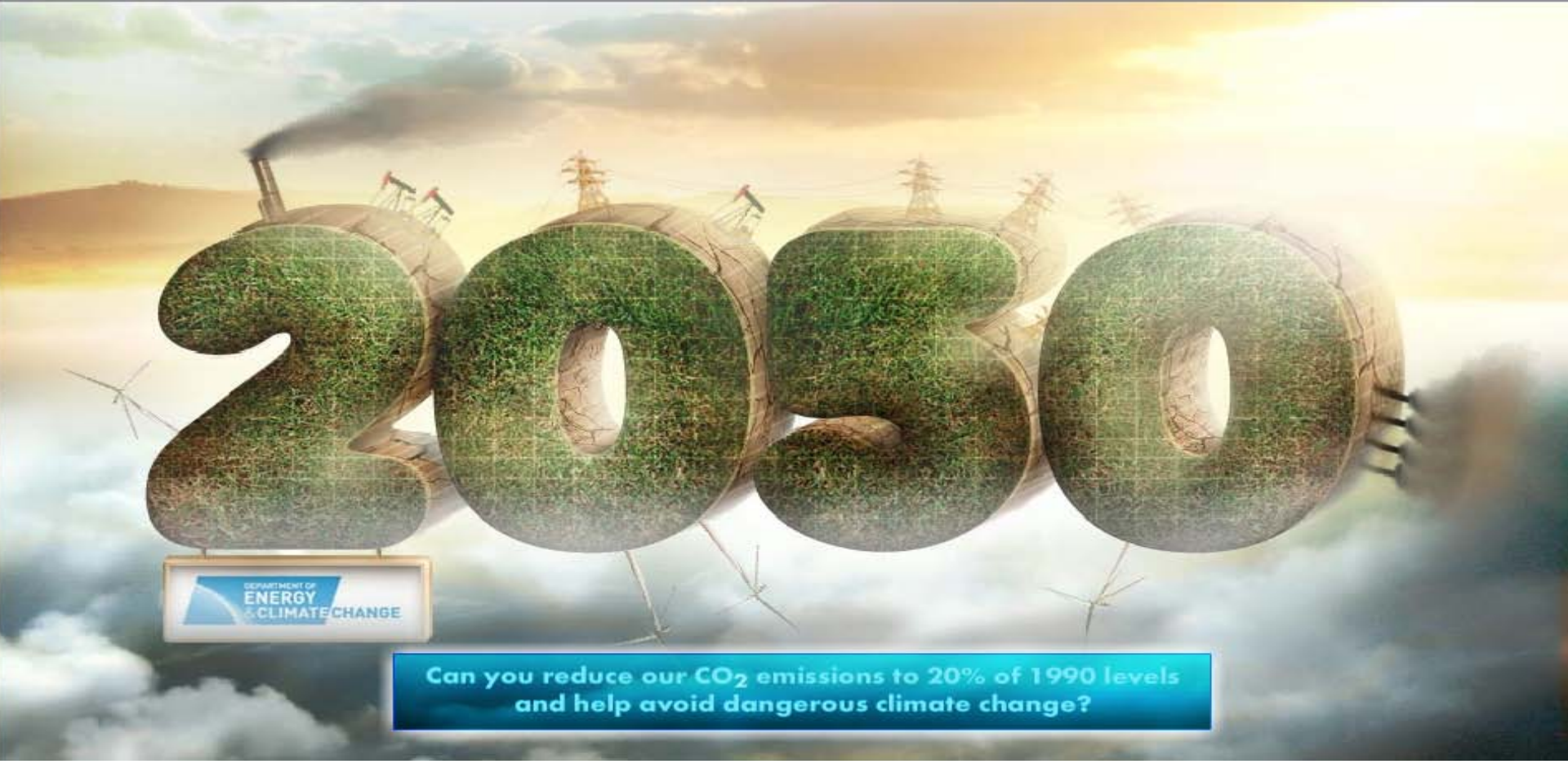


My2050 Simulation Analysis

An analysis of draft and final pathways, along with the feedback provided by those who submitted My2050 worlds between 3-29 March 2011

Contents

Background

What is the My2050 Simulation?

- The UK is committed to cutting carbon emissions to 20% of 1990 levels by 2050.
- As part of the effort to engage the public with this target, and the planning process, the 2050 team at DECC commissioned Delib to create an interactive Simulation, whereby the public can create their own solution to meeting the 2050 target.
- Users can manipulate 14 different levers, each representing a different choice on the demand or the supply side, in order to reduce CO_2 emissions to the 2050 target.
- The Simulation visualises how the world will look in 2050, according to the levels chosen for each lever.

How does the Simulation work?

Bar measuring progress towards 80% reduction.

My Home, My City, My Country give visual clues as to the impact of the My2050 world. International impact is not accounted for.

Levers can be set on a 0 - 3 scale for effort. For the purposes of analysis, 3 levers (oil, gas and power; manufacturing growth; and home temperature) were rebased by Ipsos MORI so that 0 is always least effort.

Interpreting the results

The analysis is based on 10,215 people who submitted their My2050 worlds via the My2050 Simulation website between 3-29 March 2011.

The results are based on a self-selecting sample, i.e. people who went to the My2050 website and chose to take part. This means that although the sample size is big enough to allow for robust data analysis, caution needs to be taken when interpreting results as those who opted to create and submit a My2050 world appear more engaged with the topic than the general public.

Sliding the lever upwards represented a 'higher effort' on that lever for all levers except 'Manufacturing growth' 'Home temperature' and 'Oil, gas and coal power' where sliding the lever downwards represented higher effort. As it would be easy for players of the My2050 game to overlook this, we advise caution in interpreting the results for these levers.

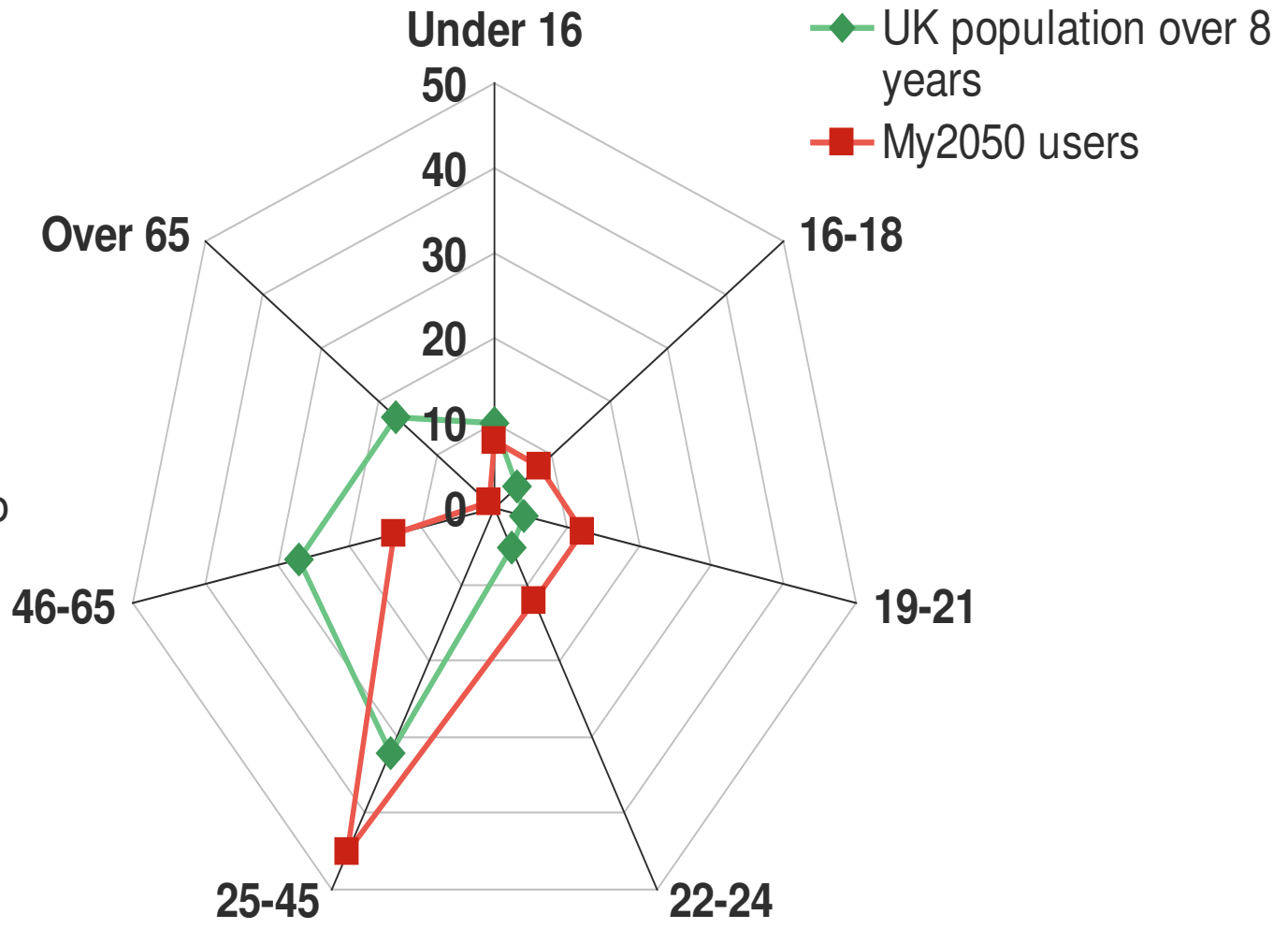
Who used the My2050 Simulation?

Demographics and other characteristics

Under 45s more likely to submit worlds

Those who submitted My2050 worlds tended to be younger, with under 25s being particularly likely to use it.

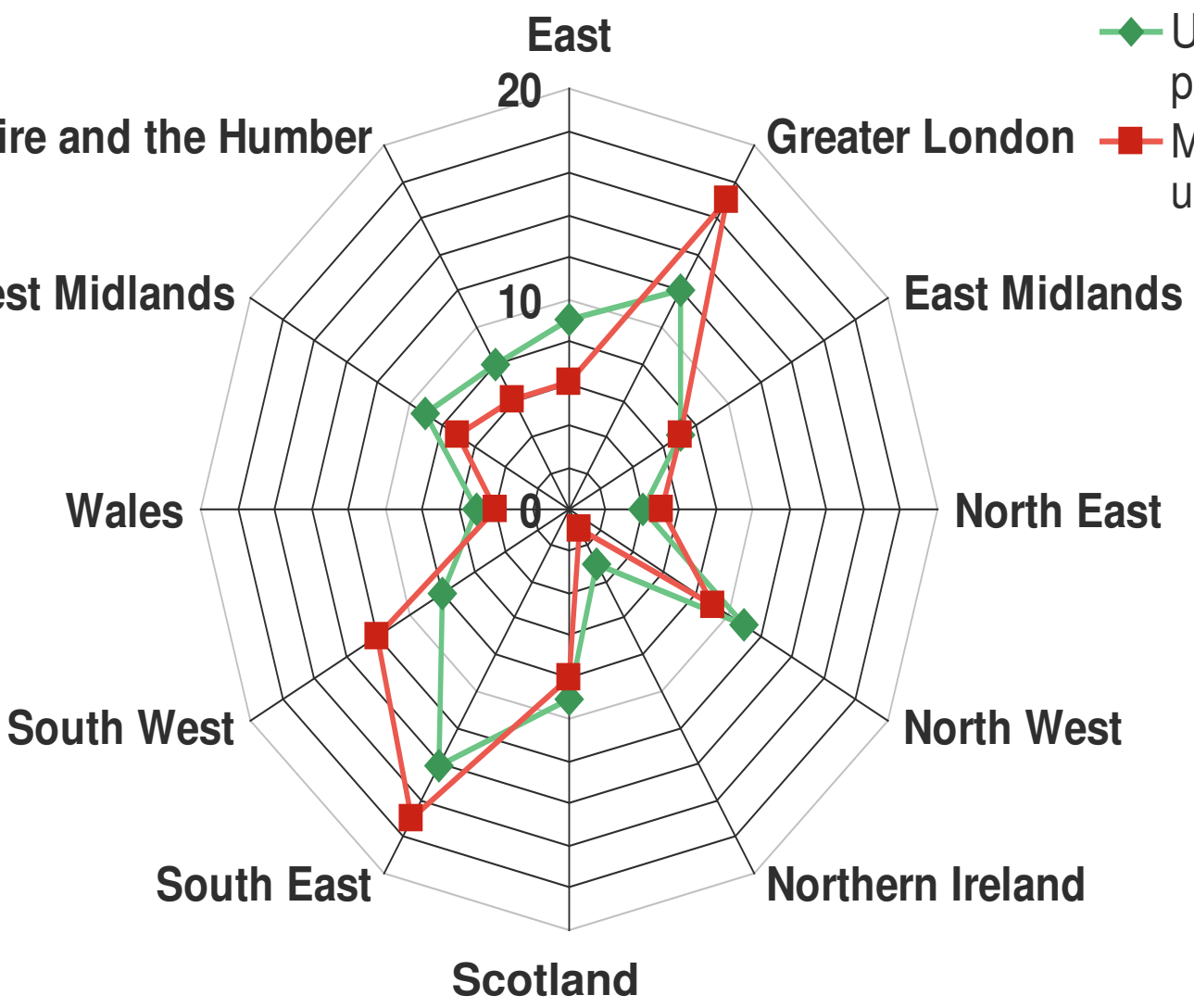
Older people were less likely to submit a world.



Base: 10,215 people who submitted My2050 worlds; ONS mid-2009 population estimates.

My2050 most popular in London and the South

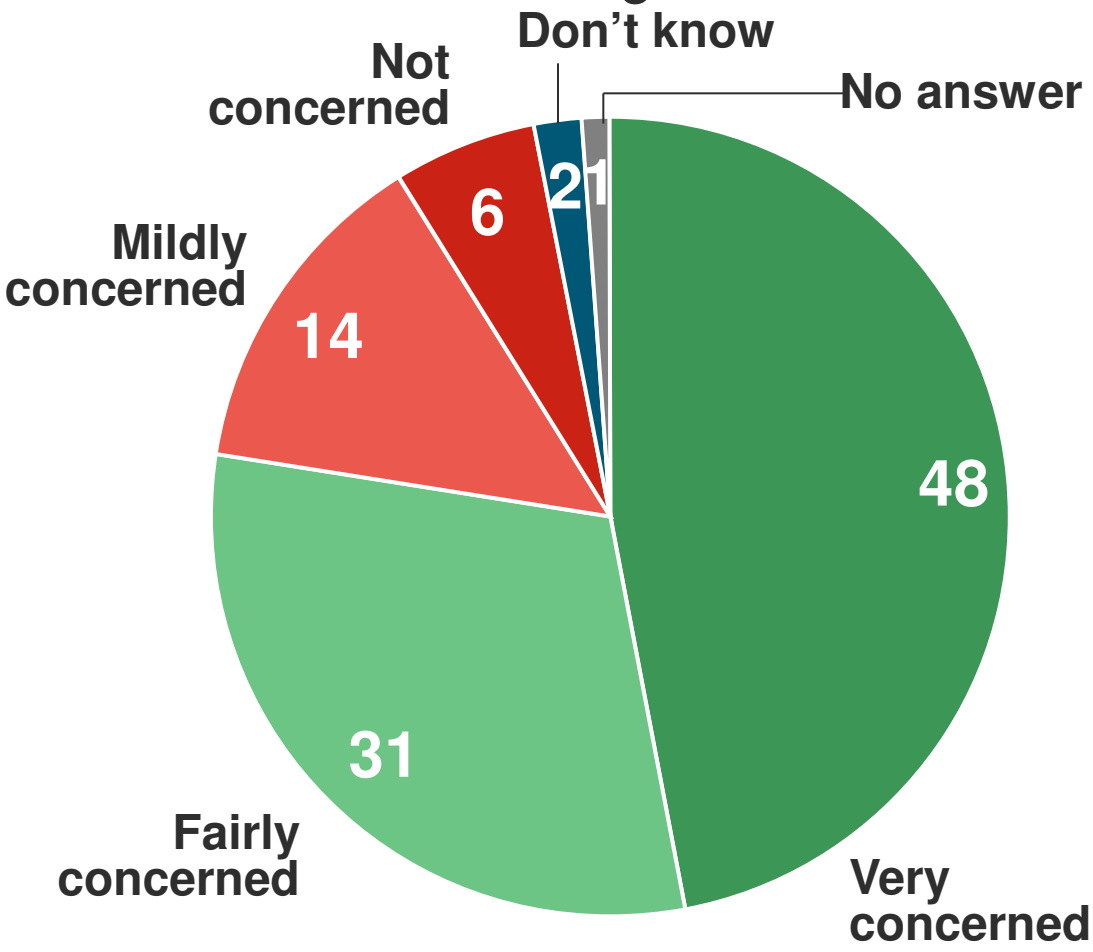
Most My2050 worlds were submitted by Londoners and those in the South East. Some areas of the UK, especially Northern Ireland, were underrepresented.



Base: 10,215 people who submitted My2050 worlds; 2001 census data.

Preaching to the converted?

Q. How concerned are you, if at all, about climate change?



- A similar question, asked by Ipsos MORI on behalf of Cardiff University (see slide 11), found that a far smaller proportion (28%) of the general population are 'very concerned' about climate change.
- The creators of My2050 worlds appeared therefore more engaged with the problem of climate change that the general public.
- Those under 25 who created My2050 worlds were less likely than average for the world creators to be 'very concerned' (42%), in contrast to the general population where there is no significant difference. This suggests while older people were more likely to participate if they were concerned about climate change, younger people were motivated by something different.

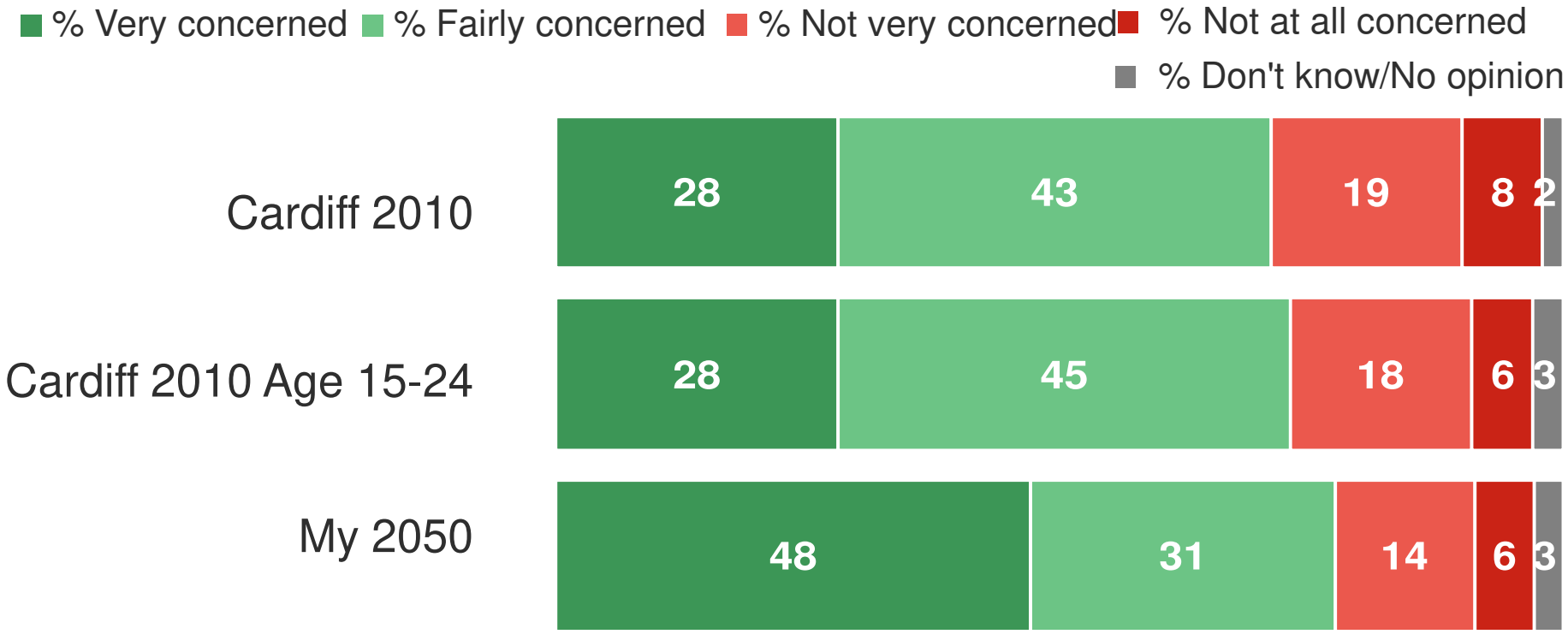
Ipsos MORI

Base: 10,215 people who submitted My2050 worlds;

Preaching to the converted? (2)

Q. How concerned, if at all, are you about climate change, sometimes referred to as 'global warming'? (Cardiff University)

Q. How concerned are you, if at all, about climate change? (My 2050)

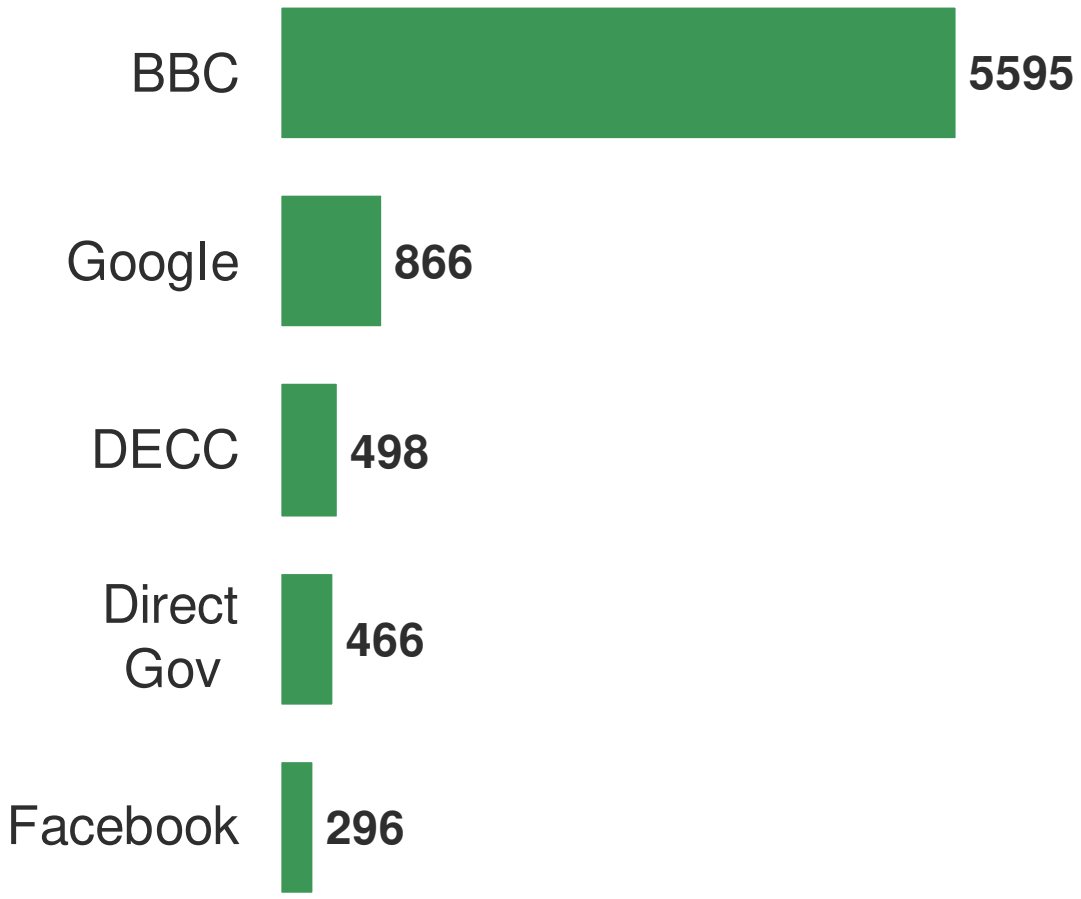


Base: 1,822 British adults, aged 15 and over, 6th January-26th March 2010;
276 British people, aged 15-24, 6th January-26th March 2010;
10,215 people who submitted My2050 worlds.

Source: 2010 Cardiff University / Ipsos MORI
Source: 2011 Ipsos MORI

Most found out about My2050 via the BBC

Where did the players come from?*



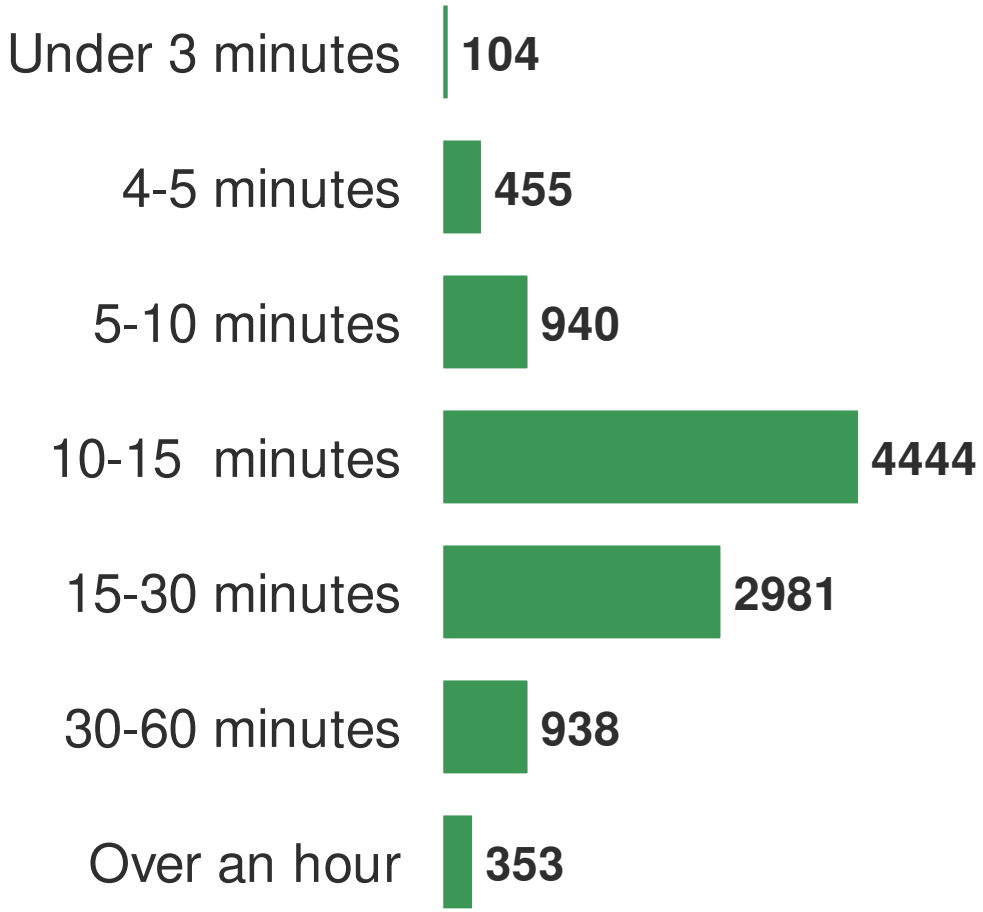
- Over half arrived at the My2050 site via a link from the BBC website
- Very few were redirected from social networking websites, suggesting that few people chose to 'share' their solutions on such sites

* All websites from which over 100 people arrived at the My2050 website

Base: 10,215 people who submitted My2050 worlds.

On average, they spent around 13 minutes playing

How long did they spend playing?



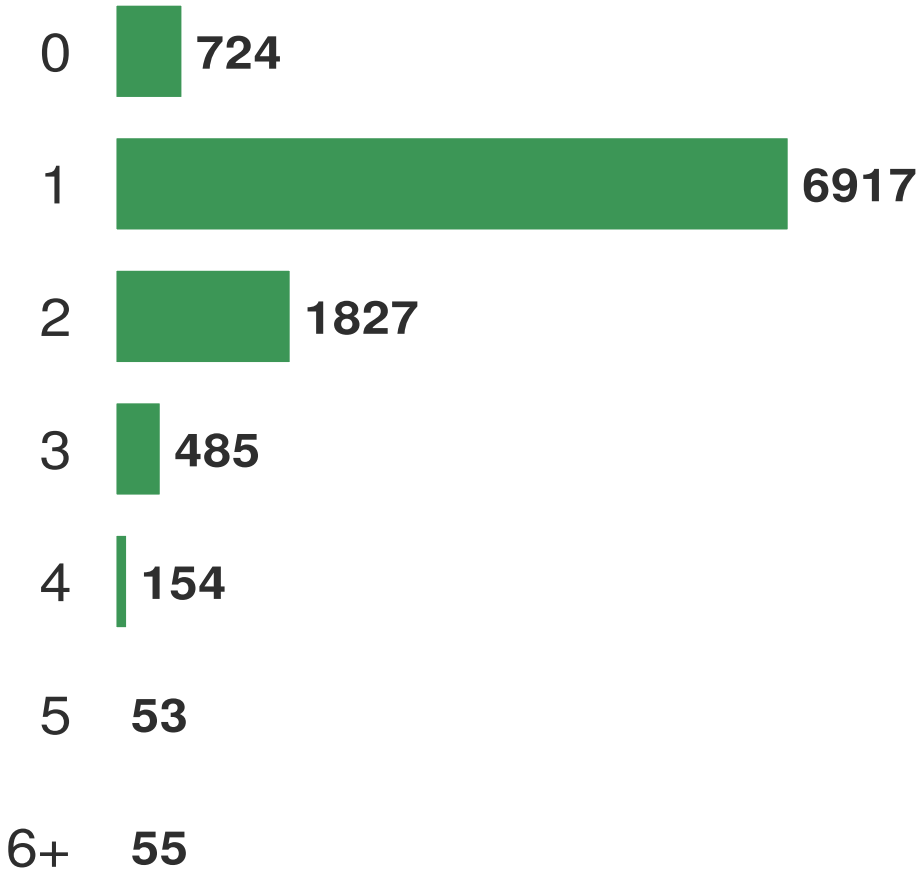
- The median amount of time spent on the game was 13.3 minutes
- One in twenty (5%) spent less than 5 minutes playing the game
- Conversely, 13% spent over half an hour, and 3% spent over an hour
- Almost three-quarters spent between 10 and 30 minutes playing the game suggesting a high level of engagement and thought.

* All websites from which over 100 people arrived at the My2050 website

Base: 10,215 people who submitted My2050 worlds.

The vast majority deliberated, and submitted one or more drafts

How many drafts did they submit?

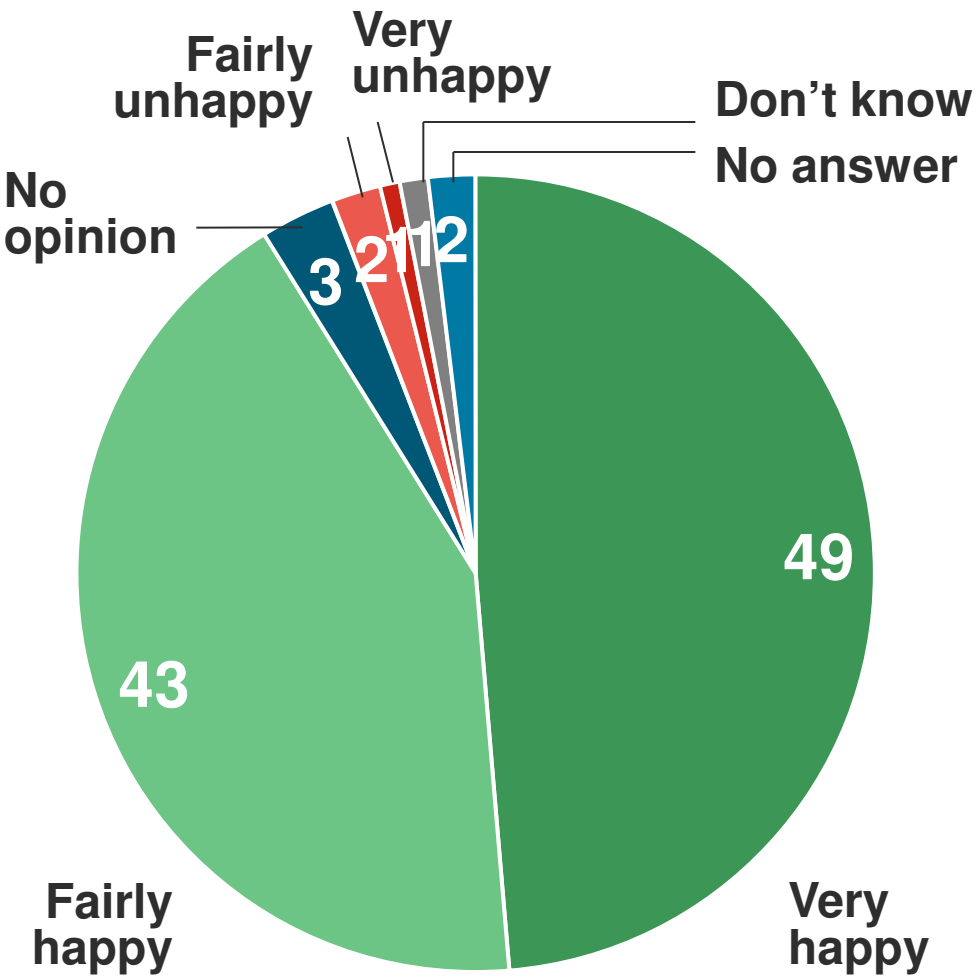


Base: 10,215 people who submitted My2050 worlds.

Why these worlds?

Satisfaction with the final My2050 worlds

Q. How happy would you be to live in the world you created?



- Over nine in ten said they would be happy to live in the world that they created.
- This is despite the fact that many worlds would require a large amount of effort on the demand side which would mean many changes in personal behaviour. However, it is not known how clearly users understood the implications of their worlds.
- Those who were very or fairly unhappy to live in their world were more likely than average to:
  - Use nuclear
  - Use bio-fuel
  - Not limit manufacturing growth

Ipsos MORI

Base: 10,215 people who submitted My2050 worlds

Why did people choose their worlds?

Q. Why did you choose your My2050 world?

- Many put heavy effort on the demand-side in their world, but then cited reasons relating to supply when asked why they chose their world, suggesting they may have tried to avoid particular supply methods.
- Almost a third talked about the necessity for change as a reason for choosing their world.
- Only one in five cited reasons relating to a 'strategy', such as trying to find the most cost-efficient world or one that reached the target with least impact.

% Mentions*

*Please see appendices for a full list of codes

Base: Feedback data from 3000 people who submitted My2050 worlds. Multiple codes per answer permitted.

Top ten reasons for choosing worlds

Supply Strategy Change Demand

Top 10	Description	%
1	**Need to use renewables more (inc. wind, solar, tide)**	19%
2	**Individuals should make more of an effort/ changes in lifestyle needed/work as a community**	14%
3	**Reduced use of fossil fuels/ fossil fuels are not sustainable/ running out of fossil fuels**	11%
4	**Need to use nuclear/ pronuclear/ nuclear is the future**	11%
5	**Balanced effort/ not extreme/ even distribution/good mix**	10%
6	**Need to change/improve how we transport people/ goods (incl. public transport)**	10%
7	**Global warming/climate change needs to be tackled/reduced**	8%
8	**We need to reduce CO_2 emissions/to stop pollution**	8%
9	**More use of insulation/reduce temperatures/in the homes/buildings**	8%
10	**Business/industry needs to change**	8%

Base: Feedback data from 3000 people who submitted My2050 worlds. People could submit more than one reason. All other reasons given below 8%.

Top ten reasons for choosing worlds by urbanity

Supply Strategy Change Demand

Description	Rural	Urban
Need to use renewables more (inc. wind, solar, tide)	16%	20%
Individuals should make more of an effort/ changes in lifestyle needed/work as a community	14%	15%
Reduced use of fossil fuels/ fossil fuels are not sustainable/ running out of fossil fuels	11%	11%
Need to use nuclear/ pronuclear/ nuclear is the future	10%	11%
Balanced effort/ not extreme/ even distribution/good mix	9%	11%
Need to change/improve how we transport people/ goods (incl. public transport)	8%	11%
Global warming/climate change needs to be tackled/reduced	9%	7%
We need to reduce CO_2 emissions/to stop pollution	9%	7%
More use of insulation/reduce temperatures/in the homes/buildings	8%	8%
Business/industry needs to change	7%	8%

Base: Feedback data from 2965 people who submitted My2050 worlds and rurality data (951 rural, 2014 urban). People could submit more than one reason, so differences are indicative only.

Top ten reasons for choosing worlds by age

Supply Strategy Change Demand

Description	<25	25-45	> 46
Need to use renewables more (inc. wind, solar, tide)	21%	16%	20%
Individuals should make more of an effort/ changes in lifestyle needed/work as a community	16%	14%	15%
Reduced use of fossil fuels/ fossil fuels are not sustainable/ running out of fossil fuels	14%	11%	11%
Need to use nuclear/ pronuclear/ nuclear is the future	15%	10%	11%
Balanced effort/ not extreme/ even distribution/good mix	9%	9%	11%
Need to change/improve how we transport people/ goods (incl. public transport)	12%	8%	11%
Global warming/climate change needs to be tackled/reduced	6%	9%	7%
We need to reduce CO_2 emissions/to stop pollution	8%	9%	7%
More use of insulation/reduce temperatures/in the homes/buildings	10%	8%	8%
Business/industry needs to change	10%	7%	8%

Base: Feedback data from 2716 people who submitted My2050 worlds and age data (887 under 25, 126 25-45, 573 Over 46). People could submit more than one reason, so differences are indicative only.

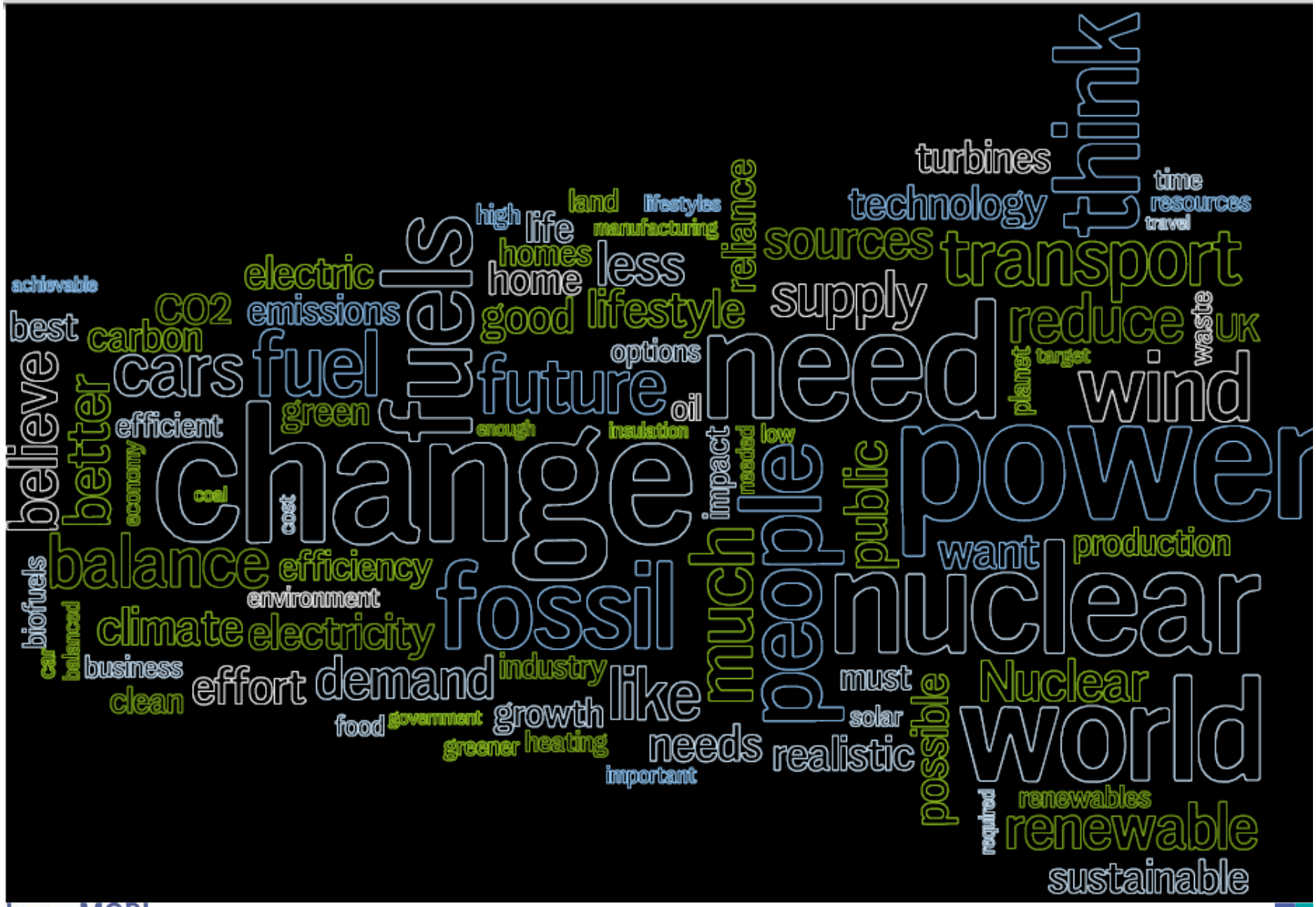
Top ten reasons for choosing worlds by region

Supply Strategy Change Demand

Description	London	North	South	Midlands
Need to use renewables more (inc. wind, solar, tide)	17%	19%	20%	19%
Individuals should make more of an effort/ changes in lifestyle needed/work as a community	17%	16%	13%	15%
Reduced use of fossil fuels/ fossil fuels are not sustainable/ running out of fossil fuels	12%	10%	10%	12%
Need to use nuclear/ pronuclear/ nuclear is the future	12%	11%	11%	10%
Balanced effort/ not extreme/ even distribution/good mix	7%	11%	12%	10%
Need to change/improve how we transport people/ goods (incl. public transport)	10%	9%	11%	10%
Global warming/climate change needs to be tackled/reduced	7%	9%	8%	9%
We need to reduce CO_2 emissions/to stop pollution	6%	7%	8%	10%
More use of insulation/reduce temperatures/in the homes/buildings	11%	5%	8%	8%
Business/industry needs to change	10%	6%	8%	8%

Base: Feedback data from 2487 people who submitted My2050 worlds and age data (454 in London, 543 in the North, 432 in the Midlands and 1058 in the South excluding London). Scotland, Wales and N. Ireland excluded due to small base sizes. People could submit more than one reason, so differences are indicative only.

Language commonly used in describing worlds



Language used when explaining their world

- People used **both rational and emotive language** (think, must vs. feel, believe) to explain why they chose their world.
- Many mentioned of **supply issues** (wind, fossil, nuclear), while the submitted worlds often focused on reducing demand. This suggests that views on supply – including sources to avoid – were a strong influence on worlds submitted.

In their own words

"I would like to see … more intervention (and assistance) from government in new homes - i.e. ALL new buildings to be energy-neutral with very high insulation, electricity generation built in (e.g. use solar roof tiles, ground pumps, triple glazing, heat exchangers, etc)."

"Nuclear energy is the only way forward. The earthquakes in Japan have proven it would be safe in this country (a 0.89 earthquake is strong for us, never mind 8.9 and no meltdown as such). No reliance on tin pot dictatorships or people such as Hugo Chavez."

"Using fossil fuels is archaic… I choose more wind power as solar is not as efficient as wind for the UK and wind is less intrusive than harnessing tidal energy."

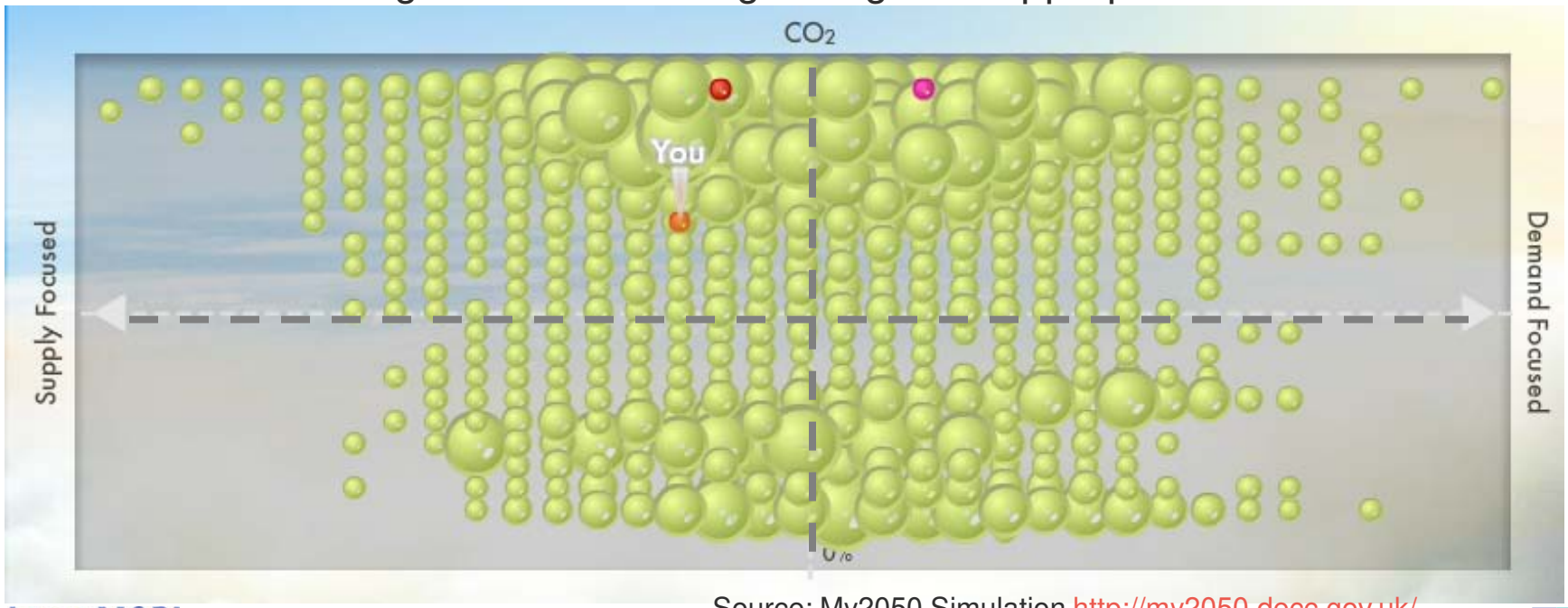
"Encouraging different lifestyle choices such as cycling rather than driving would make for a cleaner [and] more pleasant, less stressful day-to-day life."

What levers did people use?

Demand vs. supply-focused worlds

The schematic below plots worlds depending on whether they focus more on supply or demand, and how big a CO_2 reduction they achieve.

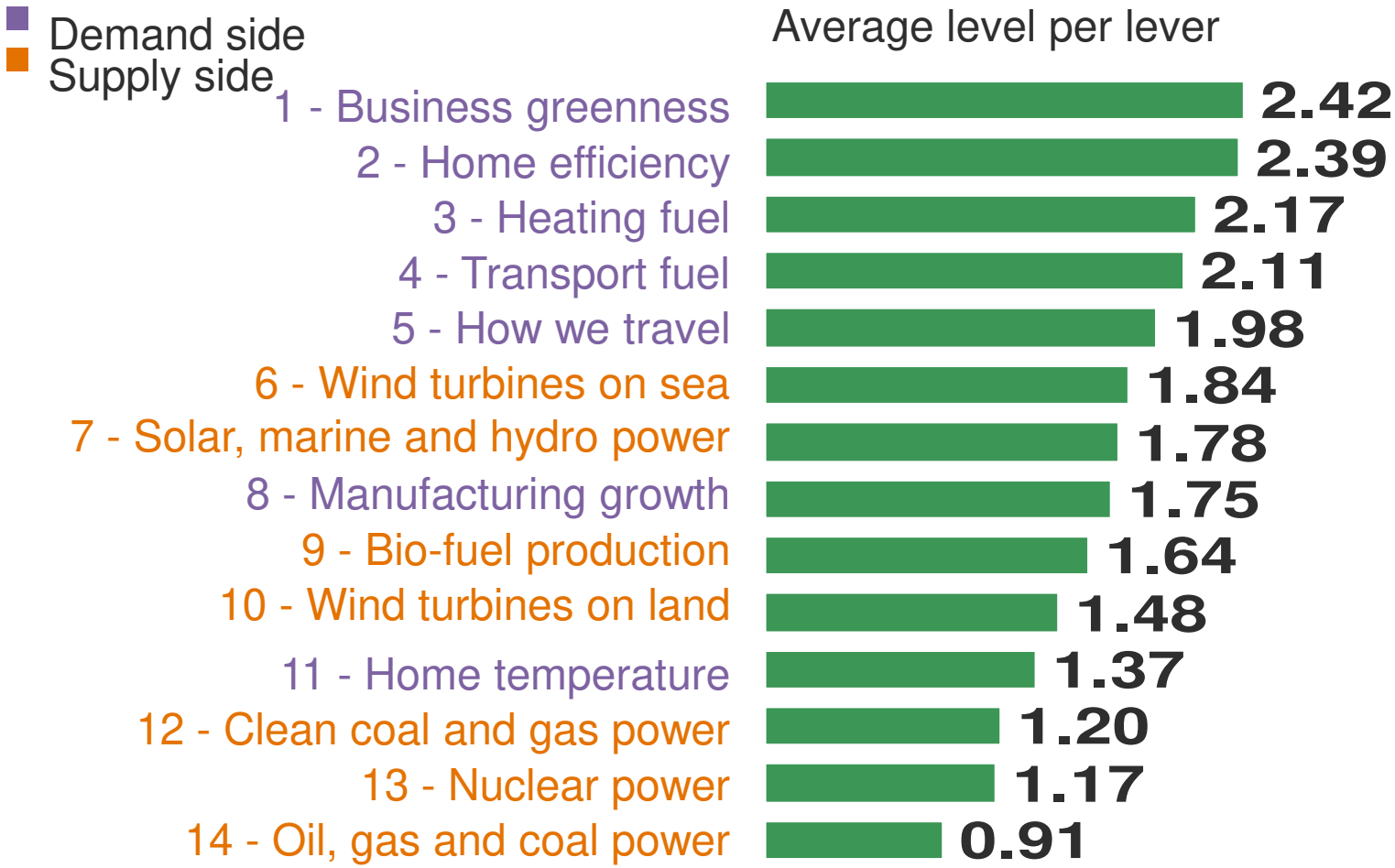
- Overall, more users focused on reducing demand than changing supply (see overleaf for more detail).
- Users either aimed for the minimum 80% reduction needed to submit a pathway, or submitted a world that achieved a reduction closer to 0% emissions. This may be on purpose, but could also show that users experimented with high effort levels without considering that lesser changes might be appropriate.



Source: My2050 Simulation http://my2050.decc.gov.uk/

Higher effort on most demand-side levers

Top 5 levers (on average) related to the demand side, mirroring the concentration on the demand side seen in the 2050 Pathways workshops



Source: 10,215 people who submitted My2050 worlds

NB unless otherwise stated, three levers have been reversed so that for all levers 0 is no effort and 3 is maximum effort/change from current behaviour

Results mirror the workshop findings

Top 5 levers My2050
Business greenness
Home efficiency
Heating fuel
Transport fuel
How we travel

Bottom 5 levers My2050
Wind turbines on land
Home temperature
Clean Coal and Gas
Nuclear power
Oil, gas and coal power

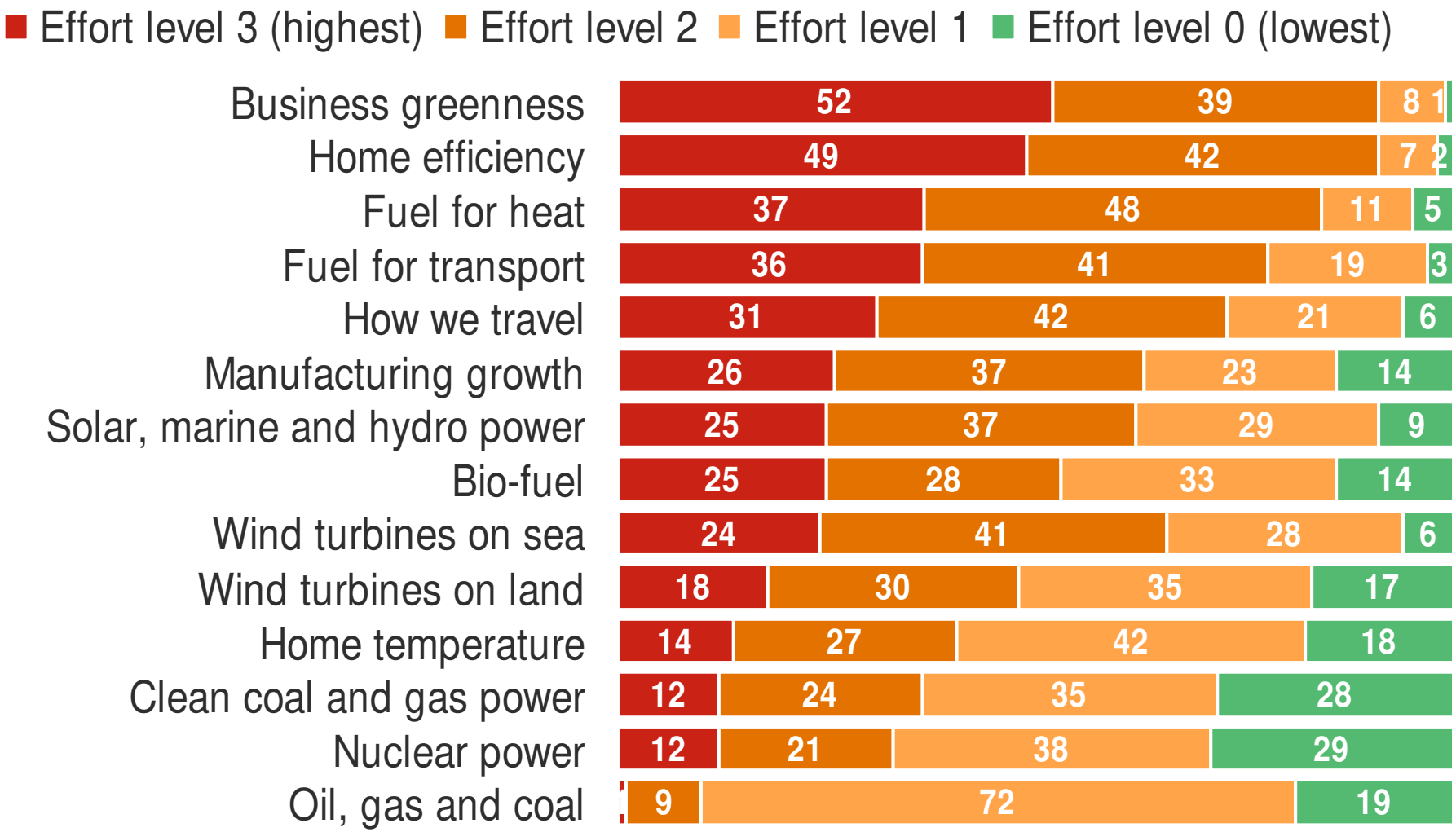
Demand side
Supply side

Top 5 levers 2050 Pathways workshops
Home insulation
Domestic transport behaviour
Commercial demand for heating and cooling
Home heating electrification
International aviation

Bottom 5 levers 2050 Pathways workshops
Electrification of home cooking
Nuclear power stations
Electrification of commercial cooking
Biomass power stations
CCS power stations

Source: 10,215 people who submitted My2050 worlds.
My2050 workshops were held in Ulverston, London, and Nottingham in February and March 2011.
NB workshops used the calculator with over 40 levers so direct comparison cannot be made.

A hierarchy of acceptability?

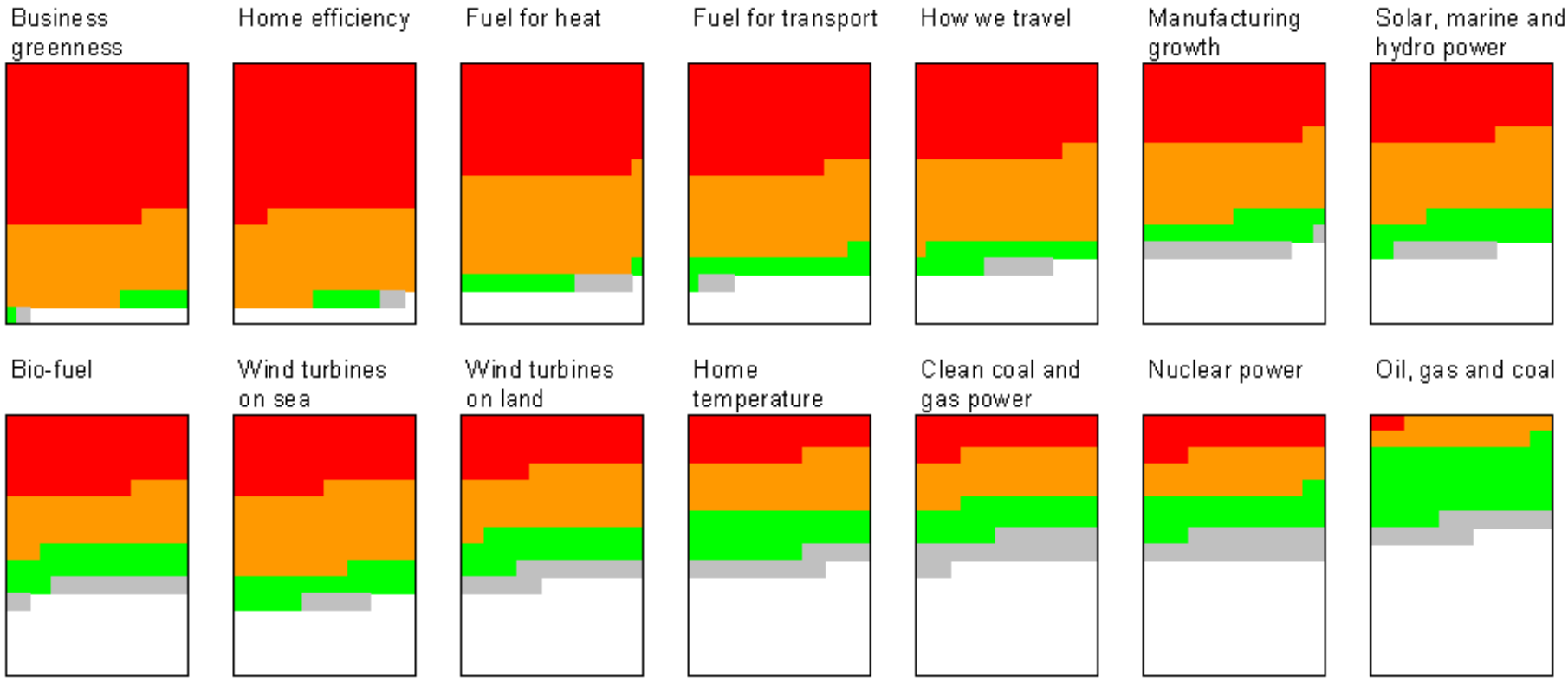


Base: 10,215 unique My2050 'worlds', for 3 levers ('Manufacturing growth', 'Home temperature' and 'Oil, Gas and Coal' the order of the levels has been reversed, to reflect the level of effort.

Levers sorted by the percentage of users choosing the highest effort level.

Business greenness almost double the chosen effort on oil, gas and coal

Visualising the same data differently, the blocks below show how responses are distributed, where levers set on effort level 3 are given three times the area of a level 1 effort.



- Effort level 3 (highest)
- Effort level 2
- Effort level 1
- Effort level 0 (lowest)

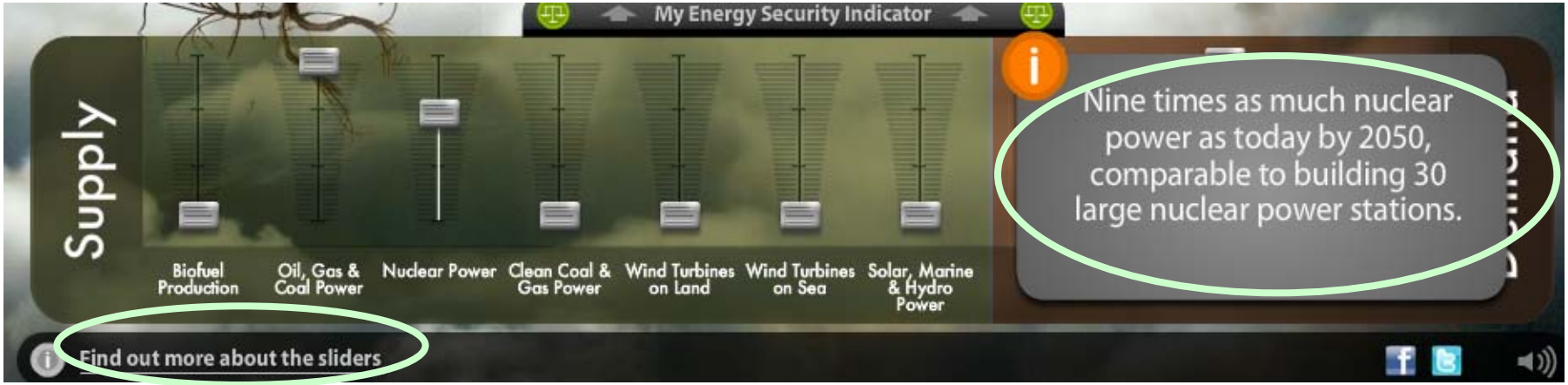
Ipsos MORI

Base: 10,215 unique My2050 'worlds', for 3 levers ('Manufacturing growth', 'Home temperature' and 'Oil, Gas and Coal' the order of the levels has been reversed, to reflect the level of effort.)

Levers sorted by the percentage of users choosing the highest effort level.

An informed decision?

- Measures relating to demand reduction have received much publicity over the years and relate most to people's everyday life. Conversely, details of how supply methods work would have received less coverage.
- As evidenced in the workshops, people's choices often reflect the measures they are most familiar with (which varies), and are not necessarily all rational, information-based decisions.
- My2050 provided some further information on the levers:



Common worlds

Were any solutions more particularly popular?

How many people created unique worlds?

- Of the 10,215 worlds analysed, 8255, or 80.8% were unique, submitted just once.
- 1,960 submitted worlds were not unique (i.e. the same combination of levers was submitted by more than one user).
- These represented 591 separate worlds / combinations of levers
  - The vast majority (393) of non-unique worlds were submitted by two different users
  - 94 worlds were submitted by 3 different users
  - 104 worlds were submitted by 4 or more different users
    - 18 of these unique worlds were submitted by more than 10 users
- Overleaf we examine the characteristics the 18 worlds which were submitted by the highest number of different people (i.e. by ten or more people).

Base: 10,215 people who submitted My2050 worlds.

Most common worlds: description

In our analysis, we have classified common worlds into two forms, depending on level of effort:

- The first was **high effort**, with a large proportion of the levers set to maximum effort (either '3' or '0').These worlds tend to achieve very high carbon reductions, but the large number of levers set to three may indicate a lack of deliberation on the part of the users who chose these worlds.

- The world that was submitted by the most people (91) had all levers set to '3'. It may be that those who chose these options did not fully understand the three inverted levers (where setting the lever to '0' indicates the highest effort).

- The other common form was worlds with **balanced effort**. In these worlds, the majority of the levers are set to 2, but there is **usually with more effort on the demand side**. This suggests a particular popularity of solutions that require a modest effort across a number of sectors rather than a huge amount of effort in a few.

Most common worlds: frequencies

High effort

Balanced effort, more emphasis on demand side

Description	Frequency	Supply	Demand
All levers on 3, including inverted levers	91	3333333	3333333
All levers but Oil, Coal and Gas Power on highest effort	52	3333333	0330333
Balanced, more effort on demand side	44	1211111	1222222
Balanced, more effort on demand side	36	1211111	2222222
All levers on 3, except Manufacturing Growth	26	3333333	0333333
High effort generally, anti-Nuclear and CCS	25	3300333	0330333
High effort generally, anti-Nuclear and CCS	20	3300333	3333333
High effort generally, anti-Nuclear and CCS, less Biofuel	19	2300333	3333333
High effort generally, anti-CCS	17	3330333	0330333
High effort generally, anti-Nuclear	16	3303333	0330333
Balanced effort, high on fossil fuels, home temp and Growth	16	2122222	1221222
High effort generally, anti-Nuclear	16	3303333	3333333
Balanced effort, high on home temperature and Growth	11	2222222	1221222
High effort generally, no effort on Heating Fuel	11	3333333	3333033
High effort generally, anti-Nuclear and CCS	10	3300333	0333333
Balanced effort, modest on biofuels	10	1222222	1222222
Balanced effort	10	2222222	1222222
Balanced, more effort on demand side	10	1212111	2222222

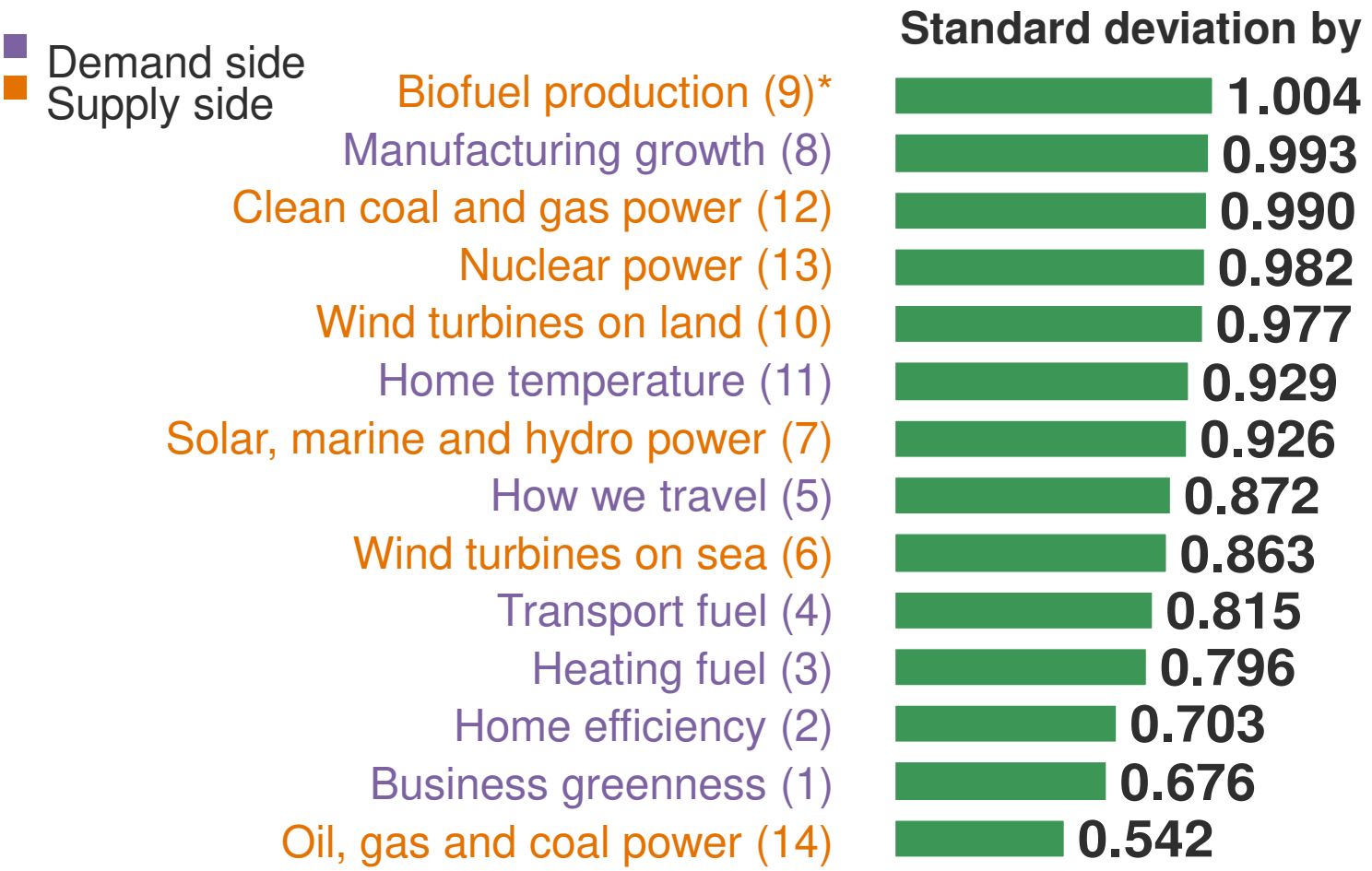
Base: 10,215 people who submitted My2050 worlds.

Supply and Demand Columns list level of effort for each lever in turn – biofuel, oil and gas, nuclear, clean coal, wind onshore, wind offshore, solar and manufacturing growth, business greenness, home efficiency, home temperature, heating fuel, how we travel, transport fuel (NB in columns 3 and 4 effort is presented as it appeared in the original dataset but descriptions reflect actual level of change from status quo)

Divisive Levers

Bio-fuel production and manufacturing growth most divisive levers

By looking at the standard deviation for each lever, we can distinguish the levers where people were more likely to choose similar levels (lower score) and more likely to choose diverging levels (higher score)

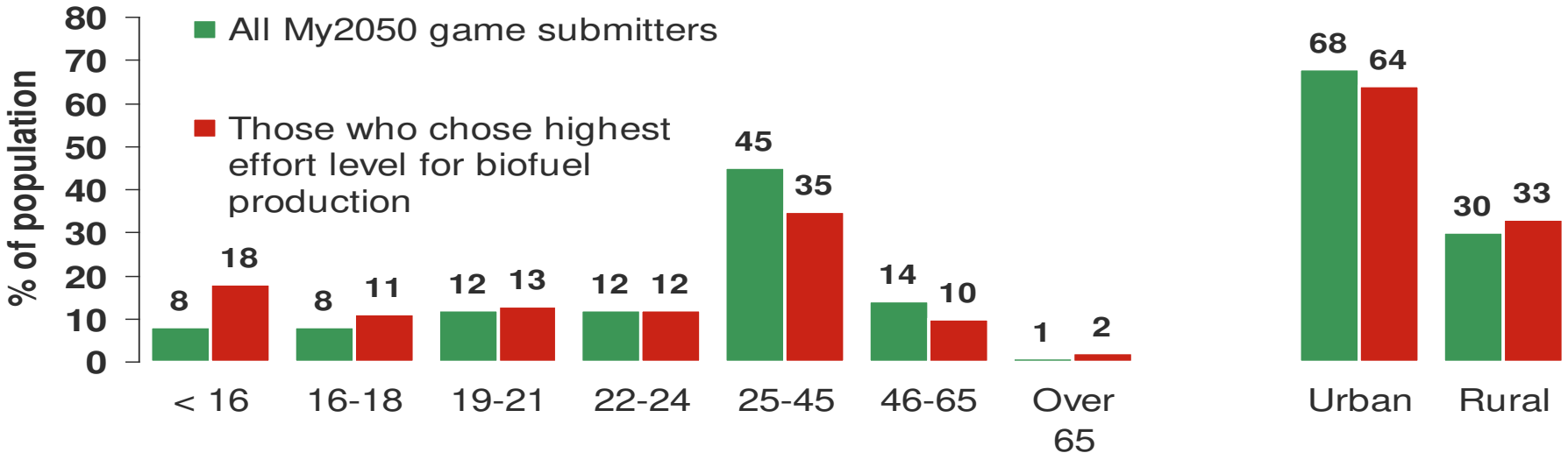


*The numbers in brackets represent the position of this lever on the 'effort' scale at slide 21.

Base: 10,215 people who submitted My2050 worlds.

Divisive levers: Views on bio-fuel production differ by age

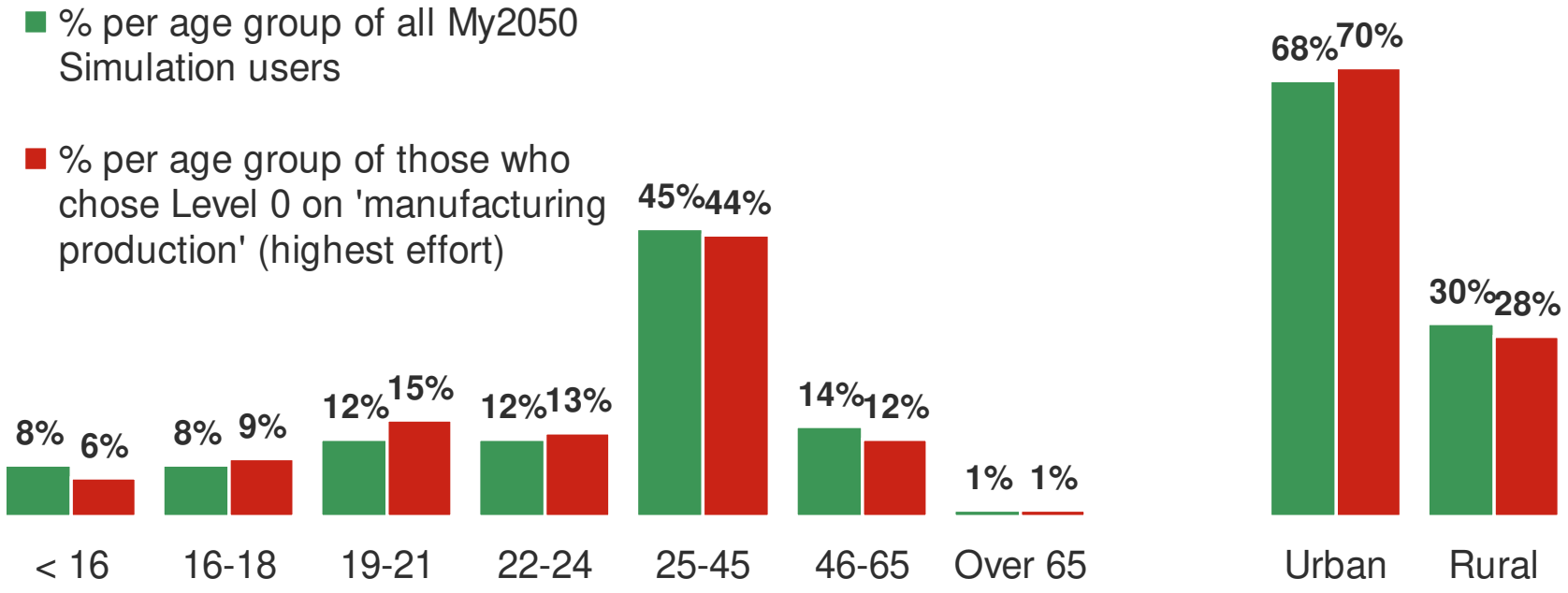
- The following graph shows how age and urbanity breakdown differs between all My2050 Simulation users vs. those who put the highest possible effort on bio-fuel.
- Young people under the age of 21 were significantly more likely to use a higher effort on the bio-fuel lever than users overall, while those ages between 25 and 45 were significantly less likely to do so.
  - The chart shows 8% of those who submitted worlds were aged under 16, while 18% of those who set bio-fuel effort on maximum were under 16
- Those who were 'very concerned' about climate change were significantly more likely to use less effort than average on this lever, suggesting those most concerned about the environment and climate change were less keen than average on the use of bio-fuels as a solution.



Base: 10,215 people who submitted My2050 worlds, 2530 people who submitted worlds with the biofuel lever set on 3.

Divisive levers: Manufacturing growth

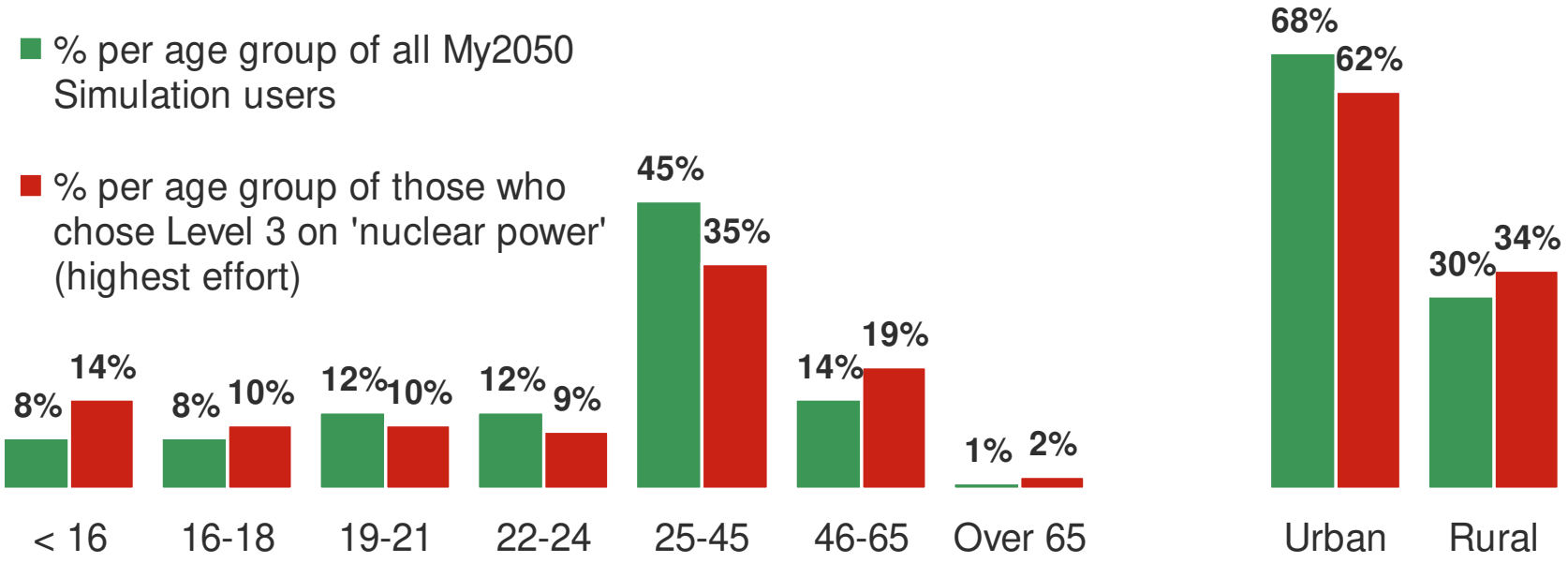
- The following graph shows how age and urbanity breakdown differs between all My2050 Simulation users vs. those who chose the lowest effort level for manufacturing growth.
- While manufacturing growth is the second most divisive lever (see slide 19), there are minimal differences by demographic group, suggesting that the level of effort on this lever is guided by attitudinal factors.
- Based on the workshops, it is possible that settings for this lever were based on what people thought was plausible (e.g. some may feel that the level of effort is outside of people's control)



Base: 10,215 people who submitted My2050 worlds, 2681 people who submitted worlds with the Manufacturing Growth lever set on 0.

Divisive levers: Nuclear power

- The following graph shows how age and urbanity breakdown differs between all My2050 Simulation users vs. those who chose the lowest effort level for nuclear power.
- As with bio-fuel, young people under the age of 18 were significantly more likely to use the highest effort on the nuclear lever than users overall, while those ages between 25 and 45 were significantly less likely to do so.
- Rural dwellers were more likely than urban dwellers to use the highest effort for nuclear power



Base: 10,215 people who submitted My2050 worlds, 1265 people who submitted worlds with the nuclear lever set on 3.

Who used which levers?

Subgroup differences

Differences by age (1)

- Those aged **under 16** were significantly more likely to have chosen a higher effort than average on 9/14 levers, which suggests many follow a strategy of putting most of the levers on maximum. Clearer instructions and warning boxes may be necessary to avoid this.
- Within the 16 – 24 age group there are a number of differences in usage
  - People aged **19-24** used a lower level of effort than average for the wind turbines on land, and solar marine and hydropower.
  - Those aged **16-21** put more emphasis than average on bio-fuel production, and
  - Those **under 18** on put more effort than average on nuclear power.
- Those **aged between 46 and 65** tended in general to concentrate less on the demand side, and more on the supply side.
- Those in the middle age range (**25-45**) put significantly less emphasis on bio-fuel production, nuclear power and CCS.

More detail is provided overleaf.

Significant differences by age (2)

The following table shows how the average **lever settings vary across different age groups**. Lever settings with a lower effort than average are highlighted in **green**, and those with a higher effort than average in **red**. Where the box is white the difference is not significant. For the inverted levers (the final three, where a score of 3 is low effort instead of high effort) the colour coding remains the same – red is more effort, green is less effort than average.

World makers	Business greenness	Home efficiency	Heating fuel	Transportfuel	How we travel	Wind turbines on sea	Solar, marine and hydro power	Bio-fuel production	Wind turbines on land	Clean coal and gas power	Nuclear power	Manufacturing growth	Home temperature	Oil, gas and coal power
Overall	**2.42**	**2.39**	**2.17**	**2.11**	**1.98**	**1.84**	**1.78**	**1.64**	**1.48**	**1.20**	**1.17**	**1.25**	**1.63**	**2.09**
< 16	2.46	2.30	2.24	2.39	2.36	1.99	1.99	2.36	1.88	1.58	1.37	1.75	1.80	2.26
16-18	2.40	2.34	2.23	2.20	2.05	1.82	1.72	1.94	1.41	1.22	1.34	1.29	1.62	2.15
19-21	2.46	2.39	2.23	2.13	1.95	1.77	1.68	1.75	1.37	1.17	1.18	1.07	1.55	2.12
22-24	2.43	2.36	2.17	2.10	1.98	1.75	1.63	1.67	1.32	1.12	1.14	1.16	1.59	2.12
25-45	2.39	2.40	2.15	2.07	1.89	1.83	1.76	1.50	1.47	1.14	1.10	1.19	1.60	2.06
46-65	2.42	2.42	2.08	2.03	2.00	1.89	1.92	1.39	1.52	1.29	1.23	1.32	1.73	1.98
Over 65	2.57	2.53	2.18	2.26	2.30	1.96	2.05	1.72	1.69	1.43	1.35	1.47	1.81	2.04

Note: The three 'inverted' levers are highlighted in yellow and placed to the right. These are the levers for which a lower average indicated less effort rather than more.

Base: 10,215 people who submitted My2050 worlds.

Differences by attitude to climate change (1)

- Those who were '**very concerned**' about climate change were more likely to place effort on demand-side levers and renewable energy sources.
- Those who were '**fairly concerned**' were more likely to put effort into nuclear power and CCS, and less effort on the demand side levers and renewables.
- The '**mildly concerned**' followed a similar strategy, but used higher effort for the nuclear power and bio-fuel levers.
- Those who were '**not concerned**' were the group with the highest average level of effort for nuclear power and bio-fuel production.

More detail is provided overleaf.

Significant differences by attitudes to climate change (2)

The following table shows how the average **lever settings vary by attitude to climate change**. Lever settings with a lower effort than average are highlighted in **green**, and those with a higher effort than average in **red**. A white background shows the difference is not significant. For instance, those very concerned about climate change put the levers for nuclear power and clean coal and gas power on a significantly lower setting than average.

	World makers	Business greenness	Home efficiency	Heating fuel	Transport fuel	How we travel	Wind turbines on sea	Solar, marine and hydro power	Bio-fuel production	Wind turbines on land	Clean coal and gas power	Nuclear power	Manufacturing growth	Home temperature	Oil, gas and coal power
Overall	**2.42**	**2.39**	**2.17**	**2.11**	**1.98**	**1.84**	**1.78**	**1.64**	**1.48**	**1.20**	**1.17**	**1.25**	**1.63**	**2.09**
Very concerned	2.50	2.47	2.18	2.20	2.13	1.96	1.89	1.57	1.60	1.17	1.01	1.32	1.72	2.13
Fairly concerned	2.35	2.33	2.12	2.03	1.88	1.77	1.70	1.63	1.42	1.24	1.21	1.21	1.61	2.04
Mildly concerned	2.31	2.28	2.15	1.98	1.74	1.65	1.64	1.73	1.25	1.19	1.38	1.09	1.46	2.02
Not concerned	2.39	2.34	2.30	2.05	1.79	1.60	1.59	1.89	1.27	1.29	1.68	1.15	1.46	2.05

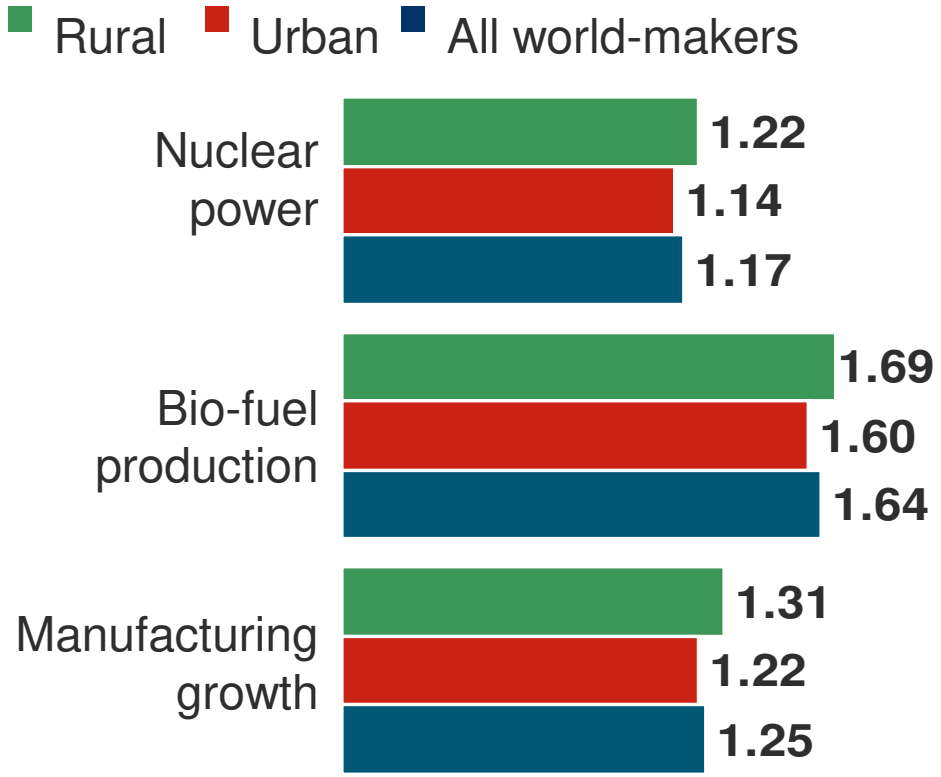
Note: The three 'inverted' levers are highlighted in yellow and placed to the right. These are the levers for which a higher average indicated less effort rather than more.

Base: 10,215 people who submitted My2050 worlds.

Differences by place of dwelling

- There were few significant differences by place of dwelling.
- Rural dwellers tended to emphasise nuclear power more than urban dwellers in creating their worlds.
- They were also more keen on bio-fuel production, potentially as they were more aware of it, and saw it as a potential source of rural employment.
- Urban dwellers were more likely than rural dwellers to limit manufacturing growth as a means of hitting the target.

The figures below refer to the average use of each lever by group. Note that for nuclear power and bio-fuel production a higher average represents a higher effort, for manufacturing growth a lower average represents higher effort.



Base: 10,215 people who submitted My2050 worlds.

Differences by region

- Differences by region tended to be less pronounced than differences by age or attitude, and there was no evidence of people in different regions using different strategies to create their worlds.
- **Bio-fuel production** was a less popular lever in the south and Scotland, but was used the most by those in the North East and Northern Ireland.
- Perhaps reflecting the better availability of public transport in the capital, Londoners were the regional group that puts the highest effort on **how we travel**. Those in the South East had the lowest average use of this lever.
- **Wind turbines on land** was more popular in Northern Ireland, the West Midlands and Wales, and less popular in the South East.

Significant differences by region (2)

The following table shows how the average **lever settings vary by attitude to climate change**. NB due to the large number of variables in this table, significance testing has not been conducted.

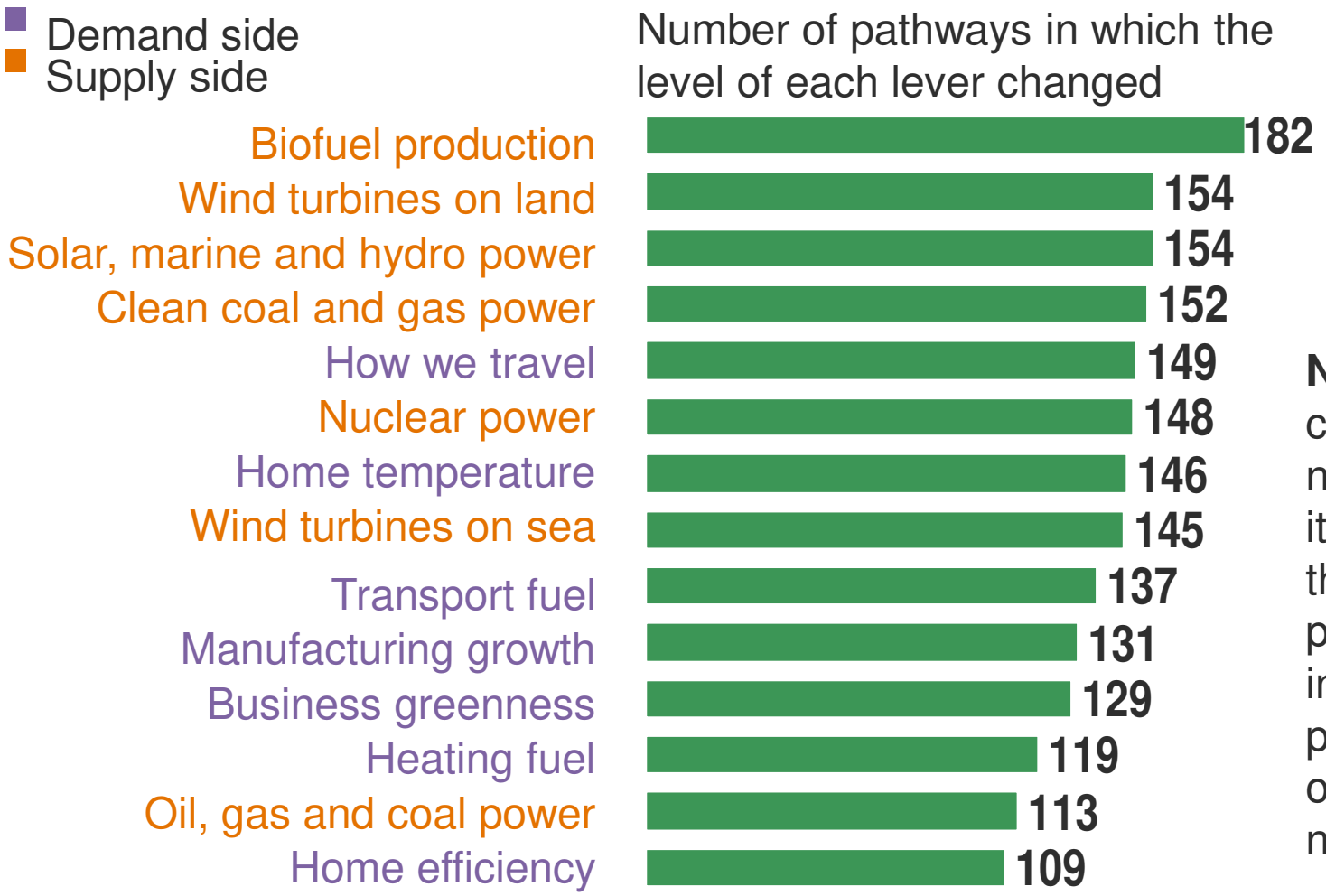
	World makers	Business greenness	Home efficiency	Heating fuel	Transport fuel	How we travel	Wind turbines on sea	Solar, marine and hydro power	Bio-fuel production	Wind turbines on land	Clean coal and gas power	Nuclear power	Manufacturing growth	Home temperature	Oil, gas and coal power
Overall	2.42	2.39	2.17	1.98	2.11	1.64	1.17	1.20	1.48	1.84	1.78	1.25	1.63	2.09	
East	2.44	2.43	2.15	1.99	2.11	1.63	1.28	1.24	1.47	1.90	1.82	1.28	1.70	2.11	
East Midlands	2.43	2.44	2.17	1.95	2.11	1.67	1.20	1.28	1.51	1.87	1.77	1.27	1.66	2.08	
Greater London	2.43	2.34	2.15	2.08	2.13	1.58	1.17	1.19	1.45	1.83	1.73	1.23	1.60	2.06	
North East	2.39	2.41	2.14	1.94	2.06	1.77	1.28	1.28	1.43	1.79	1.76	1.21	1.63	2.09	
North West	2.43	2.41	2.18	1.95	2.14	1.65	1.20	1.21	1.49	1.83	1.79	1.25	1.66	2.10	
Northern Ireland	2.51	2.41	2.13	1.94	2.13	1.86	1.29	1.13	1.65	1.98	1.83	1.26	1.63	2.17	
Scotland	2.43	2.42	2.20	2.00	2.09	1.62	1.02	1.15	1.46	1.83	1.83	1.25	1.68	2.09	
South East	2.39	2.38	2.15	1.87	2.09	1.62	1.22	1.21	1.43	1.80	1.74	1.20	1.59	2.05	
South West	2.43	2.38	2.21	1.99	2.10	1.60	1.13	1.13	1.45	1.79	1.77	1.30	1.68	2.11	
Wales	2.54	2.51	2.19	2.02	2.19	1.65	1.18	1.30	1.51	1.90	1.91	1.27	1.67	2.14	
West Midlands	2.42	2.36	2.15	1.93	2.11	1.66	1.20	1.24	1.54	1.90	1.77	1.25	1.63	2.06	
Yorkshire & Humber	2.35	2.32	2.11	1.89	2.04	1.65	1.16	1.24	1.53	1.85	1.79	1.24	1.61	2.09	
International	2.38	2.34	2.22	2.16	2.19	1.73	1.04	1.11	1.63	1.86	1.84	1.25	1.52	2.15	

Note: The three 'inverted' levers are highlighted in yellow and placed to the right. These are the levers for which a higher average indicated less effort rather than more.
Base: 10,215 people who submitted My2050 worlds.

Do the worlds change between drafts?

Change between drafts concentrated on supply-side levers

Out of the 500 sets of draft pathways analysed, 426 had changes between the first and final draft. The changes by lever are set out below.

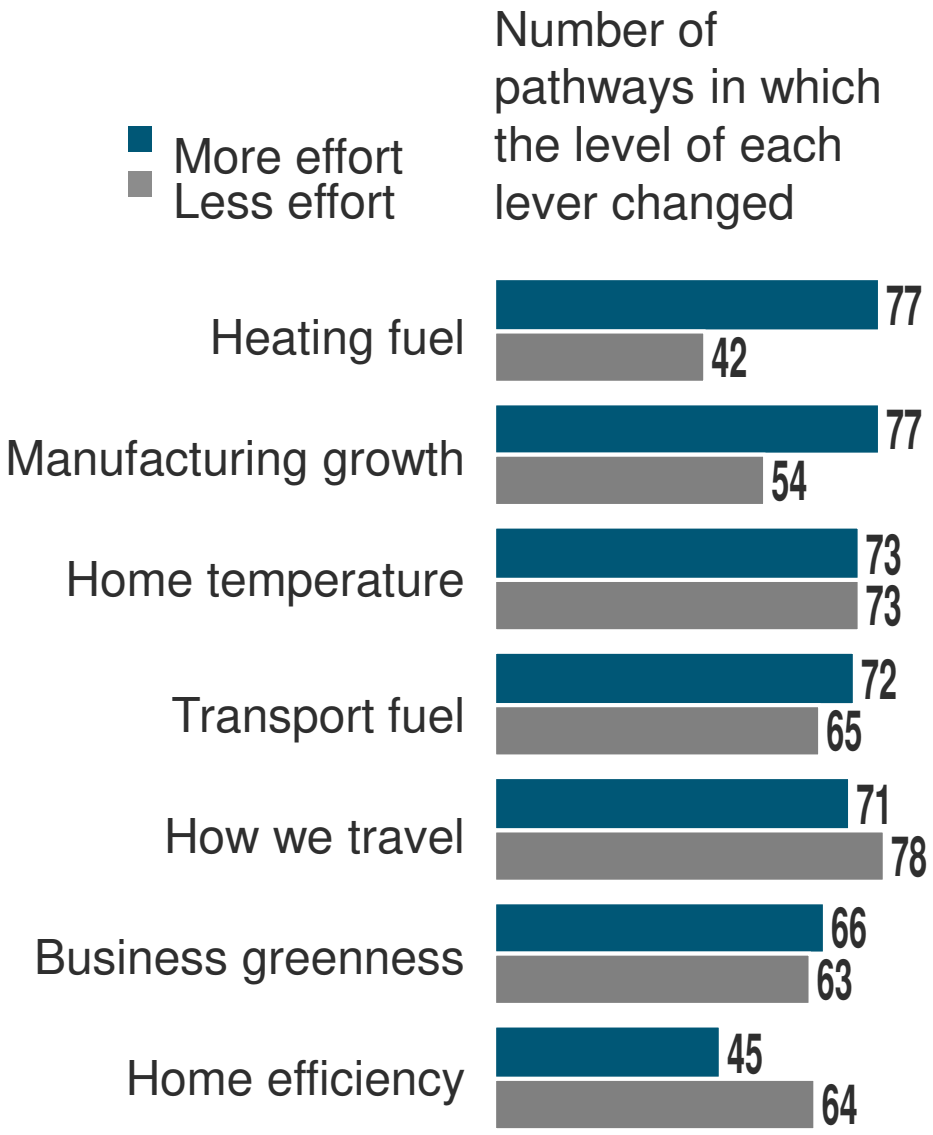


Note: changes may not represent iterations of the same pathway, but instead people trying out entirely new pathways

Base: 500 randomly selected users who submitted at least one draft and one final world. Where more thank one draft was submitted, the first draft and the final world were analysed.

Demand-side change

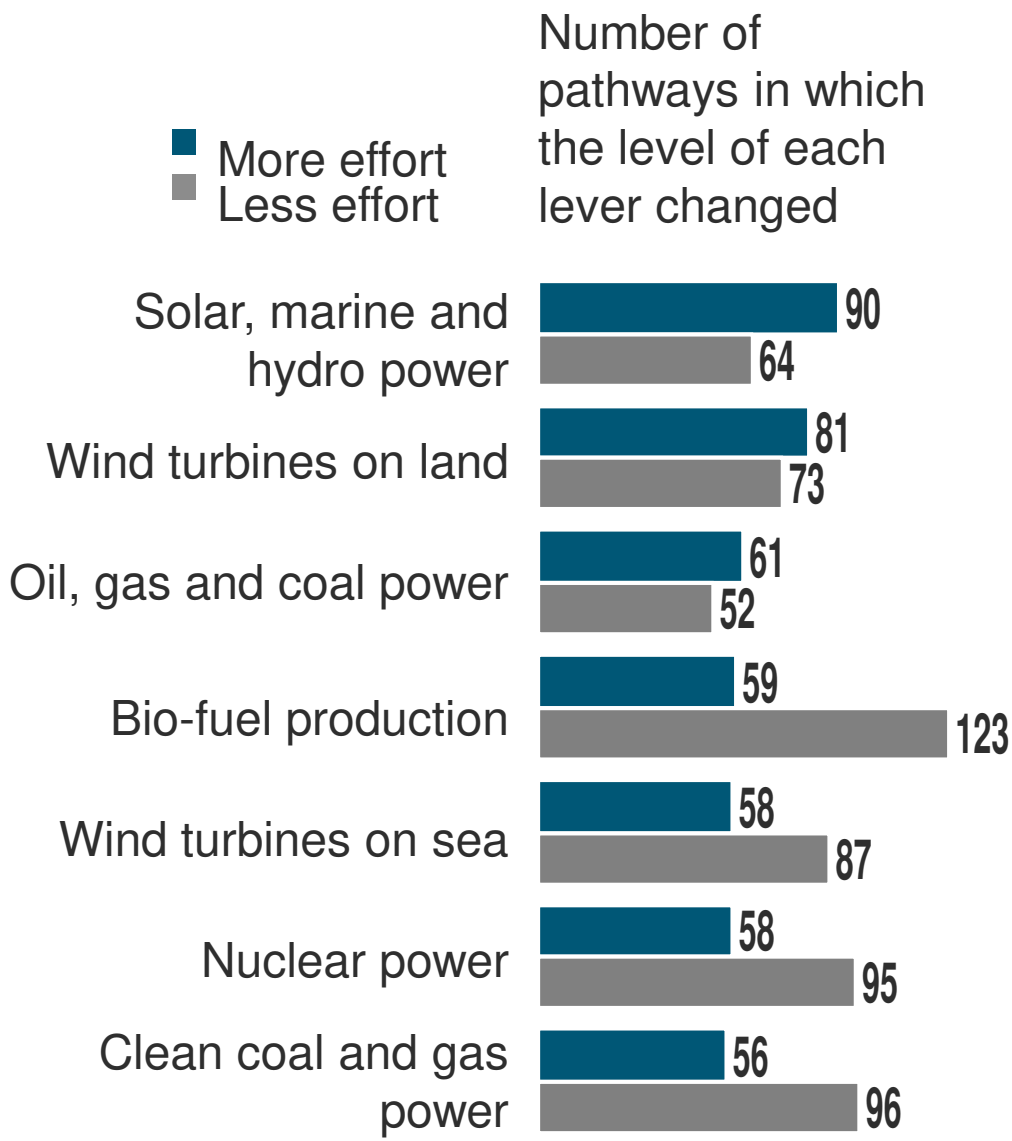
- **Heating fuel** and **manufacturing growth** are the levers where people tended to increase effort between drafts.
- People were most likely to reduce effort on **home temperature, home efficiency how we travel and transport fuel**, suggesting that if there is any leeway to make less effort, they will concentrate on the levers that are most related to personal behaviour, rather than the levers that pertain to business behaviour.



Base: 500 randomly selected users who submitted at least one draft and one final world. Where more than one draft was submitted, the first draft and the final world were analysed.

Supply-side change

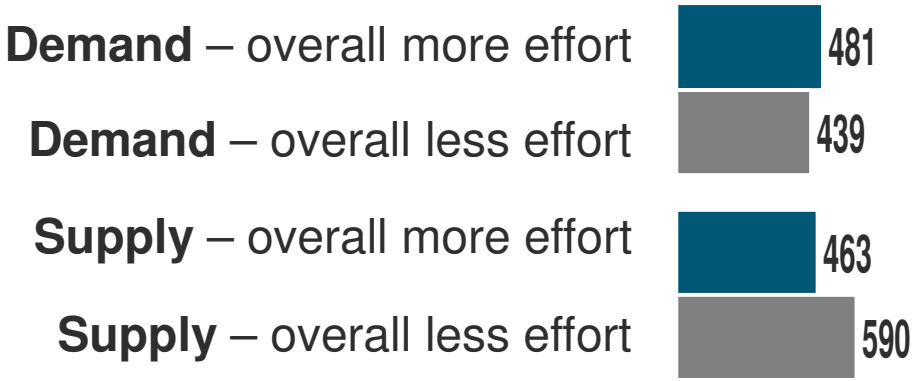
- People tend to put more effort on renewable energy sources such as **solar, marine and hydro power**, as **wind turbines on land**, in final drafts, but conversely are more likely to decrease effort for **wind turbines on sea.**
- **Bio-fuel production** is the lever where most people reduce effort between drafts.
- **Nuclear and CCS** are also more likely than other levers to be reduced between pathways, suggesting that people would rather use both of these options less if there is any leeway in meeting the target.



Base: 500 randomly selected users who submitted at least one draft and one final world. Where more than one draft was submitted, the first draft and the final world were analysed.

What changed overall?

- More participants made changes to supply levers than made changes to the demand levers. This is in line with their explanations for their worlds, where supply issues featured prominently.
- In most cases, this was to reduce effort on supply levers



Conclusions

Conclusions – findings (1)

- The people who submitted worlds were younger than average, which suggests the simulation did it's job of engaging a younger audience.
- Younger people appear to have different views on some levers (e.g. nuclear and bio-fuel) than older people in the sample, and this is worth keeping this in mind when drawing conclusions, as the overall figures will therefore not be representative of the UK as a whole.
- Users focused effort on demand side measures and on issues they were familiar with (i.e. issues related to their everyday life).
  - Just under half talk about supply-side decisions as their motivation, suggesting that the most common approach was to alter demand to achieve supply objectives (e.g. avoid fossil fuels or nuclear)
- Green business was a particularly popular lever. It is likely effort in this area does receive a high level of support, but also worth noting there could be a methodological effect because this lever is the first one people come to
- The most divisive levers are bio-fuel and manufacturing growth, followed by CCS, onshore wind and nuclear. These solutions are likely to be the most contentious if put in place.

Conclusions – findings (2)

- A significant proportion of participants did go back and change their world after their first draft suggesting there was some deliberation occurring.
- These changes included both increases and decreases in effort on all the levers, however, for some supply-side levers people did tend to reduce effort if possible (particularly bio-fuel, nuclear, CCS and offshore wind).
- Changes on the demand side tended to be to reduce personal effort (e.g. how we travel, home temperature etc) although a significant number did choose to increase these between their draft and final pathways
- The Simulator is a useful way to establish how people might approach the 2050 challenge. It successfully reached its target audience of young people, although those who submitted worlds were likely to be more concerned about climate change than the population as a whole.

Conclusions – some thoughts on usability

- Users (young people in particular) may have had some trouble understanding the levers that 'worked the other way around' (i.e. oil, gas and coal power; manufacturing growth; home temperature).
  - The evidence for this is that they put in higher than average effort on the majority of levers, but lower than average effort on the 'inverse' levers
  - ➢ Perhaps consider usability testing or re-basing the levers?
- People completed the Simulation as a game or a challenge, but results could potentially have been different if this had been used as a policy consultation exercise.
  - The evidence for this is that some people only spent only a short period of time devising a solution, suggesting they took the Simulation lightly.
  - However, as the majority said they were happy with the world they created this might not be too problematic.
  - ➢ If using this data for policy-making it might be helpful to explain this to participants more explicitly at some point (NB this could be part of the final form e.g. "would you be happy to see DECC adopt policies which take us towards the world you designed")
- Many pathways worked because people put a lot of effort on all levers, and in the workshops this was partly because people did not necessarily realise a lower effort solution was possible.
  - ➢ Perhaps include warning to avoid such universal high effort?

Appendices

Codes (1)

Supply

Need to use renewables more (inc. wind, solar, tide)

Reduced use of fossil fuels/ fossil fuels are not sustainable/ running out of fossil fuels

Need to use nuclear/ pronuclear/ nuclear is the future

We need to reduce Co2 emissions/to stop pollution

Did not want to use nuclear/ nuclear is bad/ negative comments and/or concerns about nuclear

Need to change fuel supply

Did not want to use bio-fuels/ bio-fuels are bad/ negative comments about bio-fuels

Technology is advancing rapidly

We need land to grow food/feed population/we should not reduce food crops as this will increase prices

Anti onshore wind farms

Reduced use of resources

Positive comments for bio-fuels/production

Not happy importing from/relying on other countries

Change

Individuals should make more of an effort/changes in lifestyle needed/work as a community

Global warming/climate change needs to be tackled/reduced

Business/industry needs to change

Governments need to take the lead/tackle climate change/provide funding

Need to make tough decisions/ strong action needed/ necessity

Codes (2)

Demand
Need to change/improve how we transport people/ goods (incl. public transport)
More use of insulation/reduce temperatures/in the homes/buildings
We need to be more energy-efficient (inclu. needing to reduce energy use/use of cars/better home insulation)
We need to make the use of electric cars/transport more viable/cheaper/more places to charge the battery etc
Too much consumption/demand/need to reduce it
Strategy
Balanced effort/ not extreme/ even distribution/good mix
Best could do realistically/ it worked
Reached target with least impact
Most cost-efficient
Compromise/ best of both worlds/ pragmatic
Calculator too limited/Need more information/Not financial/other information included
Just tried it out/ no particular strategy

Codes (3)

Outcomes
Good for the economy/ maintains growth/ economic growth is important
Achievable/ practical/ fair
Changes that people will accept/ get used to
Maintains standard of living
It increases energy security
It will help provide jobs
Feelings
Concerned/ care about environment/ environment-friendly
It is right/ logical/ common sense
Optimistic about the changes that can happen
I would make the lifestyle changes in this pathway/ I want to do my part
Don't like the alternatives
Views on the world created
Better world/ happier/ quieter/ healthier/ cleaner/ safer /greener
Answered different question