

# Public Attitudes to Nuclear Power and Climate Change in Britain Two Years after the Fukushima Accident

Summary findings of a survey conducted in March 2013

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# 1. Introduction

## Background

Climate change presents a formidable challenge for governments worldwide. Profound reductions in carbon emissions are needed in both the medium and long term to lessen the chances of dangerous climate impacts. The Copenhagen Accord contained a commitment by Japan to reduce its emissions by a quarter by 2020 and by the United Kingdom as an EU member by between 20–30% over the same time period. Both Japan and the UK have also announced long-term emissions reduction of 80% by 2050. Fundamental changes will be needed in the ways energy is produced to achieve large and sustained cuts of this kind. This is unlikely to succeed without the support of the general public.

Nuclear power has in recent years been advanced as a means of enabling both low-carbon electricity generation and energy security (Brook, 2012; Sailor *et al.*, 2000; Pacala and Socolow, 2004; Teräväinen *et al.*, 2011; Valentine and Sovacool, 2010). Previous studies have suggested that this reframing of nuclear power has been endorsed to some extent by members of the public – although such support appears to be contingent upon the portrayal of the particular purpose to which nuclear power is put.

Truelove and Greenberg (2013) have argued that the perception of climate change as a significant risk tends to make people more open to the idea of new nuclear facilities. Likewise, whereas only around a third of people unconditionally favour nuclear power in the UK, a small majority are favourable where it is stipulated that its use will help tackle climate change, and a similar proportion are favourable where nuclear power is presented as a means of improving energy security (Corner *et al.*, 2011). Such contingent support has been argued to reflect what has been termed ‘reluctant acceptance’ (Bickerstaff *et al.*, 2008; Pidgeon *et al.*, 2008) although these latter authors cautioned that such support would change dramatically were any major nuclear accident to occur in any part of the world.

Both Britain and Japan were considering an ambitious expansion of nuclear power as part of their strategies to reduce carbon emissions and to deliver a reliable and secure supply of electricity (Cyranoski, 2010). In Japan, the government had proposed increasing dependency on nuclear power to generate around half the country's electricity by 2030, with the construction of at least 14 new reactors (Hayashi and Hughes, 2013a). However, the accident at the Fukushima Dai-ichi nuclear power plant that followed the devastating Great East Japan earthquake and tsunami on the 11th of March 2011 has thrown nuclear power as a publicly acceptable energy technology into doubt (Cyranoski, 2012).

One consequence of the accident in Japan has been a greater impetus to move away from nuclear generation and towards increasing use of renewable energy (Vivoda, 2012; Hayashi and Hughes, 2013a). The Fukushima Dai-ichi accident has also had policy implications further afield (Hayashi and Hughes, 2013b); although across Europe policy responses have varied widely (Wittneben, 2012).

Within this changed context it is important to study public opinion about climate change and different energy technologies and systems, as they are critical to achieving environmental sustainability targets and energy security policies (Spence *et al.*, 2010). Case studies from around the world have shown that community opposition can lead to delays or even cancellation of the deployment and siting of energy technologies, while mitigating climate change through energy demand reduction requires serious commitment from the general public to change their own behaviour (Pidgeon *et al.*, 2008).

The authors of this report have been involved in a number of nationally representative surveys that have been conducted in Britain and Japan at different stages before and after the Fukushima accident (e.g. Poortinga *et al.*, 2006; Spence *et al.*, 2010; Aoyagi *et al.*, 2011; Demski *et al.*, 2013). Analyses of the datasets have provided indications of how British and Japanese publics have responded to the Fukushima accident. Major differences were found in regards to 'conditional support' for nuclear power, preferences for alternatives to nuclear

power, the perceived safety of nuclear power, and trust in risk regulation (Poortinga *et al.*, 2013).

The available evidence so far suggests that British attitudes towards nuclear have been largely unchanged in the wake of the Fukushima accident. The Japanese public in contrast appears to have completely lost trust in the safety and regulation of nuclear power after the accident. While trust in the regulation of nuclear power was already low in Japan before the accident, it collapsed to extremely low levels after the Fukushima accident (Poortinga *et al.*, 2013). The low level of support and trust in the management of nuclear power prior to the accident has most likely been caused by a series of nuclear incidents and accidents throughout the 1990s and 2000s. There are indications that trust in risk regulation has held up relatively well in Britain (Poortinga *et al.*, 2013).

The Fukushima accident appears to have had a profound impact on public confidence in future electricity generation in Japan. The Japanese public is now less likely to think that any specific energy source will contribute to energy security in the future. While the results regarding nuclear power may reflect the Japanese government's (apparent) commitment to reducing Japan's reliance on nuclear power, it is less clear as to why the Japanese public is less certain about the contribution of other energy sources to energy security in the wake of the Fukushima accident. The finding that all energy sources are now thought to be less able to contribute to a reliable and secure supply of energy suggests more generic concerns regarding energy security. In contrast, favourability ratings of the different forms of electricity generation remained stable in Britain from 2005 to 2010 (Poortinga *et al.*, 2013).

## Aim of the Research

The work by Poortinga and colleagues (2013) has shown that British and Japanese publics have responded very differently to the Fukushima accident. However, the surveys included in the analyses were not specifically designed to examine the impacts of the Fukushima accident and contained different sets of questions. Comparisons could therefore only be made on a small number of items.

This new survey builds upon the previous work conducted by the authors of the study (Poortinga *et al.*, 2006; Spence *et al.*, 2010; Aoyagi *et al.*, 2011; Demski *et al.*, 2013) and examines British attitudes to nuclear power and climate change two years after the Fukushima accident. The British survey was coordinated with a similar survey in Japan allowing a detailed cross-national comparison of the long-term impacts of the Fukushima accident on public attitudes to nuclear power and climate change. The Japanese survey was conducted in February 2013 (Aoyagi, 2013).

This report describes the main findings of the British survey conducted in March 2013. The results are contrasted with previous British surveys where possible (i.e. Poortinga *et al.*, 2006; Spence *et al.*, 2010; Demski *et al.*, 2013). Technical details of the previous surveys are provided in Box A. In the longer term, the data will be used for more detailed statistical analyses and cross-national comparisons with Japan.

## Box A: Previous British Surveys

**GB2005:** The first British survey was conducted between 1 October and 6 November 2005. A national representative quota sample of 1,491 people, aged 15 years and older, were interviewed face-to-face in their own homes by the market and opinion research company *MORI* (see Poortinga *et al.*, 2006 for more details).

**GB2010:** The second British survey was conducted between 6 January and 26 March, 2010. A nationally representative quota sample of 1,822 people, aged 15 years and older, were interviewed face-to-face in their own homes by trained *Ipsos MORI* interviewers (see Spence *et al.*, 2010 for more details).

**GB2011:** The third British survey was conducted between 26 August 2011 and 29 August 2011. *Populus Ltd* interviewed a random sample of 2,050 adults online and subsequently weighted the sample to make it representative of the British adult population. The data were collected for the 2011 British Science Festival organised by the British Science Association (BSA).

**GB2012:** The fourth British Survey was conducted as part of a UKERC-funded study on public attitudes to whole energy system transformations. Data for this online quantitative survey (n=2,441) were collected by *Ipsos MORI* between 2 and 12 August 2012 (Demski *et al.*, 2013).

## 2. The Survey

### Procedure and Respondents

A nationally representative sample of British people (England, Scotland, Wales) was interviewed face-to-face in their own homes using Computer Assisted Personal Interviews (CAPI) methodology (n=961). The 38 questions of the survey were added to Ipsos MORI's face-to-face omnibus that was conducted between 8 and 26 March 2013. The face-to-face omnibus provides a nationally and regionally representative sample of adults aged 15 years and over.

A controlled dual-stage sampling strategy was used. First, primary sampling units were selected with a probability proportional to their size. Each primary sampling unit had an average size of 250 households. The primary sampling units were stratified according to field region to ensure a good geographical spread. Second, two adjacent output areas, made up of about 125 addresses each, were randomly selected from each primary sampling unit, which then become the secondary sampling units.

Quotas were set for gender, age, working status and tenure within each secondary sampling unit to control for the likelihood of respondents being at home. Fieldwork was conducted during weekends, as well as weekdays, to meet the set quotas on working status. The final sample was weighted to ensure it reflects the national demographic profile (see Table 1). In this sample weighting is applied to correct for the oversampling of low-income owner occupiers.

**Table 1. Characteristics of the weighted survey sample (n=961)**

Characteristic		%	Characteristic		%
Gender	Male	49	Social Grade <sup>1</sup>	AB	26
	Female	51		C1	28
Age	15–24	16		C2	22
	25–34	16		DE	24
	35–44	17	Region	North East	5
	45–54	17		North West	10
	55–64	14		Yorkshire and	9
	65+	20		Humberside	
Employment	Employed full time	38		West Midlands	9
	Status	Employed part-time		11	East Midlands
Self-employed		5	East Anglia	4	
Unemployed – looking for job		6	South West	9	
Not in paid work		10	South East	19	
Retired		23	Greater London	13	
In full time education			7	Wales	5
				Scotland	9

Note: The percentages in the table may not always add up to 100% due to rounding.

<sup>1</sup> The social grades presented here reflect the social class definitions as used by the Institute of Practitioners in Advertising based on the occupation of the chief income earner. This classification is standard on all surveys carried out by Ipsos MORI. The classification is as follows: A: Higher managerial, administrative or professional (Upper Middle Class); B: Intermediate managerial, administrative or professional (Middle Class); C1: Supervisor or clerical and junior managerial, administrative or professional (Lower Middle Class); C2: Skilled manual workers (Skilled Working Class); D: Semi and unskilled manual workers (Working Class); and E: State pensioners etcetera, with no other earnings (those at the lowest levels of subsistence).

## The Questionnaire

The 38-item questionnaire consisted of three main sections, covering public attitudes towards climate change, nuclear power, and other forms of electricity generation. First, respondents were asked to give their overall opinions or impressions of different forms of electricity generation (see e.g. Poortinga *et al.*, 2006).

Second, respondents were asked in detail about their attitudes to nuclear power. This second section covered generic ‘unconditional’ attitudes to nuclear power (e.g. general support, concern, perceived risks and benefits) as well as ‘conditional’ attitudes to nuclear power in the context of climate change and energy security (see Corner *et al.*, 2011). Other related issues included the perceived safety of nuclear power, trust in risk regulation, and views on the future of nuclear power in Britain. This second section further included a new battery of questions examining the perceived risks of nuclear power in more detail.

The third section of the questionnaire covered attitudes, beliefs and concern about climate change. Questions were designed to assess levels of trend, attribution, and impact scepticism (see Rahmstorf, 2004; Poortinga *et al.*, 2011). The items were selected to provide a comprehensive overview of how the general public perceives the reality, causes and impacts of climate change.

# 3. Results

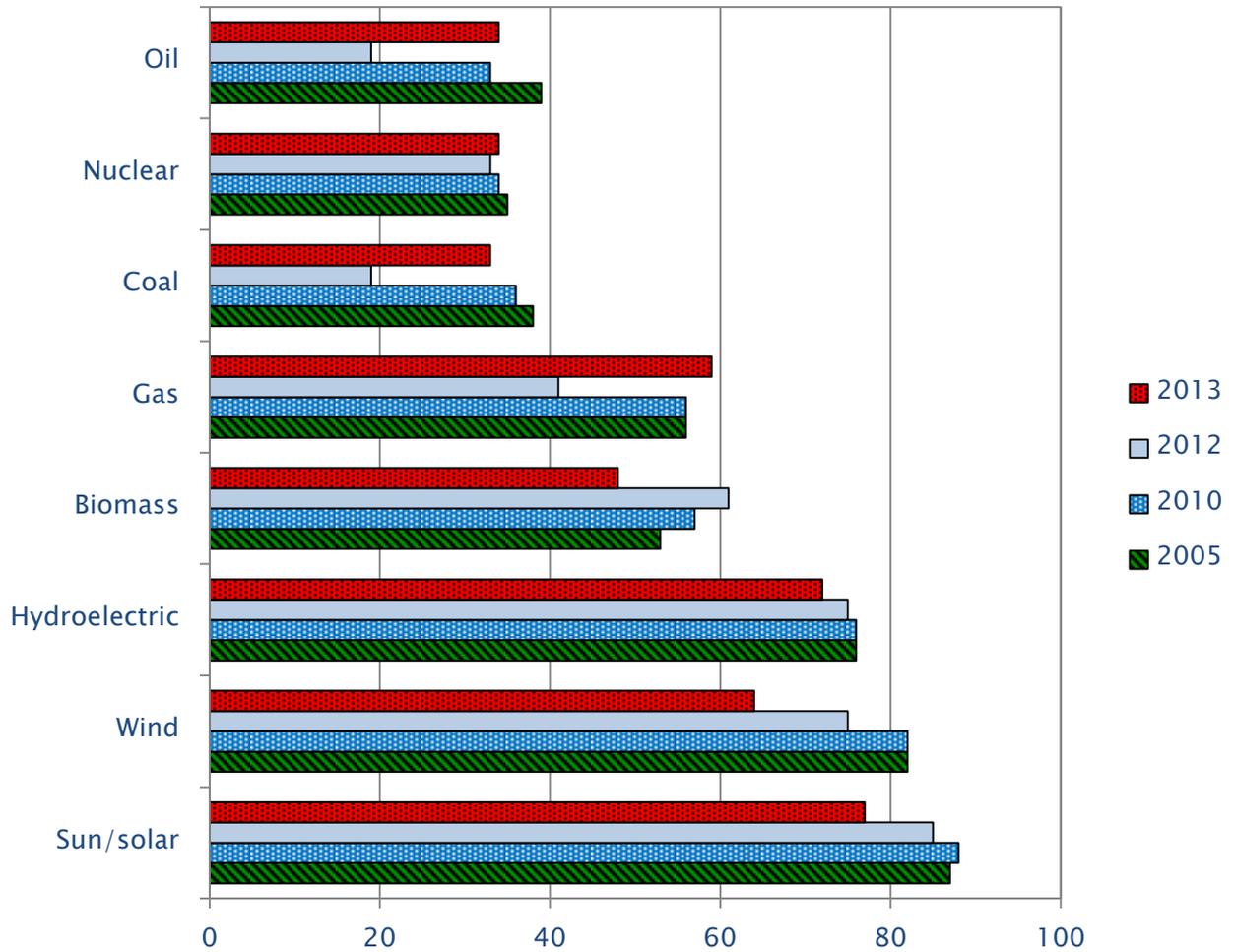
## Attitudes to Different Forms of Electricity Generation

There is consistent evidence that people express a preference for renewable forms of electricity production over other forms of electricity generation. The current survey also found that renewable options were regarded more favourably than nuclear power and fossil fuel based forms of electricity generation.

Respondents had the most positive opinions or impressions of solar power (77% mainly or very favourable), followed by hydro-electric (72%), and wind power (64%). Biomass was by far the least favoured renewable option (48%) although this might in part reflect the large proportion of 'neither favourable nor unfavourable' responses obtained (25%) compared to other renewable sources. Across the options for fossil fuel based electricity generation, natural gas was the most favoured (59% mainly or very favourable). Across all forms of electricity generation, nuclear (34%), coal (33%) and oil (34%) were the least favoured.

Figure 1 shows that, while renewables remained the most favoured form of electricity production, support for them has dropped substantially over the years. Favourability ratings for wind power in particular have shown a sharp decline, from 82% in 2005 to 64% in 2013. Favourability ratings of solar power have dropped from 87% in 2005 to 77% in 2013. Gas is the only form of electricity production that is now perceived more favourably (59%) than in 2005 (56%).

Figure 1. Percentage of respondents having mainly or very favourable opinions or impressions of different energy sources for producing electricity



# Attitudes to Nuclear Power

## Generic Unconditional Attitudes to Nuclear Power

The survey included a range of items to assess how the general public thinks about nuclear power. About the same number of people generally supported (32%) or opposed (29%) nuclear power in 2013, where no additional context was given for the rationale for its use.

Overall support for nuclear power has increased by about six percentage points since 2005, while opposition has decreased by about eight percentage points since 2005 (see Table 2). The number of people reporting being ambivalent about nuclear power (i.e. being unsure whether to express support or opposition) dropped from 32% in 2005 to 27% in 2013. However, the number of respondents choosing the ‘other’, ‘none of these’ and ‘don’t know’ options increased substantially from 1% to 9% over the same period.

**Table 2. Overall support and opposition to nuclear power (in %)**

	2005	2013
Overall, I support nuclear power	26	32
Overall, I oppose nuclear power	37	29
I am not sure whether I support or oppose nuclear power	32	27
I don't care what happens with nuclear power	3	3
Other/None of these/ Don't know	1	9

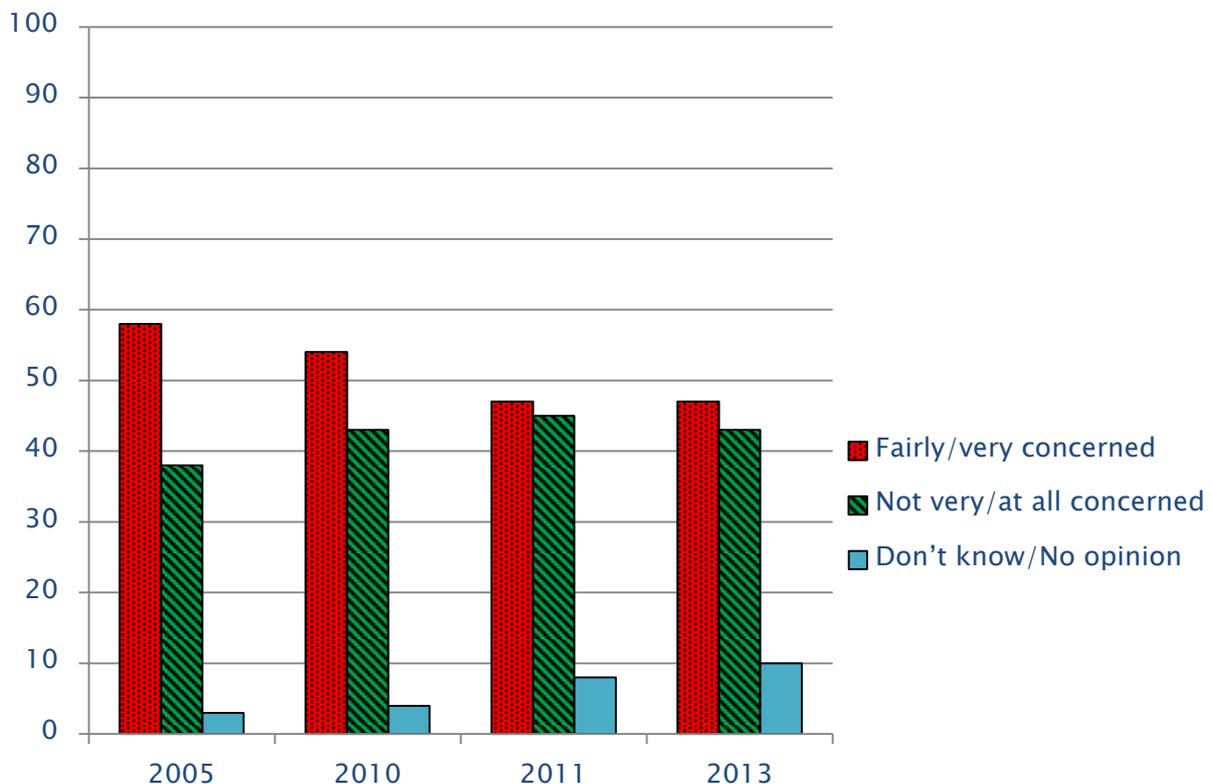
Note: The percentages in the table may not always add up to 100% due to rounding.

In line with these findings, Figure 2 shows that concern about nuclear power decreased between 2005 and 2013. The proportion of people reporting being fairly or very concerned dropped from 58% in 2005 and 54% in 2010 to 47% in 2011 and 2013. The proportion of respondents being ‘not very’ or ‘not at all’ concerned about nuclear power remained fairly stable over the same time period (38% in 2005, 43% in 2010, 45% in 2011, and 43% in 2013). The proportion reporting that they do not know or have no opinion as to whether they are

concerned about nuclear power or not increased from 3% in 2005 to 10% in 2013.

As well as these data pointing to increased acceptability of nuclear power over the 2005–2013 period, the proportion of those perceiving there to be risks to Britain from nuclear power dropped from 73% in 2005 to 61% in 2010 and further to 55% in 2013. The perceived benefits of nuclear power remained relatively stable over the same period (49% in 2005, 60% in 2010, and 58% in 2013; see Appendix Q7).

**Figure 2. Concern about nuclear power (in %)**

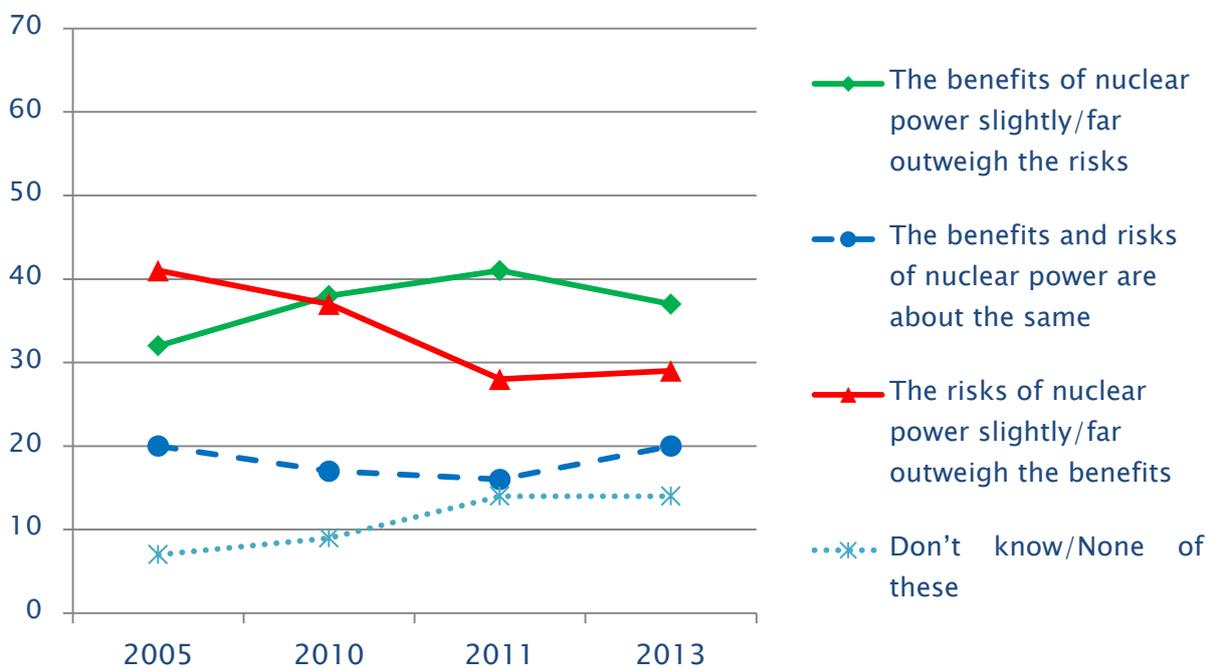


The proportion of respondents who agree that the risks of nuclear power either slightly or far outweigh the benefits has likewise fallen (from 41% in 2005 to 29% in 2013). The proportion of people who agree that the benefits of nuclear power slightly or far outweigh the risk of nuclear power increased slightly (32% in 2005, 38% in 2010 and 37% in 2013), whilst the proportion being of the opinion that

the risks and benefits of nuclear power are about the same remained stable (20% in 2005 and 2013).

However, those choosing the ‘don’t know’ or ‘none of these’ options have increased by seven percentage points since 2005 (Figure 3). It is notable that in 2005 a greater proportion of people were of the view that the risks of nuclear power outweighed its benefits rather than the other way round. This situation was effectively reversed by 2013 (see figure 3).

**Figure 3. Perceived risks and benefits of nuclear power (in %)**



Regarding the future of nuclear power in Britain, Table 3 shows that public views were evenly balanced. While 15% maintained that the number of nuclear power stations should be increased, 13% were of the opinion that all existing nuclear power stations should be shut down immediately. Thirty percent (30%) of the sample were of the opinion that “We should continue using the existing nuclear power stations and replace them with new ones when they reach the end of their life”; whereas 27% agreed that “We should continue using the existing nuclear power stations but not replace them with new ones when they reach the end of their life”.

**Table 3. Views on the future of nuclear power in Britain (in %)**

	2005	2010	2011	2012	2013
We should increase the number of nuclear power stations	9	17	23	21	15
We should continue using the existing nuclear power stations and <i>replace</i> them with new ones when they reach the end of their life	34	29	31	26	30
We should continue using the existing nuclear power stations but <i>not replace</i> them with new ones when they reach the end of their life	34	33	21	32	27
We should shut down all existing nuclear power stations now and not replace them with new ones	15	13	11	9	13
Don't know/none of these	7	7	15	12	16

Note: The percentages in the table may not always add up to 100% due to rounding. The aggregate figure quoted in the text for those wanting to replace nuclear power is derived from non-rounded data.

The aggregate proportion wanting to phase out nuclear power (immediately or gradually) has decreased from 50% in 2005 to 40% in 2013. The aggregate proportion wanting to replace nuclear (at current levels or with expansion) has however changed little since 2005 (43% in 2005 and 44% in 2013). The proportion of the sample choosing the 'don't know' or 'none of these' options increased by nine percentage points in the same period, perhaps indicating greater uncertainty or ambivalence around this issue among the public.

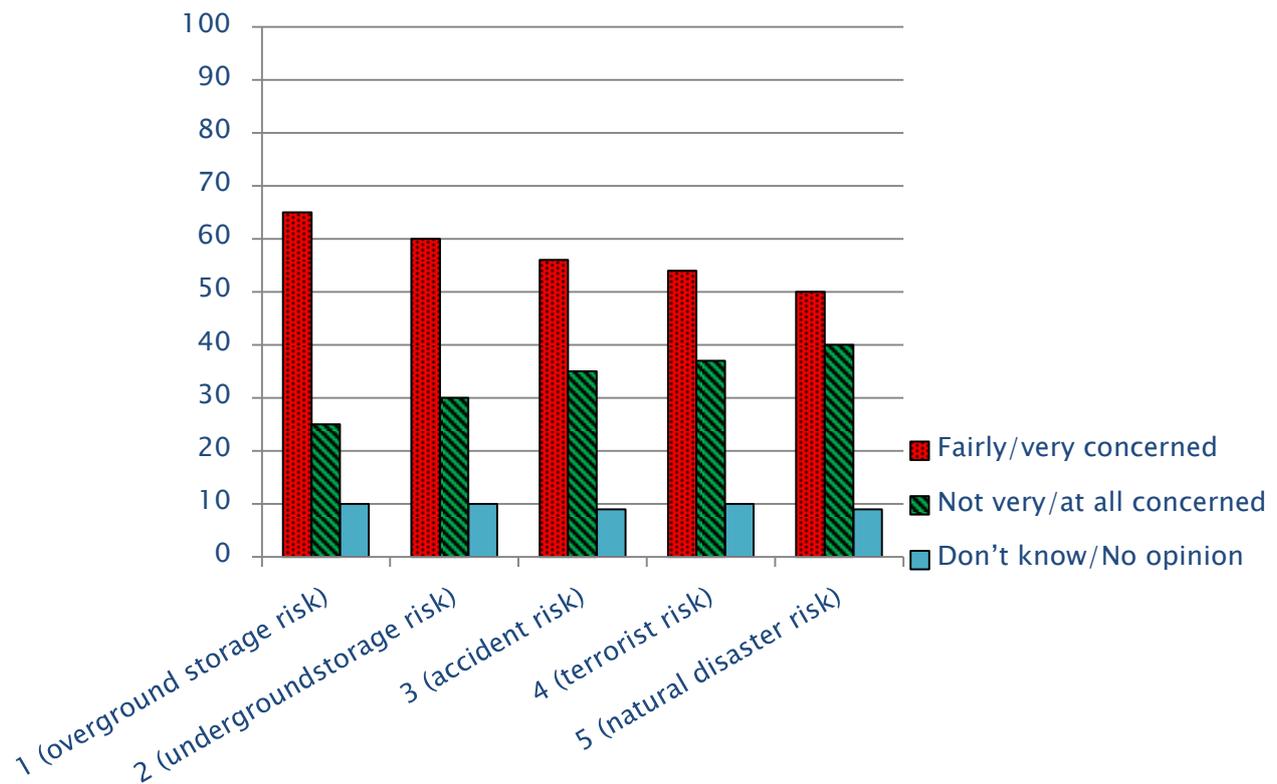
A new survey item included in the 2013 study suggests that there is overall more support for the building of new nuclear power stations than there is opposition. Forty-two (42%) percent of respondents tended to support or strongly support the building of new nuclear power stations in Britain to replace those being phased out over the next few years, while 32% tended to oppose or strongly opposed this. Ten percent (10%) did not know or had no opinion as to whether they supported or opposed the building of new nuclear power stations in Britain (see Appendix Q3).

The perceived safety of nuclear power has remained fairly stable over the years. A similar proportion in 2013 (55%) as in 2005 (53%) agreed that they would be prepared to support new power stations being built on the condition that these were safer. The proportion of the population that thinks we should stop using nuclear power stations because we do not know how to store radioactive waste safely dropped slightly from 44% in 2005 to 39% in 2013 (see Appendix Q7).

Levels of trust in the regulation of nuclear power has remained relatively stable over the past eight years. Confidence that the British Government adequately regulates nuclear power dropped back to 33% in 2013, after an increase from 33% in 2005 to 39% in 2010. Similarly, agreement that current rules and regulations are sufficient to control nuclear remained at comparable levels between 2005 (32%) and 2013 (34%; see Appendix Q7).

The 2013 survey included a new battery of questions that was designed to examine the perceived risks of nuclear power in more detail. Figure 5 shows that the British public is the most concerned about the risks associated with the overground (65%) and underground (60%) storage of nuclear waste; this is followed by concerns about the risks of an accident at a nuclear power station (56%) and the risks of terrorists targeting a nuclear installation in Britain (54%); the lowest level of concern was found for the risks of a natural disaster triggering a nuclear accident (50%). About 10% of the sample had no opinion or did not know whether they were concerned or not about the risks associated with nuclear power.

Figure 5. Concern about risks associated with nuclear power (in %)<sup>2</sup>



### Conditional Attitudes to Nuclear Power

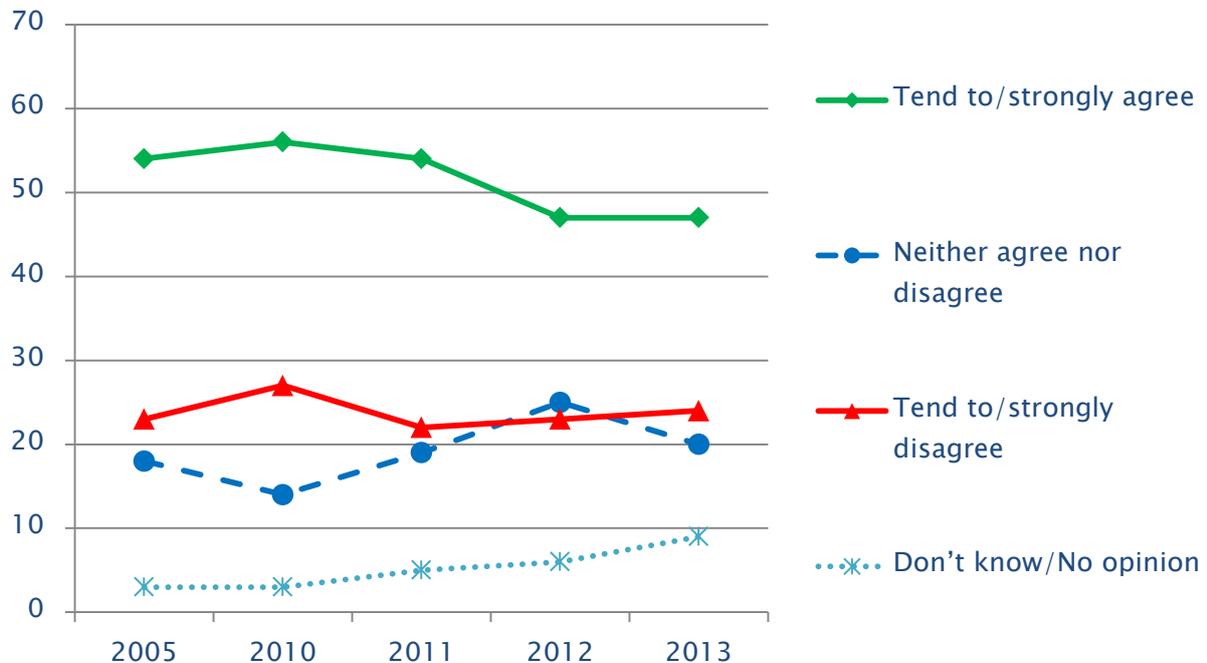
This study suggests that around half of the British population is willing to accept the building of new nuclear power stations *if* it would help to tackle climate change (47%) or *if* it would help to improve energy security (52%). The proportions who reported being unwilling to accept these two conditional uses of nuclear power were 24% and 22% respectively.

Figure 4 shows that support for nuclear power as a solution to climate change is somewhat lower in 2012 (47%) and 2013 (47%) than in 2005 (54%), 2010 (56%) and 2011 (54%). The proportion of the sample that are not willing to accept the building of new nuclear power stations to help tackle climate change has remained relatively stable over the years. The proportion of the sample choosing

<sup>2</sup> (1) The risks associated with the storage of nuclear waste overground at a nuclear power station; (2) The risks associated with the storage of nuclear waste at an underground storage site; (3) The risks of an accident at a nuclear power station; (4) The risks of terrorists targeting a nuclear installation in Britain; (5) The risks of a natural disaster triggering a nuclear accident.

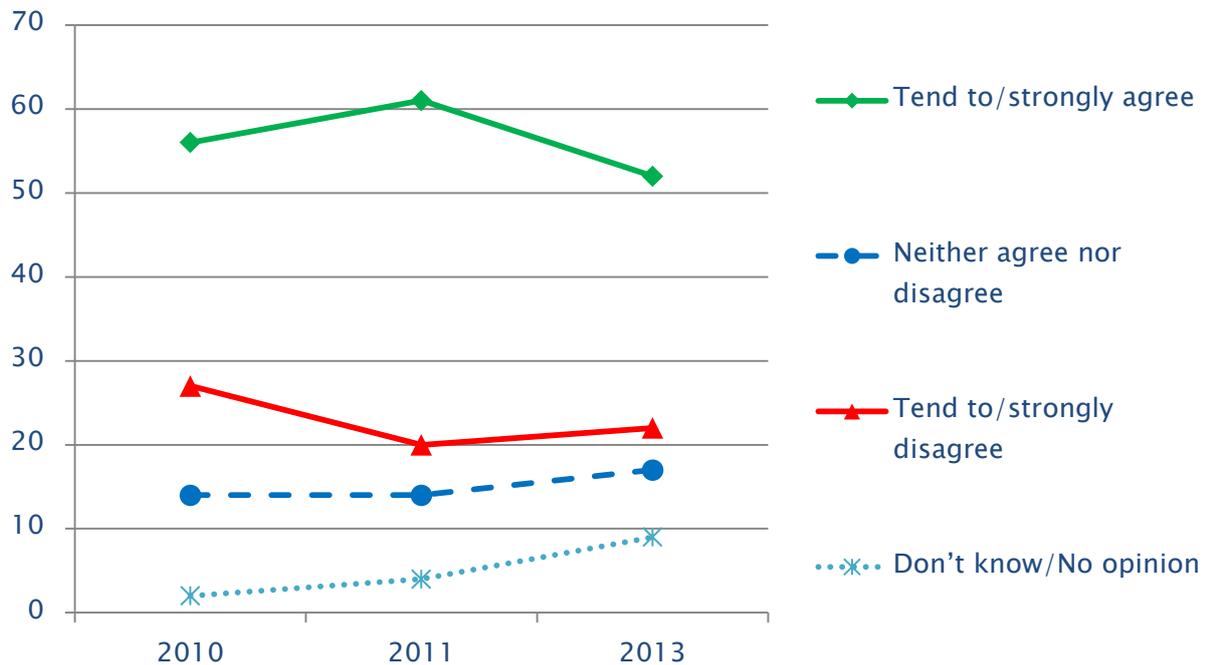
the 'don't know' or 'none of these' options has increased by six percentage points since 2005.

**Figure 4. Willingness to accept the building of new nuclear power stations if it would help to tackle climate change (in %).**



Support for nuclear power as a way to increase energy security decreased slightly from 56% in 2010 and 61% in 2011 to 52% in 2013 (see Figure 5). The proportion of the sample that is not willing to accept the building of new nuclear power stations to help improve energy security also dropped slightly from 27% in 2010 to 20% in 2011 and 22% in 2013. The proportion choosing the 'don't know' or 'none of these' options increased from 2% in 2010 to 9% in 2013.

**Figure 5. Willingness to accept the building of new nuclear power stations if it would help to improve energy security (in %)**



Agreement with the statement that “we shouldn’t think of nuclear power as a solution for climate change before exploring all other energy options” has decreased over the years from 74% in 2005 to 70% in 2010, and 53% in 2013. Similarly, agreement that promoting renewable energy sources is a better way of tackling climate change than nuclear power was lower in 2012 and 2013 (61%) than in 2005 and 2010 (78% and 71% respectively). Agreement that reducing energy use through lifestyle changes and energy efficiency is a better way of tackling climate change than nuclear power decreased from 76% in 2005 to 63% in 2013 (see Appendix Q7).

Demski *et al.* (2013) have separately shown that the perceived need for nuclear power has remained relatively stable over the years. Agreement with the statement “We need nuclear power because renewable energy sources alone are not able to meet our electricity needs” was 48% in 2005, 55% in 2010, and 54% in 2012. Agreement that Britain needs a mix of energy sources to ensure a reliable supply of electricity, including nuclear power and renewable sources dropped

back to 66% in 2012, after an increase from 63% to 74% between 2005 and 2010 (see Appendix Q7).

## Public Perceptions of Climate Change

This section of the study builds upon research on public attitudes, beliefs and concerns about climate change conducted by Poortinga *et al.* (2006), Spence *et al.* (2010) and Demski *et al.* (2013). Where possible the results are contrasted with the findings of these previous British surveys. The survey contained a number of key indicators to assess levels of trend, attribution, and impact scepticism (see Rahmstorf, 2004; Poortinga *et al.*, 2011)<sup>3</sup>.

**Table 4. As far as you know, do you personally think that the world’s climate is changing? (in %).**

	2005	2010	2012	2013
Yes	91	78	79	72
No	4	15	11	19
Don’t Know	5	6	11	9

Note: The percentages in the table may not always add up to 100% due to rounding.

Table 4 suggests that the downward trend in public belief in the reality of climate change is continuing. Although a clear majority (72%) still think that the world’s climate is changing, this has to be compared to 91% in 2005 and 78% in 2010. Trend scepticism has increased from 4% in 2005 to 15% in 2010 and 19% in 2013. The proportion of the sample reporting that they do not know whether or not the world’s climate is changing was higher in 2012 and 2013 (11% and 9% respectively) than in 2005 and 2010 (5% and 6% respectively).

Table 5 shows that the perceived causes of climate change have hardly changed since 2010. Just as in 2010 (47%) and 2012 (48%), most people commonly

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<sup>3</sup> ‘Trend scepticism’ refers to a lack of belief that the world’s climate is changing. ‘Attribution scepticism’ refers to a lack of belief that climate change has an anthropogenic component. ‘Impact scepticism’ refers to a lack of belief that the consequences of climate change constitute a serious problem.

consider that climate change is caused by a combination of human activity and natural processes (46%).

A similar proportion in 2010 (31%), 2012 (32%) and 2013 (28%) thought that climate change is mainly or entirely caused by human activity, and a similar proportion in 2010 (18%), 2012 (16%) and 2013 (17%) thought that climate change is mainly or entirely caused by natural processes. The proportion choosing the ‘don’t know’ and ‘no opinion’ options increased from 3% in 2010 to 7% in 2013.

**Table 5. Thinking about the causes of climate change, which, if any, of the following best describes your opinion?**

	2010	2012	2013
Climate change is entirely caused by natural processes	6	4	5
Climate change is mainly caused by natural processes	12	12	12
Climate change is partly caused by natural processes and partly caused by human activity	47	48	46
Climate change is mainly caused by human activity	24	28	22
Climate change is entirely caused by human activity	7	4	6
I think there is no such thing as climate change	2	2	2
Don't know/No opinion	3	2	7

Note: The percentages in the table may not always add up to 100% due to rounding.

Table 6 shows that the British public’s views on the seriousness of climate change have remained relatively stable over the 2010 to 2013 period, although overall levels of impact scepticism have decreased. Agreement with the statement “The seriousness of climate change is exaggerated” decreased from 40% in 2010 to 30% in 2012 and 34% in 2013. Disagreement with the statement moved from 42% in 2010 to 47% in 2012, and back to 41% in 2013. The

proportion choosing the ‘don’t know’ and ‘no opinion’ options increased from 3% in 2010 to 7% in 2013.

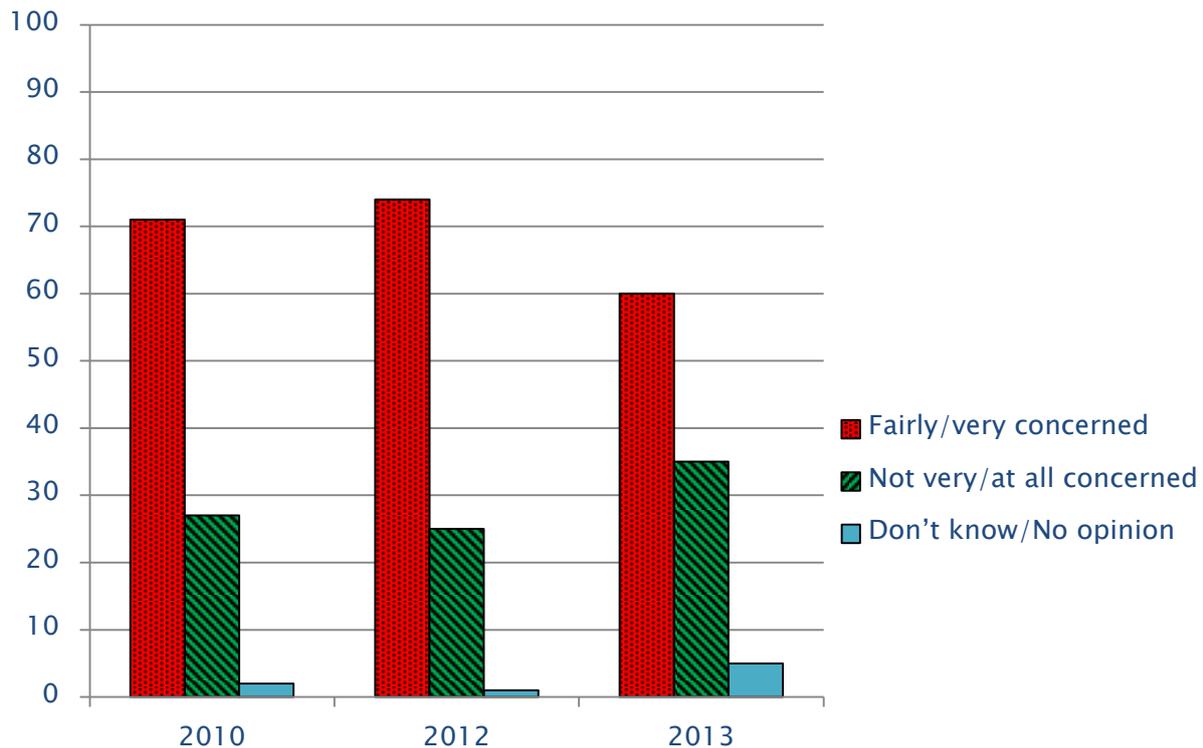
**Table 6. Agreement that the seriousness of climate change is exaggerated (in %).**

	2010	2012	2013
Strongly agree	12	9	10
Tend to agree	28	21	24
Neither agree nor disagree	15	21	18
Tend to disagree	28	28	27
Strongly disagree	14	18	14
Don't know/No opinion	3	2	7

Note: The percentages in the table may not always add up to 100% due to rounding.

Figure 6 shows that concern about climate change has decreased from 71% in 2010 and 74% in 2012 to 60% in 2013. The proportion of the sample indicating that they are not very or at all concerned about climate change increased from 27% in 2010 and 25% in 2012 to 35% in 2013.

Figure 6. Concern about climate change (in %)



The perceived impacts of climate change were comparable in 2010 and 2013. Fewer people agreed with the statement “My local area is likely to be affected by climate change” in 2013 (47%) than in 2010 (53%). At the same time, a slightly smaller proportion disagreed with the statement (24% in 2013 versus 27% in 2010). More people neither agreed nor disagreed (21% in 2013 versus 16% in 2010) or chose the ‘don’t know’ and ‘no opinion’ options (8% in 2013 versus 4% in 2010; see Appendix Q12).

A similar pattern was found for the statement “Climate change is likely to have a big impact on people like me”. Slightly smaller proportions agreed (43%) and disagreed (28%) with this statement in 2013 as compared to 2010 (45% and 32% respectively). More people neither agreed nor disagreed with the statement (23% or chose the ‘don’t know’ and ‘no opinion’ options (7%) in 2013 than in 2010 (20% and 4% respectively; see Appendix Q12).

Perceived personal responsibility to do something about climate change remained stable between 2010 and 2013. Similar proportions of the sample agreed with the statement “It is my responsibility to do something about climate change” in 2013 (67%) and in 2010 (71%). Only 12% disagreed with the statement in 2013 (15% in 2010). The proportion of the sample that neither agreed nor disagreed with the statement (16% in 2013 versus 14% in 2010) or chose the ‘don’t know’ and ‘no opinion’ options (5% in 2013 versus 1% in 2010) increased slightly (see Appendix Q12).

A substantial proportion of the sample (68%) agreed that extreme weather events have become more frequent in Britain in the past ten years. Only 13% disagreed with the statement, or did not know or had no opinion (6%). Of the people who agreed that extreme weather events have become more frequent in Britain in the past year, 74% attributed this increased frequency to climate change (see Appendix Q13).

## 4. Main Findings and Conclusions

This report describes the findings of a nationally representative British survey (n=961) conducted in March 2013. The main aim of the survey was to assess British attitudes to nuclear power and climate change two years after the Fukushima accident. The results are compared to a number of previous British surveys that were conducted at various stages before and after the Fukushima accident. This provides an overview of how public attitudes to nuclear and climate change have developed over the past decade and in particular after the Fukushima accident. In the longer term the data will be used for more detailed cross-national comparisons with Japan.

The study has found that public attitudes towards nuclear power in Britain may not have followed a trajectory that could have been expected after a major nuclear accident. In the context of high levels of public support for nuclear power obtained in 2005, with which the present study's findings are contrasted throughout this report, Pidgeon *et al.* (2008) argued that this could alter dramatically were there to be any further major nuclear accident in any part of the world over the next five to ten years. It would appear that this has not materialised, at least from the perspective of the British public. We find instead that there have been no marked changes in public concern about nuclear power and the perceived risks associated since 2011. This relative durability in attitudes follows an increase in the level of general support for nuclear power since 2005, meaning that in 2013 similar proportions of people now support and oppose its use.

The absence of a falling away in acceptance of nuclear power in Britain appears to be in stark contrast to that experienced in other parts of the world. Perhaps not surprisingly, in Japan there was a collapse in public trust in the safety and regulation of nuclear power following the Fukushima accident (Aoyagi, 2011; Aoyagi, 2013; Poortinga *et al.*, 2013) together with a parallel shift in policy away from its use (Cyranoski, 2012).

In Germany, too, these events lead directly to an increase in already high levels of public opposition to nuclear power (BBC, 2011; Srinivasan and Gopi Rethinaraj, 2013) and to the German government's decision to completely phase out nuclear generation of electricity over a ten-year period (Butler *et al.*, 2011).

The differences in public and policy responses between the UK and Germany may be connected in part to a greater intensity of reporting of the Fukushima accident in Germany (Witneben, 2012) and also to historical differences in the cultural acceptability of nuclear power across different European nations (Wiliarty, 2013). Butler *et al.* (2011) argue that the events at Fukushima tended to be portrayed in the UK as part of 'learning from experience' whereby new nuclear power development has been seen as compatible with ongoing improvement of safety measures and procedures. The Fukushima accident has therefore in some ways acted as an impetus for current policy trends in the UK in favour of nuclear generation, rather than as an impediment.

Notwithstanding these cross-national differences, the present study finds that there still is a substantial level of public concern in Britain around the use of nuclear power. In particular, survey respondents expressed concern about the risks of storage of radioactive waste, the risks of an accident, and the targeting of nuclear facilities by terrorists. That the present study finds that, across different risks, the level of concern is lowest overall with respect to that of a natural disaster, suggests that the British public do not see the perceived natural causes of the Fukushima accident as being likely to occur in Britain (cf. Poortinga and Aoyagi, 2013). This may further explain the relatively resilient British attitudes to nuclear power following the Fukushima accident.

Regarding the future of nuclear power, the present study finds that public opinion in Britain is evenly balanced. As many people are of the view that the number of nuclear power stations should be increased as are of the view that all should be shut down, with the majority of people holding views somewhere in between – i.e. that existing nuclear capacity be utilised but then shut down or replaced thereafter.

Where the building of new nuclear power stations is presented as conditional upon it helping to address climate change or to bolster energy security, a larger proportion of people are willing to see this happen than under a generic unconditional framing as described above. This finding is in line with other literature which has suggested that some people may be more supportive of nuclear power where this is construed as a means of addressing climate change and/or energy security (Corner *et al.*, 2011; Truelove and Greenberg, 2013). That said, the proportion of people who express support for the use of nuclear power conditional upon it helping to address climate change has declined somewhat over recent years, in particular in the years after the Fukushima accident. However, this may be associated as much with an increase in climate scepticism as with changing attitudes to nuclear power, as we discuss further below.

Whilst in 2013 a higher proportion of people remain of the view that renewable energy is a better way of tackling climate change than nuclear power (by a ratio of around 4:1), there has been a substantial shift over recent years in favour of nuclear power (in 2005 the ratio was around 10:1 in favour of renewable energy). Likewise, there has been a shift in the relative preference for lifestyle change and energy efficiency towards nuclear power since 2005, although the former are still favoured overall. The diminishing view that renewable energy is a better way of tackling climate change than nuclear power most likely reflects the weakening popularity of renewable energy; rather than an increased popularity of nuclear power. This is evidenced by a marked drop in people having favourable views of wind and solar power.

The present study finds that just under three-quarters of the British public accept that the world's climate is changing. Nevertheless, the proportion of people doubting the reality of climate change has risen to one of the highest levels obtained since 2005. Similarly, overall levels of concern have dropped away compared to previous years, although a majority of people still express some concern about climate change. The reasons for the observed increase in 'trend scepticism' and decrease in concern are probably multiple: studies have suggested that sustained public doubts about climate change may be related to

such factors as the global economic downturn (Scruggs and Benegal, 2012), the continued influence of sceptic voices in the media (Brulle *et al.*, 2012), increasing 'climate fatigue' (Nordhaus and Shellenberger, 2009), and more general fluctuations in public attention towards climate change (Ratter *et al.*, 2012).

Whilst doubts about the basic reality of climate change have increased, the present study nevertheless finds that the level of acceptance of an anthropogenic component to climate change has remained stable over the past three years. Likewise, the extent to which people view the seriousness of climate change to be exaggerated has remained largely unchanged since 2010, as has perceived personal responsibility to act on climate change. It would seem that changes in patterns of belief about climate change have not been uniform. These patterns warrant further attention in future research, not least because of the demonstrated importance of climate change perceptions for attitudes towards nuclear power.

In summary, the study found that attitudes to nuclear power have been surprisingly resilient in the wake of the Fukushima accident. Public opinion in Britain appears evenly balanced, with as many opposing as supporting nuclear power.

Despite the apparent durability of attitudes, substantial levels of concern remain over the risks associated with nuclear power, most notably those associated with the overground and underground storage of nuclear waste and an accident at a nuclear power station. There has been an overall drop in support for nuclear power as a way of addressing climate change and energy security issues, although that may be as much due to an increase in climate scepticism as to changing attitudes to nuclear power.

At the same time, support for renewable energy has dropped substantially, although it remained the most favoured form of electricity production by far. This is further reflected in a relative drop in support for renewables as a better way of tackling climate change than nuclear power. The study further found a

continuing upward trend in doubt regarding the reality of climate change, even if the level of acceptance of an anthropogenic component and the seriousness of the impacts of climate change has largely remained unchanged.

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# Appendix 1. UK Questionnaire Items

## Attitudes to Different Forms of Electricity Generation

Q1. How favourable or unfavourable are your overall opinions or impressions of the following energy sources for producing electricity currently? Just read out the number that applies.

		(1)	(2)	(3)	(4)	(5)	NHOI	NO/DK
<b>Biomass</b>	2013	16	32	25	8	4	8	8
	2012	22	40	25	5	2	6	–
	2010	24	34	19	9	5	7	3
	2005	18	36	17	6	2	10	9
<b>Coal</b>	2013	5	28	27	22	12	*	6
	2012	3	16	35	32	14	*	–
	2010	9	27	19	30	13	*	2
	2005	7	31	24	25	8	*	3
<b>Gas</b>	2013	10	49	22	11	4	*	4
	2012	7	33	35	19	4	*	–
	2010	14	42	20	18	4	*	2
	2005	10	45	21	14	4	*	3
<b>Hydroelectric power</b>	2013	34	38	15	3	1	3	7
	2012	39	36	18	2	1	4	–
	2010	39	37	13	3	1	5	3
	2005	36	40	11	2	1	3	7
<b>Nuclear power</b>	2013	10	24	23	16	19	1	8
	2012	11	23	27	21	18	*	–
	2010	10	24	20	21	20	1	3
	2005	9	27	22	20	17	1	6
<b>Oil</b>	2013	6	28	26	22	11	1	7
	2012	3	16	38	31	12	*	–
	2010	5	27	26	28	10	1	2
	2005	6	33	22	25	8	*	4

Note: (1) Very favourable, (2) Mainly favourable, (3) Neither favourable nor unfavourable, (4) Mainly unfavourable, (5) Very unfavourable, NHOI= Never heard of it, NO=No opinion, DK=Don't know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q1. How favourable or unfavourable are your overall opinions or impressions of the following energy sources for producing electricity currently? Just read out the number that applies (cont'd)**

<b>Sun/Solar power</b>	2013	36	40	13	3	2	1	5
	2012	51	34	11	3	1	*	–
	2010	56	32	6	3	1	*	1
	2005	55	32	6	2	1	*	2
<b>Wind power</b>	2013	26	38	15	7	7	*	6
	2012	38	37	13	7	5	*	–
	2010	49	33	9	5	3	1	1
	2005	50	31	8	5	2	*	2

Note: (1) Very favourable, (2) Mainly favourable, (3) Neither favourable nor unfavourable, (4) Mainly unfavourable, (5) Very unfavourable, NHOI= Never heard of it, NO=No opinion, DK=Don't know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

## Attitudes to Nuclear Power

**Q2. Which, if any, of the following statements most closely describes your own opinion about nuclear power in Britain today?**

	2005	2010	2011	2012	2013
We should increase the number of power stations	9	17	23	21	15
We should continue using the existing NP stations and replace them with new ones when they reach the end of their life	34	29	31	26	30
We should continue using the existing NP stations but <u>not</u> replace them with new ones when they reach the end of their life	34	33	21	32	27
We should shut down all existing NP stations now and not replace them with new ones	15	13	11	9	13
Don't know/none of these	7	7	15	12	16

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q3. To what extent do you support or oppose the building of new nuclear power stations in Britain to replace those being phased out over the next few years? This would ensure that the previous proportion of nuclear energy is retained (18%).**

	2013
Strongly support	16
Tend to support	26
Neither support nor oppose	16
Tend to oppose	18
Strongly oppose	15
Don't know/No opinion	10

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q4. Which, if any, of the following statements most closely describes your own opinion about nuclear power in Britain today? Just read out the number that applies.**

	2005	2013
Overall, I support nuclear power	26	32
Overall, I oppose nuclear power	37	29
I am not sure whether I support or oppose nuclear power	32	27
I don't care what happens with nuclear power	3	3
Other/None of these	*	4
Don't know	1	5

Note: The percentages in the table may not always add up to 100% due to missing values and rounding; \* denotes a value of less than 1% but greater than zero.

**Q5. How concerned, if at all, are you about nuclear power?**

	2005	2010	2011	2013
Very concerned	28	16	12	13
Fairly concerned	31	38	35	34
Not very concerned	27	30	34	31
Not at all concerned	11	12	11	12
No opinion/ Don't know	3	4	8	10

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q6. From what you know or have heard about using nuclear power for generating electricity in Britain, on balance, which of these statements, if any, most closely reflects your own opinion?**

	2005	2010	2011	2013
The benefits of nuclear power far outweigh the risks	13	16	20	18
The benefits of nuclear power slightly outweigh the risks	19	22	21	19
The benefits and risks of nuclear power are about the same	20	17	16	20
The risks of nuclear power slightly outweigh the benefits	16	19	12	16
The risks of nuclear power far outweigh the benefits	25	17	16	13
None of these	1	1	2	4
Don't know	6	7	12	10

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q7. To what extent do you agree or disagree about the following statements on nuclear power?**

		SA	TA	NN	TD	SD	NO/DK
<b>Conditional Support</b>							
I am willing to accept the building of new nuclear power stations if it would help to tackle climate change	2013	15	32	20	14	10	9
	2012	12	34	25	15	8	6
	2011	15	39	19	11	11	5
	2010	17	39	14	16	11	3
	2005	11	43	18	15	8	3
I am willing to accept the building of new nuclear power stations if it would help to improve energy security (i.e. a reliable supply of affordable energy)	2013	20	32	17	13	9	9
	2012	-	-	-	-	-	--
	2011	22	39	14	10	10	4
	2010	20	36	14	16	11	2
	2005	-	-	-	-	-	-

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree; NO=No Opinion; DK= Don't Know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q7. To what extent do you agree or disagree about the following statements on nuclear power? (cont'd)**

<b>Alternatives to Nuclear Power</b>							
We shouldn't think of nuclear power as a solution for climate change before exploring all other energy options	2013	25	28	20	13	5	8
	2012	-	-	-	-	-	-
	2011						
	2010	30	39	12	11	4	3
	2005	29	45	10	7	3	3
Promoting renewable energy sources, such as solar and wind power, is a better way of tackling climate change than nuclear power	2013	31	31	17	11	3	8
	2012	29	31	20	11	4	5
	2011	-	-	-	-	-	-
	2010	37	33	14	9	4	2
	2005	40	38	10	6	2	2
Reducing energy use through lifestyle changes and energy efficiency is a better way of tackling climate change than nuclear power	2013	28	35	18	10	2	8
	2012	-	-	-	-	-	-
	2011	-	-	-	-	-	-
	2010	-	-	-	-	-	-
	2005	31	44	13	6	2	2
<b>Safety of Nuclear Power</b>							
If we had safer nuclear power stations, I'd be prepared to support new ones being built	2013	24	31	17	12	8	8
	2012	-	-	-	-	-	-
	2011	-	-	-	-	-	-
	2010	-	-	-	-	-	-
	2005	15	38	19	15	8	3
We should stop using nuclear power stations because we do not know how to store radioactive waste safely	2013	17	22	21	21	10	10
	2012	-	-	-	-	-	-
	2011	-	-	-	-	-	-
	2010	-	-	-	-	-	-
	2005	19	25	23	21	8	3

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree; NO=No Opinion; DK= Don't Know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q7. To what extent do you agree or disagree about the following statements on nuclear power? (Cont'd).**

		SA	TA	NN	TD	SD	NO/D K
<b>Perceived Risks and Benefits</b>							
There are risk in Britain from nuclear power	2013	14	40	18	14	4	9
	2012	-	-	-	-	-	-
	2011	-	-	-	-	-	-
	2010	17	44	16	15	3	5
	2005	24	48	14	8	1	3
There are benefits to people in Britain from nuclear power	2013	16	41	17	10	6	10
	2012	-	-	-	-	-	-
	2011	-	-	-	-	-	-
	2010	16	44	16	12	6	6
	2005	9	40	25	12	7	6
<b>Need for Nuclear Power</b>							
We need nuclear power because renewable energy sources alone are not able to meet our electricity needs	2013	-	-	-	-	-	-
	2012	17	36	22	10	5	9
	2011	-	-	-	-	-	-
	2010	17	38	18	16	7	5
	2005	10	38	22	17	6	5
Britain needs a mix of energy sources to ensure a reliable supply of electricity, including nuclear power and renewable energy sources	2013	-	-	-	-	-	-
	2012	24	42	18	8	4	5
	2011	-	-	-	-	-	-
	2010	28	45	11	9	4	2
	2005	17	46	17	11	3	3
<b>Trust</b>							
I feel confident that the British Government adequately regulates nuclear power	2013	8	25	25	19	11	13
	2012	-	-	-	-	-	-
	2011	-	-	-	-	-	-
	2010	7	33	22	20	12	8
	2005	4	28	26	23	10	8

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree; NO=No Opinion; DK= Don't Know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q7. To what extent do you agree or disagree about the following statements on nuclear power? (Cont'd).**

Trust							
I feel that current rules and regulations are sufficient to control nuclear power	2013	8	26	26	15	9	16
	2012	-	-	-	-	-	-
	2011	-	-	-	-	-	-
	2010	-	-	-	-	-	-
	2005	4	28	30	18	7	12

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree; NO=No Opinion; DK= Don't Know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q8. Thinking about the risks of nuclear power IN THIS COUNTRY. How concerned, if at all, are you about...**

	(1)	(2)	(3)	(4)	NO/DK
The risks of an accident at a nuclear power station	21	34	29	6	9
The risks associated with the storage of nuclear waste at an underground storage site	24	36	24	6	10
The risk associated with the storage of nuclear waste overground at a nuclear power station	29	35	19	6	10
The risks of a natural disaster triggering a nuclear accident	21	29	28	12	9
The risks of terrorists targeting a nuclear installation in Britain	24	30	28	8	10

Note: (1) Very concerned; (2) Fairly concerned; (3) Not very concerned; (4) Not at all concerned; NO=No Opinion; DK= Don't Know; The percentages in the table may not always add up to 100% due to missing values and rounding.

## Public Perceptions of Climate Change

**Q9. As far as you know, do you personally think that the world's climate is changing or not?**

	2005	2010	2012	2013
Yes	91	78	79	72
No	4	15	11	19
Don't Know	5	6	11	9

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q10. How concerned, if at all, are you about climate change, sometimes referred to as 'global warming'?**

	2010	2012	2013
Very concerned	28	24	21
Fairly concerned	43	50	39
Not very concerned	19	20	27
Not at all concerned	8	6	7
Don't know/No opinion	2	1	5

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q11. Thinking about the causes of climate change, which, if any, of the following best describes your opinion?**

	2010	2012	2013
Climate change is entirely caused by natural processes	6	4	5
Climate change is mainly caused by natural processes	12	12	12
Climate change is partly caused by natural processes and partly caused by human activity	47	48	46
Climate change is mainly caused by human activity	24	28	22
Climate change is entirely caused by human activity	7	4	6
I think there is no such thing as climate change	2	2	2
Don't know/No opinion	3	2	7

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q12. To what extent do you agree or disagree that with the following statements about climate change?**

		SA	TA	NN	TD	SD	NO/D K
The seriousness of climate change is exaggerated	2013	10	24	18	27	14	7
	2012	9	21	21	28	18	2
	2010	12	28	15	28	14	3
My local area is likely to be affected by climate change	2013	12	35	21	18	6	8
	2012	-	-	-	-	-	-
	2010	13	40	16	21	6	4
Climate change is likely to have a big impact on people like me	2013	10	33	23	20	8	7
	2012	-	-	-	-	-	-
	2010	11	34	20	25	8	3
It is my responsibility to help do something about climate change	2013	22	46	16	8	4	5
	2012	-	-	-	-	-	-
	2010	20	50	14	9	5	1
Extreme weather events have become more frequent in Britain in the past ten years	2013	26	42	14	10	3	6
	2012	-	-	-	-	-	-
	2010	-	-	-	-	-	-

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree, NO=No Opinion, DK= Don't Know; The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q13. To what extent do you agree or disagree that with the following statements about extreme weather events such as flooding, heat waves and drought?**

	SA	TA	NN	TD	SD	NO/DK
Extreme weather events have become more frequent in Britain in the past ten years	26	42	14	10	3	6
This increased frequency is due to climate change [ALL WHO AGREE TO Q13_1; n=627]	23	51	15	5	2	4

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree, NO=No Opinion, DK= Don't Know; The percentages in the table may not always add up to 100% due to missing values and rounding.

# Appendix 2. Public Attitudes to Nuclear Power and Climate Change in Japan

Topline findings of surveys conducted in 2007, 2011 and 2013

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## Attitudes to Different Forms of Electricity Generation

Q1a. To what extent do you agree or disagree that the following energy sources will make a substantial contribution to reliable and secure supplies of electricity in Japan.

		SA	TA	NN	TD	SD	NHOI	NO/DK
Biomass	JP2013	22	28	25	6	1	7	12
	JP2011	13	31	26	12	4		14
	JP2007	26	31	19	10	3		12
Coal	JP2013	3	9	23	25	36	*	5
	JP2011	2	16	28	36	11		8
	JP2007	3	18	29	34	9		7
Gas	JP2013	16	32	28	14	3	1	7
	JP2011	11	37	27	14	3		8
	JP2007	14	39	28	11	2		6
Hydroelectric power	JP2013	38	37	15	3	1	*	5
	JP2011	24	44	19	7	1		4
	JP2007	40	42	11	3	1		4
Nuclear power	JP2013	2	12	29	35	12	1	8
	JP2011	3	13	26	30	24		5
	JP2007	7	19	28	27	14		5
Oil	JP2013	4	16	34	32	8	*	5
	JP2011	4	20	29	34	8		5
	JP2007	4	20	33	30	8		5
Sun/Solar power	JP2013	63	26	7	1	*	*	3
	JP2011	56	32	7	3	1		3
	JP2007	71	22	3	2	1		3
Wind power	JP2013	55	29	9	3	1	0	3
	JP2011	41	37	12	6	1		4
	JP2007	66	26	5	1	*		3

Note: scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree; NHOI= Never heard of it NO=No Opinion; DK= Don't Know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q1b. How favourable or unfavourable are your overall opinions or impressions of the following energy sources for producing electricity currently? Just read out the number that applies.**

		(1)	(2)	(3)	(4)	(5)	NHOI	NO/DK
<b>Biomass</b>	JP2013	24	28	21	5	2	9	1
<b>Coal</b>	JP2013	3	16	29	32	10	3	1
<b>Gas</b>	JP2013	18	37	27	9	2	1	3
<b>Hydroelectric power</b>	JP2013	42	38	14	2	1	*	1
<b>Nuclear power</b>	JP2013	2	10	24	27	33	*	2
<b>Oil</b>	JP2013	4	19	33	32	7	1	2
<b>Sun/Solar power</b>	JP2013	66	25	6	1	1	2	3
<b>Wind power</b>	JP2013	59	28	9	3	1	*	1

Note: (1) Very favourable, (2) Mainly favourable, (3) Neither favourable nor unfavourable, (4) Mainly unfavourable, (5) Very unfavourable, NHOI= Never heard of it, NO=No opinion, DK=Don't know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

## Attitudes to Nuclear Power

**Q2. Which, if any, of the following statements most closely describes your own opinion about nuclear power in Britain today?**

	JP2013
We should increase the number of nuclear power stations	2
We should continue using the existing nuclear power stations, and replace them with new ones when they reach the end of their life	15
We should continue using the existing nuclear power stations, but not replace them when they reach the end of their life	53
We should shut down all existing nuclear power stations now, and not replace them with new ones.	23
None of these	3
Don't know	5

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q3. When considering Japanese future electricity demands, do you think we should resume operations at nuclear power generations currently stop their operation or we should not?**

	JP2013
I agree with opinion that we should resume operations at nuclear power stations.	7
I rather agree with the opinion that we should resume operations at nuclear power stations.	16
I neither agree nor disagree with that opinion.	25
I rather do not agree with that opinion.	23
I do not agree with that opinion.	26
No opinion	2
Don't know	1

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q4. Which, if any, of the following statements most closely describes your own opinion about nuclear power in Britain today? Just read out the number that applies.**

	JP2013
Overall, I support nuclear power	12
Overall, I oppose nuclear power	45
I am not sure whether I support or oppose nuclear power	35
I don't care what happens with nuclear power	3
Other/None of these	1
Don't know	4

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q5. How concerned, if at all, are you about nuclear power?**

	JP2013
Very concerned	37
Fairly concerned	42
Not very concerned	17
Not at all concerned	1
No opinion/ Don't know	3

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q6. From what you know or have heard about using nuclear power for generating electricity in Britain, on balance, which of these statements, if any, most closely reflects your own opinion?**

	JP2013
The benefits of nuclear power far outweigh the risks	17
The benefits of nuclear power slightly outweigh the risks	15
The benefits and risks of nuclear power are about the same	18
The risks of nuclear power slightly outweigh the benefits	13
The risks of nuclear power far outweigh the benefits	23
None of these	6
Don't know	8

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q7. To what extent do you agree or disagree about the following statements on nuclear power?**

		SA	TA	NN	TD	SD	NO/DK
<b>Conditional Support</b>							
I am willing to accept the building of new nuclear power stations if it would help to tackle climate change	JP2013	7	10	21	19	40	3
	JP2011	9	13	23	19	33	4
	JP2007	10	23	26	22	14	5
I am willing to accept the building of new nuclear power stations if it would help to improve energy security (i.e. a reliable supply of affordable energy)	JP2013	8	11	19	19	39	3
	JP2011	8	13	28	18	28	5
	JP2007	-	-	-	-	-	-
<b>Alternatives to Nuclear Power</b>							
We shouldn't think of nuclear power as a solution for climate change before exploring all other energy options	JP2013	37	22	19	7	8	8
	JP2007	31	28	23	8	3	7
Promoting renewable energy sources, such as solar and wind power, is a better way of tackling climate change than nuclear power	JP2013	48	31	13	2	1	4
	JP2011	51	31	11	3	2	4
	JP2007	48	32	12	3	1	5
Reducing energy use through lifestyle changes and energy efficiency is a better way of tackling climate change than nuclear power	JP2013	34	35	19	5	2	5
	JP2011	36	36	18	5	2	4
	JP2007	37	37	17	3	1	6

**Q7. To what extent do you agree or disagree about the following statements on nuclear power? (Cont'd).**

<b>Safety of Nuclear Power</b>							
If we had safer nuclear power stations, I'd be prepared to support new ones being built	JP2013	11	15	22	17	31	3
	JP2011	11	19	23	18	25	5
	JP2007	15	26	28	15	10	6
We should stop using nuclear power stations because we do not know how to store radioactive waste safely	JP2013	29	22	28	8	7	6
	JP2011	26	23	31	8	6	6
	JP2007	15	26	28	15	10	6
<b>Trust</b>							
(1) I feel confident that the Japanese Government adequately regulates nuclear power	JP2013 <sup>(1)</sup>	2	6	20	27	41	5
	-	-	-	-	-	-	-
	JP2013 <sup>(2)</sup>	3	6	19	26	36	11
	JP2011 <sup>(2)</sup>	3	6	19	26	34	12
(2) I feel that current rules and regulations are sufficient to control nuclear power	JP2007 <sup>(2)</sup>	6	13	36	21	9	16

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree; NO=No Opinion; DK= Don't Know; \* denotes a value of less than 1% but greater than zero; The percentages in the table may not always add up to 100% due to missing values and rounding.

## Public Perceptions of Climate Change

**Q9. As far as you know, do you personally think that the world's climate is changing or not?**

	JP2007	JP2011	JP2013
Yes	95	92	91
No	3	5	7
Don't Know	2	3	3

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q11. Thinking about the causes of climate change, which, if any, of the following best describes your opinion?**

	JP2013
Climate change is entirely caused by natural processes	3
Climate change is mainly caused by natural processes	10
Climate change is partly caused by natural processes and partly caused by human activity	39
Climate change is mainly caused by human activity	37
Climate change is entirely caused by human activity	10
No opinion	1
Don't know	1

Note: The percentages in the table may not always add up to 100% due to missing values and rounding.

**Q12. To what extent do you agree or disagree that with the following statements about climate change?**

		SA	TA	NN	TD	SD	NO/DK
The seriousness of climate change is exaggerated	JP2013	9	14	13	26	37	2

Note: the scale included the response options of SA=strongly agree, TA=tend to agree, (3) NN=neither agree nor disagree, TD=tend to disagree, SD strongly disagree, NO=No Opinion, DK= Don't Know; The percentages in the table may not always add up to 100% due to missing values and rounding.