from the Institute of Isotopes from September 8 to November 16. At this there seems to have been a collective sigh of relief – it is not the dangerous (nuclear power) type of radioactive stuff but the nice kind, connected in some way with medicine.

- The oft-claimed observation that people are afraid of radioactive waste is only partially true – there seems to be no fear (and no antinuclear campaign) concerning the production and storage of radioactive waste associated with medical (or indeed industrial) uses of radioactive materials.

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People and risk

Three common assumptions

• People get worried because they see things to get worried about.

• Every time something is made a bit safer people feel a bit less worried about it.

• Giving people accurate information will make their perceptions more ‘rational’.

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An alternative look at risk perception

- Each of us lives our life at a fairly constant level of anxiety and casts around our world for justifications or ‘candidate risks’ onto which to hang that anxiety.
- ‘Risk perception’ more a matter of finding risks to justify our anxiety than actually being frightened by a particular risk.
- Times of ‘real’ threats to safety and security e.g. wartime, natural disaster, often result in a degree of societal comfort – low suicide rates etc. – as a ‘solution’ can be imagined.
- Times of real safety cause us to find more obscure justifications for our anxiety with no clear solutions.

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Risk perception

Each of us lives our life at a fairly constant level of anxiety and casts around our world for justifications or ‘candidates’ onto which to hang that anxiety.

What makes a good candidate risk?

- Messages do not make common-sense.
- High profile – if I am not constantly reminded about a risk I’m unlikely to get worried about it.
- Relevance – I can see how this risk might impinge on me.
- Few or no apparent benefits – if I get worked up about this risk I’m not going to have to start feeling guilty about the benefits it brings.
- ‘They aren’t like us’ – representatives do not look and sound like they understand us and our concerns – in fact they speak down to us and always think they are right.

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Who is the more rational?

It is often the 'public' (including the media) who are rational and the industry irrational in communication issues.

Example – the rational response to being told that something has been made safer may well be to assume it was more dangerous than we had been told before.

Broad theoretical framework – people fear radioactivity in food from Fukushima, for example, as a *rationalisation* for the observation that the industry/regulator has set a limit five times lower than the international standard (with all the pain that causes local farmers) – NOT that fear of eating the food CAUSES their fears. If so, real danger that addressing the 'symptom' – the 'misperception' – may offer two choices to the public:

- simply disbelieve the message;
- assume that the industry has gone mad, wasting vast amounts of money and blighting famers' lives over food that is not really dangerous.

The former is by far the most rational response.

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Who is the more rational?

‘Radioactive waste is not very dangerous but we are going to bury it 800 metres underground.’

Industry’s irrational belief – people will be reassured by this.

Public’s rational response – this is the most dangerous stuff mankind has ever produced (we don’t bury anything else 800 metres underground), so we should be scared. And what’s more these jokers must think we are idiots if they expect us to believe it is not very dangerous at all, so we won’t believe them ever again.

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Who is the more rational?

‘We have spent a fortune on a monitoring system that can pick up radioactivity many thousands of times below danger levels.’

Industry’s irrational belief – people will be reassured by this.

Public’s rational response – this simply cannot be true. Either they have wilfully wasted a vast amount of my money, so shouldn’t be trusted, or they are lying about the dangers involved. NOBODY would spend a fortune on detecting something that can do no harm. Help!

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Who is the more rational?

’80,000 people cannot return to their homes near Fukushima because we are staying on the ‘safe side’.’

Industry’s irrational belief – people will be reassured by this.

Public’s rational response – radiation must be hugely dangerous or they would not be destroying our lives by keeping us from our homes. A nuclear accident must be the worst thing that can possibly happen. So obviously we can’t risk reopening existing nuclear stations in case this happens again.

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Who is the more rational?

‘To be on the safe side we will set a limit of 100 Bq per kg on food from the Fukushima region, even though the international limit is 500 Bq per kg.’

Industry’s irrational belief – people will be reassured by this.

Public’s rational response – food we were allowed to eat before the accident is now banned: why were the regulators allowing us to eat dangerous food? Can we really trust these international bodies telling us what is safe if our own Government does not think they are tough enough?

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Who is the more rational?

‘Ships carrying spent fuel are specially reinforced, triple hulled and have gun turrets to repel terrorists, and if they sank it would not matter as water is a good shield against radioactive material.’

• Industry’s irrational belief – people will be reassured by this.

• Public’s rational response – you expect us to believe that such vast expense and effort has been devoted to preventing something that would have no consequences if it did occur. Either the stuff is in need of very careful handling because it is so dangerous, or it can be allowed to sink safely – but it cannot be both of these things so I cannot believe what I am being told.

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Who is the more rational?

Great care must be taken to ensure that those designing communication are aware of the commonsense interpretation of what they are saying and that it helps not hinders!

MORAL – human or psychological rationality is different but not inferior to ‘technical’ rationality. All communication should put psychological rationality first.

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The 'education/public information' myth

- So pumping people full of 'facts' about how safe nuclear power is may cause fear rather than allay it, especially if it stresses the mammoth efforts and costs directed towards nuclear safety.
- The core irrationality is believing that if you announce that you have made something a bit safer people will be a bit more comfortable – they may well decide you have discovered it is a bit more dangerous and so get more worried.
- The message on nuclear safety is simply not credible.

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The 'education/public information' myth

- **It is simply a non-starter** to imagine that a significant, or even a noticeable, proportion of the population can be 'educated' in nuclear engineering, health physics, radiobiology etc. etc. to the extent that they can come to an independent viewpoint about the merits say of reopening nuclear plants.

- Why should people not directly affected be interested in learning about nuclear power rather than say mobile phone masts, vaccination, cancer treatments, education policy and so on?

- In practice, may get their attention only by making them sufficiently scared of nuclear power that they think they ought to know something about it.

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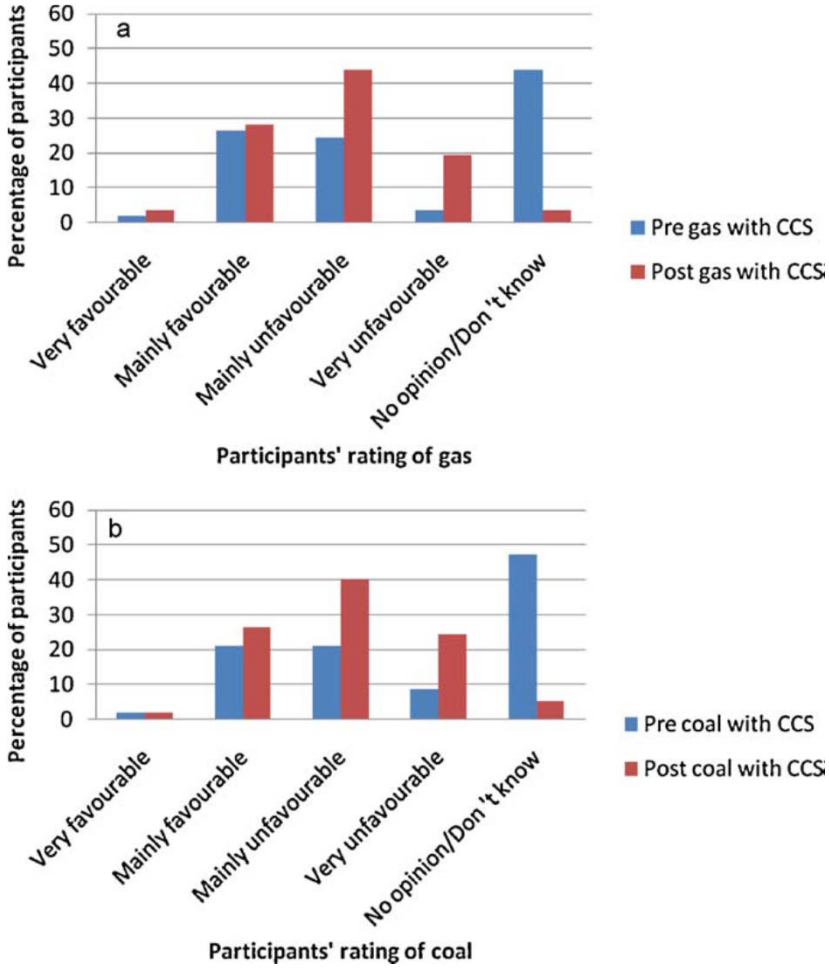
The public information myth – CCS



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An alternative approach

- Honest and consistent – do not swing between extreme secrecy and exaggerated self-flagellation.
- Say ‘we don’t know’ more often.
- Accept that there are other points of view and engage honestly with challenging questions.
- Talk more about advantages.
- Use ‘ordinary workers’ more and ‘suits’ less.
- Build relationships of trust with local stakeholders – i.e. anyone with an interest in nuclear power, including opponents.

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An alternative approach

- Make accurate factual information available to those who want it, e.g. schools, but don't force it on people.
- Challenge inaccuracies in the media.
- Role for academics – but recognise that they will not always follow the 'company line'.
- Long slow process.
- Remember in any communication you are not just communicating for now, you are creating an impression that might last for years.

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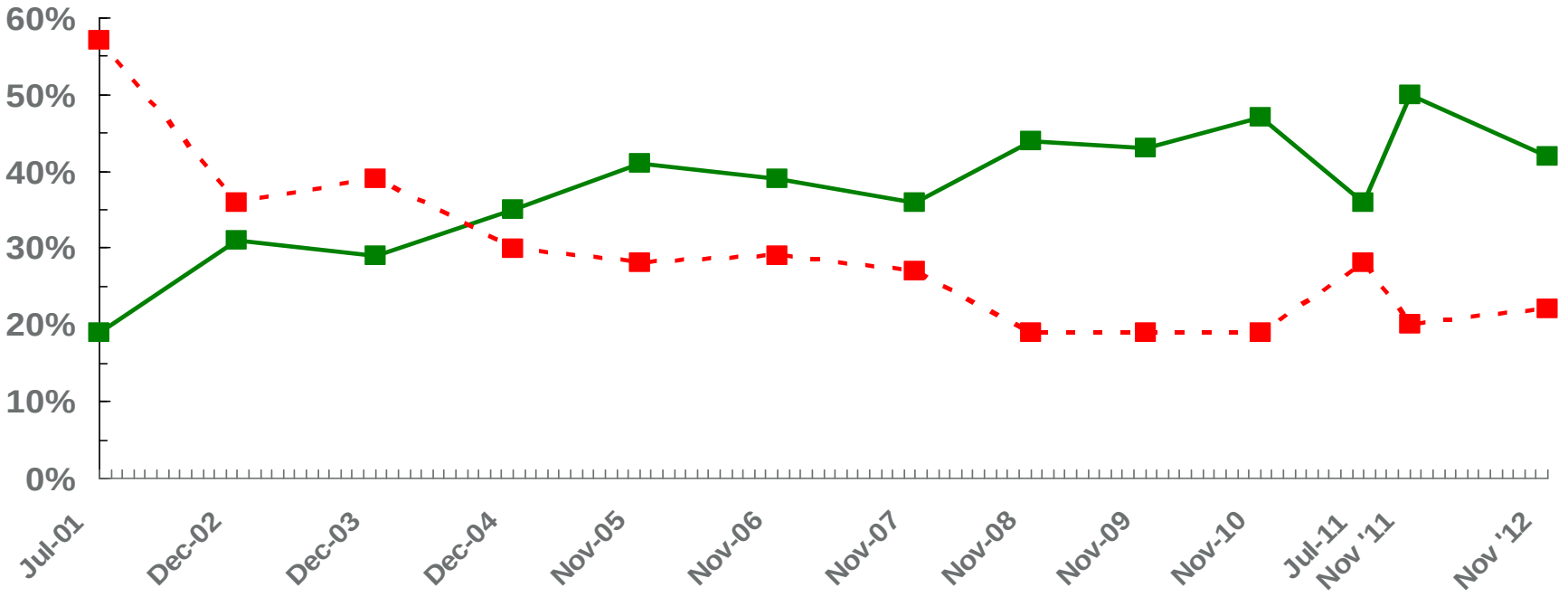
Attitude to new build

To what extent would you support or oppose the building of new nuclear power stations in Britain TO REPLACE those which are being phased out over the next few years? This would ensure the same proportion of nuclear energy is retained.



Source: IPSOS MORI 2012 – green support, red oppose