



AFTER FUKUSHIMA

Global opinion on energy policy

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March 2012



FOREWORD

The tsunami followed by the nuclear accident has created a tragedy in Japan. We have all seen the images and shared the mourning and sorrow the Japanese people are going through, and admired the courage and dignity shown by a country facing horrible circumstances.

The impact and consequences of this catastrophe go way beyond Japan and nuclear energy itself, and will have long-term implications in a number of countries and sectors.

As far as the nuclear industry is concerned, while the technical situations in Three Mile Island (US 1979), in Chernobyl (Ukraine 1986) and Fukushima are very different, occurred in different countries and with different political systems and media landscapes, they do have some perceptions in common. These include to varying degrees that the information was slow, often contradictory and that institutions and corporations cannot be trusted to prevent catastrophes in the first instance, nor to manage the situation and to communicate in a transparent manner afterwards. This is to a certain extent amplified by the very nature of nuclear physics and its apparent complexity, but could apply to many other situations related to technological risks.

Fukushima was a turning point for Japan overall and for nuclear energy in a number of countries. The credibility of governments and institutions has been seriously challenged, the general public is worried and demonstrations occurred around the world. Three Mile Island caused the United States to stop investing in nuclear energy, leading to an increased dependence on foreign oil after the peak of national production.

Of course, as nuclear energy is profoundly impacted, so will be energy policies in general around the world, including for China and Europe.

But the implications of Fukushima go way beyond this. The supply chain of many goods from the car industry to high-tech products was impacted, leading to a fear of shortages in the availability of many products due to the interdependency of economies in our era of globalization.

On the viewer's side, populations around the world have watched the news about the potential impact of a "cloud" of radioactivity flying over their countries, and even if the health authorities around the world have clearly confirmed the absence of toxicity, there remains the shadow of a doubt. Food products and even durables have been at some point suspected by consumers to be toxic. In some countries the consumption of sushi dropped in what can only be guilt by association, and car manufacturers have even decided to measure radioactivity in the cars they produce and stick "Nuclear OK" stickers on the vehicles to convince potentially worried buyers that there is no danger.

And these are just a few examples, there are many of them.

All in all there will be a "before" and an "after" Fukushima, impacting to various degrees all sectors, countries and players. Some images will stay in our collective memory for a long time. We have seen this in the past with mad cow disease. Many years after we still check the origin of the meat tagged in the butcher's shop, and this goes way beyond the UK. Similarly, we have not completely forgotten the "senior men in suits" from the Tobacco companies swearing they were telling the truth about the safety of tobacco products.

Citizens and consumers around the globe have been impacted and reacted after the event. It is interesting to evaluate one year after what are the lasting implications, particularly for energy policy and perceptions.

This is the ambition of this report.

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ENERGY POLICY: INDEPENDENCE OR SECURITY?

While the earthquake that devastated northern Honshu a year ago – and the tsunami that it created which damaged the Fukushima Daiichi reactors – was first and foremost a national tragedy for Japan, its impact on energy policy and public perception of nuclear power has been felt globally.

Ever since the global oil price shock of 1973, fear of an energy gap – especially among importers of oil – has sparked much debate on how best to secure energy supplies and in particular on the right balance to strike in the shift away from fossil fuels towards alternative energy sources.¹

There have been many twists and turns in these debates, but no resolution. Lots of different possibilities have been proposed as governments have scrambled for solutions, most notably renewable resources (such as geothermal, solar power, wind power and hydro-electric) and nuclear power², but none has yet provided an adequate answer.

For some, the answer has lain in energy independence. In 1974 President Richard Nixon launched Project Independence, declaring, “Let this be our national goal: At the end of this decade, in the year 1980, the United States will not be dependent on any other country for the energy we need to provide our jobs, to heat our homes, and to keep our transportation moving.”³ Every president since has similarly vowed to reduce the United States’ dependence on foreign oil. None has succeeded.

As Nixon and many others have found out, independence is not a viable option. It is neither practical nor necessary in a world of interdependent economies. According to the International Energy Agency, ‘Import dependence is not a problem in itself, since a population-rich, modern industrialised economy is unlikely to achieve self-sufficiency in energy supply.’⁴ This is a view endorsed by Chatham House, a think tank, which recently stated, ‘In reality, very few countries are “self-sufficient” in energy; the geography of resources does not correspond with the geography of consumption. International trade provides markets for producers and suppliers for consumers, to the economic benefit of both.’⁵

Instead, securing energy supplies is much more complex. Energy policy is both multi-faceted and context-dependent. Governments intervene in energy markets for a whole host of reasons, including security of supply and for environmental, industrial, social and economic objectives. As Dieter Helm, a leading academic specialising in energy policy and Special Advisor to the European Commissioner for Energy, points out, ‘it is therefore hardly surprising that energy policy is complex, and that governments find it very difficult to confront the hard questions of energy policy design.’⁶

That said, broad trends have emerged. The OECD wrote in 2005 that an expected sharp rise in energy demand over the next 50 years, coupled with short-term shocks, means that governments have ‘focussed attention on issues such as long-term price stability, the security of energy supply and sustainable development.’⁷ Indeed, policy has clearly been directed towards protecting energy supplies, exploiting natural resources and diversifying sources so as not to be reliant on any one form of energy.⁸ Japan, for example, was almost totally dependent on imported oil in 1973, but has since steadily introduced the use of natural gas and nuclear power and implemented energy conservation measures.

But as Fukushima and its aftermath has highlighted, there is no simple solution to delivering a secure energy supply. Governments around the world are still struggling with questions they first grappled with decades ago: How far can we protect ourselves from international ‘energy shocks’?; How significant a role can renewable energy sources play as an alternative to fossil fuels?; and Is nuclear power a feasible solution?

Post Fukushima these questions are more relevant than ever. They are also affected as much by politics as policy: public concern and acceptability are central, and therefore understanding public opinion and how this varies between countries is vital.

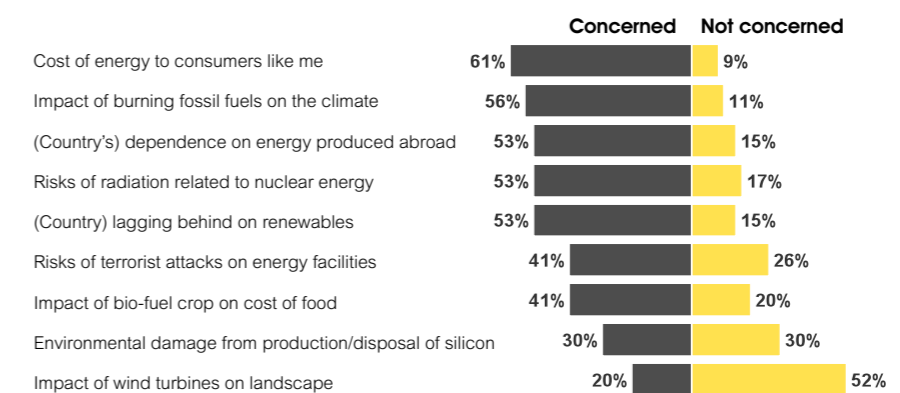
PROTECTION FROM ENERGY SHOCKS

The first question – how far countries can protect themselves from future energy shocks – is an issue of great importance to the general public. Securing future energy sources and supplies is one of the top three environmental concerns globally, with 31% saying it is a worry.⁹ This places it in the same bracket as climate change (33%).¹⁰ Nine in ten say that it is urgent that there is major investment in energy in their country.

There are many different, overlapping and competing aspects to people’s concerns about future energy supplies. At the most fundamental level, people tend to focus on ends rather than means. For example, Chart 1 ranks some of the key features that people are worried about and unsurprisingly the end cost to consumers comes out on top.

CHART 1 GLOBAL CONCERN ABOUT ENVIRONMENTAL AND ENERGY ISSUES

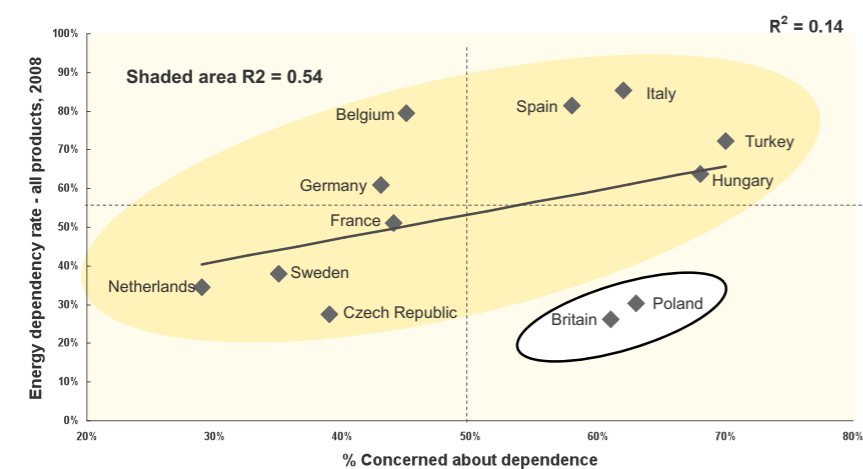
How concerned are you about each of the following . . . ?



Base: 21,623 online interviews in 23 countries, December 2009 Ipsos Global Advisor Survey

Beneath this, however, there is a clear unease about dependence on importing energy from abroad. This concern is particularly apparent in the United States, India, Mexico and Argentina, with more than seven in ten worried about the level of dependence in each of these countries.

As Chart 2 shows, across the full set of 23 countries in our study, there is very little correlation between concern about energy dependence and actual dependency. If we remove a couple of outliers (Britain and Poland) however, there is a much stronger relationship.¹¹

CHART 2**ENERGY DEPENDENCY VS CONCERN ABOUT DEPENDENCE**

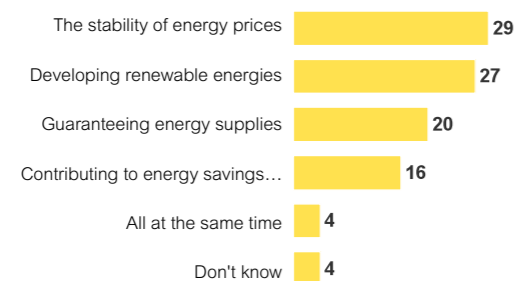
Base: Base: c. 1,000 residents in each country; Ipsos Global @dvisor, December 2009
Source: Energy dependency rate - all products, 2008, Eurostat (tsdcc310 and nrg_100a)

There are many reasons why this may be. In Britain, for example, North Sea oil has over the past few decades reduced Britain's dependence on imports and on coal, but the 1978/79 Winter of Discontent, the miners' strikes of 1984 and 1985 and the 2009 Russian fuel crisis are still important in the short- and long-term national memory. Policy makers need to be aware of these influences on perceptions when communicating energy policy.

Beyond this, however, it is important to bear in mind that dependence is just one aspect of a broader concern about energy security and stable prices. According to a recent Eurobarometer survey, for instance, within the EU the top three priorities among citizens for energy co-operation are the stability of energy prices, developing renewable energies and guaranteeing energy supplies.¹² As far as the public is concerned, these priorities outweigh concerns about where energy comes from. Having a secure source is just a means to the ends of stability and low prices, and it is through this prism that policy makers can most effectively make their case with the general public.

CHART 3**STABLE PRICES THE PRIMARY CONCERN IN EUROPE**

The European Union wants increased energy co-operation between the European Union Member States. With this in mind, do you think the main priority should be given to...



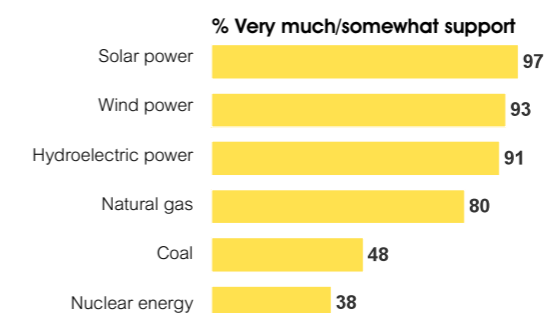
Base: 26 574 European citizens aged 15+, 25 November - 17 December 2010
Source: Eurobarometer (Standard EB 74.3 on Energy)

PUBLIC OPINION AND ALTERNATIVE ENERGY

If people are concerned about securing future energy supplies and dependency on importing energy, this begs the question of what the alternatives to fossil fuels are and how significant a role they can play. In theory at least, the public has a strong preference for renewable energy sources such as solar, wind and hydroelectric power over nuclear power, as shown in Chart 4.

CHART 4**SUPPORT FOR ENERGY SOURCES**

Please indicate whether you strongly support, somewhat support, somewhat oppose, or strongly oppose each way of producing electricity.



Base: Base: 18,787 global adults aged 16+; April 2011
Source: Ipsos Global @dvisor

However, this conceals a much more complicated picture.

The table below summarises global views on each potential alternative energy source.¹³ While the public sees renewable sources such as solar, wind and water power as more environmentally friendly and more viable long-term options than fossil fuels such as coal and oil, they retain significant doubts about their reliability, and still see the traditional and less environmentally friendly power sources such as gas, oil and nuclear power as being more dependable, at least in the short-term. The public (rightly) thinks there is some way to go before renewable energy sources can replace fossil fuels.

Source	Reliable	Environmentally friendly	By-products can be easily disposed of	Trust	Affordable	Safe for future generations	Viable long-term solution
Bio-fuels	around average	above average	above average	below average	below average	below average	below average
Coal	below average	below average	below average	below average	below average	below average	below average
Hydroelectric	above average	above average	above average	above average	above average	above average	above average
Natural gas	above average	below average	below average	below average	above average	below average	below average
Nuclear	above average	below average	below average	below average	below average	below average	below average
Oil/Petroleum	above average	below average	below average	below average	below average	below average	below average
Solar	below average	above average	above average	above average	below average	above average	above average
Wind	below average	above average	above average	above average	below average	above average	above average

Source: Ipsos Global @dvisor

■ above average ■ around average ■ below average

THE ROLE OF NUCLEAR POWER

Perhaps the most vexed question for governments around the world has been the role that nuclear power should play in the energy mix. The public sees nuclear power as a reliable source of energy, but has serious reservations over how clean, safe and environmentally friendly it is, which leads them to question its long-term viability.

The Fukushima disaster has cast a large shadow over the future use of nuclear energy and has prompted a rethink on viable energy policy in some countries. While some big markets such as China and India are expected to push on with nuclear power, in Germany and Italy the public has already spoken. In Germany Chancellor Angela Merkel announced plans to phase out nuclear power altogether, while in Italy voters overwhelmingly rejected a referendum to re-start the country's nuclear energy programme that has been stalled for 20 years.

Indeed, the shift in the global energy mix is already beginning to be felt. The Economist recently reported that 'before Fukushima, the International Energy Agency predicted that nuclear plants would add 360 gigawatts of generating capacity by 2035, or the equivalent of over 200 new EPRs; it is now reckoning on half as many.'¹⁴

However, the impact on global opinion is variable between countries, and it does not appear to be lasting. For example, our Global @dvisor study soon after the disaster showed that a quarter of those who oppose nuclear power held that view because of Fukushima, which suggests a significant impact. But this was particularly concentrated in Asian countries, where half or more said their views have been changed. In the West, the impact has been much lower.

Research by Pew in America, for instance, found that following Fukushima the balance of public opinion has shifted against the increased use of nuclear power. However, the shift has been far from seismic. Between October 2010 and March 2011, the proportion favouring increased use of nuclear power fell from 47% to 39%¹⁵, which suggests that core support remains strong.

In Britain, meanwhile, our regular polling shows that while support for nuclear power saw a dip in June 2011, it has bounced back to previous levels and even been strengthened, rising to a new peak three points above the level of support pre-Fukushima.¹⁶ This is supported by Professor Nick Pidgeon, who argues that tracking data from the Public Perceptions of Climate Change and Energy in Britain by Cardiff University indicate that "Fukushima has had little impact on overall UK public concern about nuclear power". He describes a "reluctant acceptance" of nuclear power as part of the UK's energy mix among Britons.¹⁷

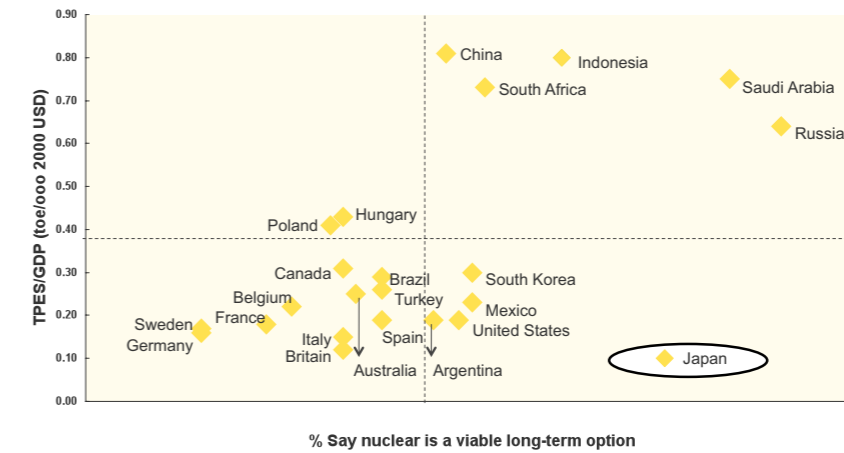
Japan too has unsurprisingly seen a fall in support for nuclear power, but even soon after the event opinion was evenly split on whether it should maintain or reduce its current level of reliance on nuclear power.

Connecting opinion on nuclear with objective measures of energy use and dependence illustrate just how much this is cultural and emotional issue. For example, if we compare support for nuclear power as a viable long-term option with a measure of energy intensity such as the ratio of energy consumption to GDP, as in Chart 5, we can see that there is no simple pattern to support for nuclear power.¹⁸

While some countries such as Saudi Arabia and Russia have a high energy intensity and a high level of support for the future of nuclear power, and others have a low energy intensity and serious reservations about the viability of nuclear power, this is more the exception than the rule.

CHART 5

ENERGY INTENSITY VS NUCLEAR IS A VIABLE LONG-TERM OPTION



Base: c. 1,000 residents in each country; Ipsos Global @dvisor, April 2011
Source: International Energy Agency (2010), Key World Energy Statistics

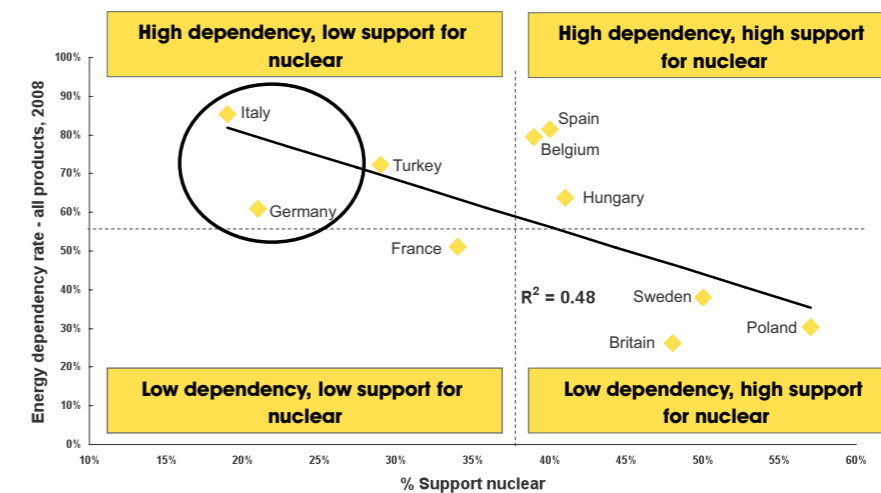
Japan, for instance, has a low energy intensity but (still) a relatively high level of support for nuclear as a long-term option. This support may be attributed to the fiscal importance of nuclear power to the Japanese economy: the Japan Centre for Economic Research estimated that, without nuclear power, GDP in 2012 would be 1.6% lower than it would otherwise be.¹⁹ (Although with 48 out of 54 nuclear reactors currently out of service, it remains to be seen what impact this has on the economy and public support.)

This variation in support for nuclear power is shown even more clearly in relation to real levels of energy dependency. Chart 6 shows that there is actually a close relationship between support for nuclear power and a country's level of energy dependency: the lower the dependency on other countries for energy, the greater support there is for nuclear power.

On the face of it, this may seem counter-intuitive, but again we need to consider the social, cultural and political factors behind this. Firstly, it may be that countries with a low level of dependency are more likely to support nuclear power as a means to maintain their independent status than those who are already dependent on others who, in turn, may feel that as they already import energy there are no benefits of switching to a source that is perceived as potentially more dangerous.

CHART 6

ENERGY DEPENDENCY VS SUPPORT NUCLEAR



Base: c. 1,000 residents in each country; Ipsos Global @dvisor, April 2011
Source: Energy dependency rate - all products, 2008, Eurostat (tsdcc310 and nrg_100a)

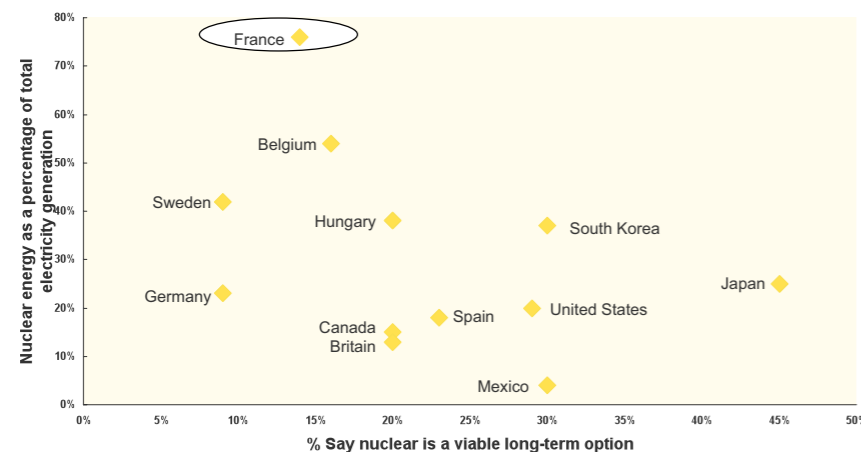
It is also worth looking more closely at individual countries. Italy and Germany are the two countries with the lowest support for nuclear power, despite having high energy dependency rates, and as we've seen, policy has followed public opinion.

However, there are a number of ramifications to these decisions. Firstly, the energy shortfall created by rejection of nuclear power will need to be met by solar and wind power which increases the risk of instability in electricity supplies in these countries. Secondly, there is an environmental cost – in Germany, Deutsche Bank analysts predict that the decision will add an extra 370 million tonnes of carbon-dioxide emissions to the atmosphere by 2020. Finally, there is an economic cost: a study commissioned by the German economics ministry has estimated the cost of Mrs Merkel's decision, in lost jobs and higher energy and carbon prices, at around €32 billion. If any of these costs are passed on to the consumers and tax payers, we may see further future shifts in public opinion.

But it may yet be France that poses the most difficult challenge for energy policy makers. Among countries that use nuclear power France has by far the highest use as a proportion of its total electricity generation, yet one of the lowest levels of support for nuclear power as a viable long-term option. With such low support for nuclear power and yet such a reliance upon it, public opinion will need to be carefully managed until renewable sources are up to the task of replacing fossil fuels.

CHART 7

USE OF NUCLEAR ENERGY VS NUCLEAR A VIABLE OPTION



Base: c.1,000 residents in each country; Ipsos Global @dvisor, April 2011
 Source: Nuclear energy As a percentage of total electricity generation (2008), OECD Factbook, 2010

CONCLUSION

As governments have found over the past four decades and more, energy policy offers no simple solutions. It is both multi-faceted – with each potential form of energy supply having unique advantages and disadvantages, and each country having different levels of resources – and context-dependent.

As we have seen, the public supports the fundamental policy aims of stabilising costs, protecting supplies and diversifying sources. However, views on how governments should achieve this, and on the role of nuclear power in particular, are influenced by social, cultural, economic and political factors to a far greater extent than more fundamental measures such as power usage or energy dependency.

This means that views inevitably vary greatly between countries. In Britain, for instance, there remains a high level of support for nuclear power resulting from an in-built resistance to dependency on other countries or single sources, while in Japan there is a clear economic imperative to retain nuclear power capacity which may explain why, even after Fukushima, support for nuclear power remains relatively high. In Germany and

Italy, on the other hand, political pressures and long-standing cultural aversions to nuclear power have already caused its abandonment. In France, meanwhile, there is potentially a huge tension between public opinion of nuclear power and the country's level of reliance upon it that demands careful management.

Public fears and concerns before and after Fukushima (whether justified or not) have already shaped major decisions, and it will be vital for policy makers to continue to track and analyse what's driving those views. In energy policy, perceptions really do matter.

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8. See, for example, EC (2001) *Towards a European Strategy for the security of energy supply*, Green Paper Office for the Official Publications of the European Communities, Luxembourg; Department of Energy and Climate Change (2011), *Planning our electric future: a White Paper for secure, affordable and low-carbon electricity*
9. Concern about future supplies of energy varies quite dramatically by country, with Sweden (58%), Germany (56%) and the United States, Japan and Britain (all 50%) the most concerned, and Brazil (four per cent), Russia (seven per cent) and Mexico (eight per cent) the least.
10. Unless stated otherwise, findings in this article come from Ipsos Global @dvisor - a monthly online survey of citizens aged 16-64 (18-64 in the United States and Canada) in 24 countries. Minor weights are applied to balance results by age, gender, city, population and education levels according to the most recent country census data. In more developed countries we can be confident that our sample provides a good picture of the population. However, in some developing countries, where a minority of the population has access to the internet, the sample should be seen as representing a more affluent and connected segment of citizens. Approximate sample size in each country is c.500-1,000, with a margin of error of plus or minus 3 percentage points.
11. Please note that energy dependency figures are only available for European countries.
12. http://ec.europa.eu/energy/studies/doc/20110131_eurobarometer_energy.pdf
13. A yellow box shows that the source is above the average of all sources; a grey box shows that it is below average and a light grey box shows that it is around average.
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