



Presentation to Jeremy Quin MP by the Transition Horsham Energy Group

'Climate change and sustainable energy for Horsham'

The image shows a screenshot of the Transition Network.org website. At the top left is the logo for Transition Network.org, which includes a stylized leaf icon. To the right of the logo are navigation elements: a 'Select Language' dropdown menu, social media icons for Facebook, Twitter, and YouTube, a search bar with the text 'Search...', a 'Login' link, and two prominent buttons labeled 'Donate' and 'Get involved'. Below these are five menu items: 'About the Movement', 'Transition Near me', 'Stories', 'Do Transition', and 'News and blog'. The main content area features a large illustration of a sustainable community. The illustration depicts a town with various buildings, including a school and a town hall, surrounded by green spaces, solar panels, wind turbines, and people walking. The text on the page reads: 'A movement of communities coming together to reimagine and rebuild our world'. Below this text is a button with a right-pointing arrow and the text 'Tell me more'.



Who are we?

Transition Horsham (TH) is a local community organisation, with c.150 supporters and part of the international Transition movement.

Aims	How we do it
Publicise issues around climate change, carbon, energy conservation, renewable energy and sustainability living	Talks, films, "soap box", discussions, newsletters and social media
Promote the transition to a community that is less reliant on fossil fuels, has a smaller carbon footprint, reduces climate change and is more RESILIENT	Practical projects - community allotment, refill service, workshops, run events i.e. Seedy Saturday (seed exchange)
Encourage, support and collaborate with related local initiatives	Liaise and collaborate with Chesworth Farm, Warnham Local Nature Reserve, Horsham Organic Gardeners, Southwater Horticultural Society, Sussex Green Living, Kinder Living Show, HDC and WSCC green initiatives

Transition Horsham is not a campaigning/ lobbying organisation – but many supporters are also members of FoE, Greenpeace, Climate Reality Corp., Green Party, Labour, Lib Dems, Conservatives etc



TRANSITION HORSHAM

- the sustainable way forward

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Transition](#)[Contact us](#)

Welcome to Transition Horsham!

Transition Horsham is a community group of local Horsham area residents who are concerned about the effects that climate change and other environmental and economic problems will have on our lives in the near and medium future. We support the ideas and practical solutions of the Transition Towns movement set up by Rob Hopkins in 2006 in Totnes, Devon, where people like us wanted to do something positive to build in flexibility and resilience to their community, so that we not only survive future changes, but thrive.

Christmas Social

Food, drink, and two soap box speakers. Heather Rogers will be explaining how **Rudgwick** is working on a local neighbourhood plan, and Geoff Barnard will talk about recent work by **Steyning 10:10**

Tuesday 29th November 7:15 pm
at **Friends Meeting House**,
Worthing Road, RH12 1SL (opposite
Sainsburys).

Transition Horsham AGM

Tuesday 31st January 8:00 pm at
Friends Meeting House, Worthing
Road, RH12 1SL (opposite

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click for more
details**

Community Allotment
Horsham Green Readers

We are part of



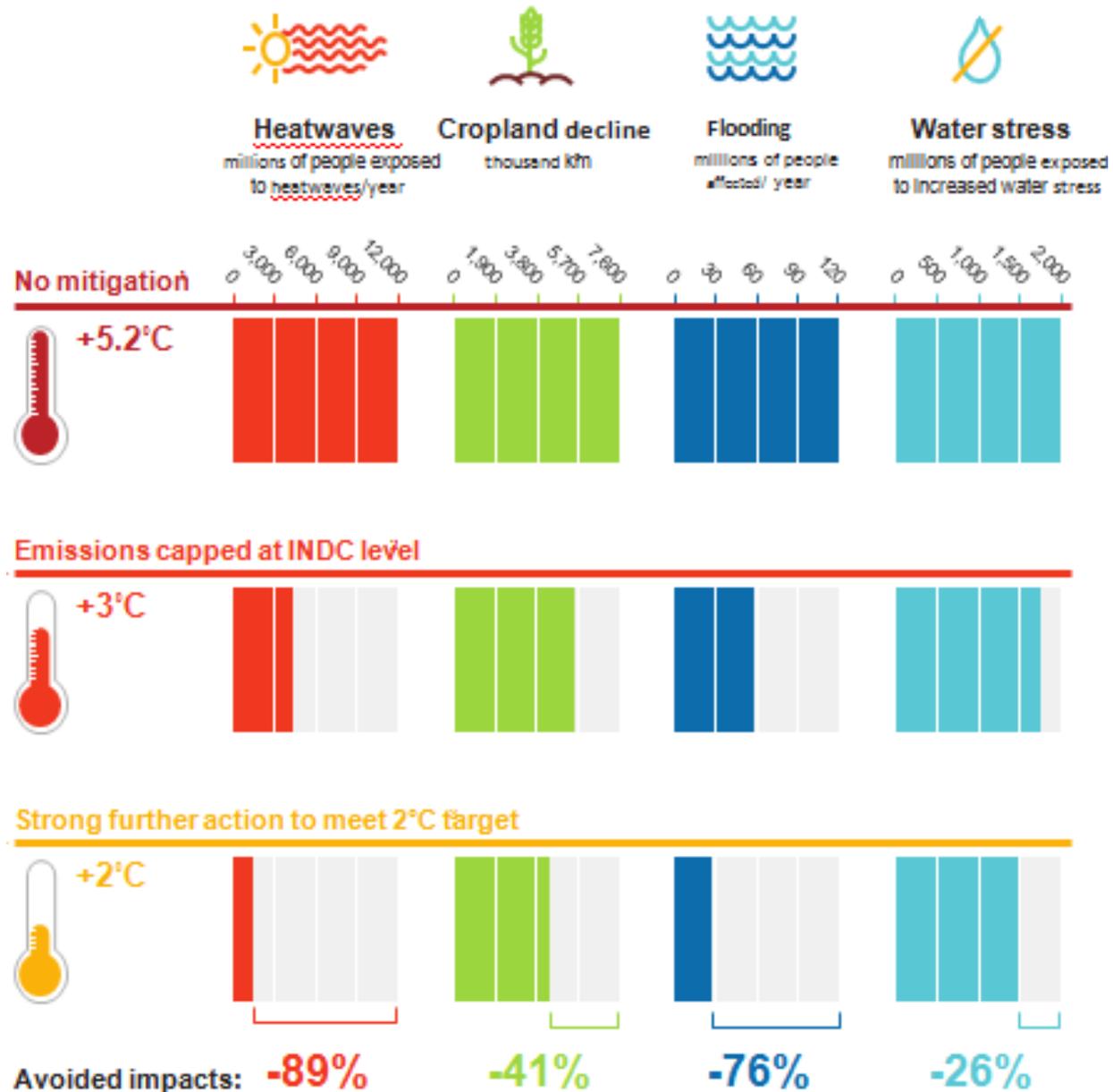


Why we need to keep most Fossil Fuels in the Ground

- In the 1970's, Yale professor William Nordhaus alluded to the danger threshold of 2°C
- A 2-3°C temperature rise above pre-industrial level would take the climate outside the range of observations over the last several hundred thousand years
- The 2°C limit has been suggested as the limit at which the worst effects of climate change can be avoided
- A cumulative industrial limit of ~5000 GtC fossil fuel emissions and 100 GtC storage in the biosphere and soil would keep climate close to the Holocene range to which humanity and other species are adapted
- 2°C limit not necessarily safe, undesirable effects may happen at a 1.5°C rise

Selected Global Climate Impacts in 2100

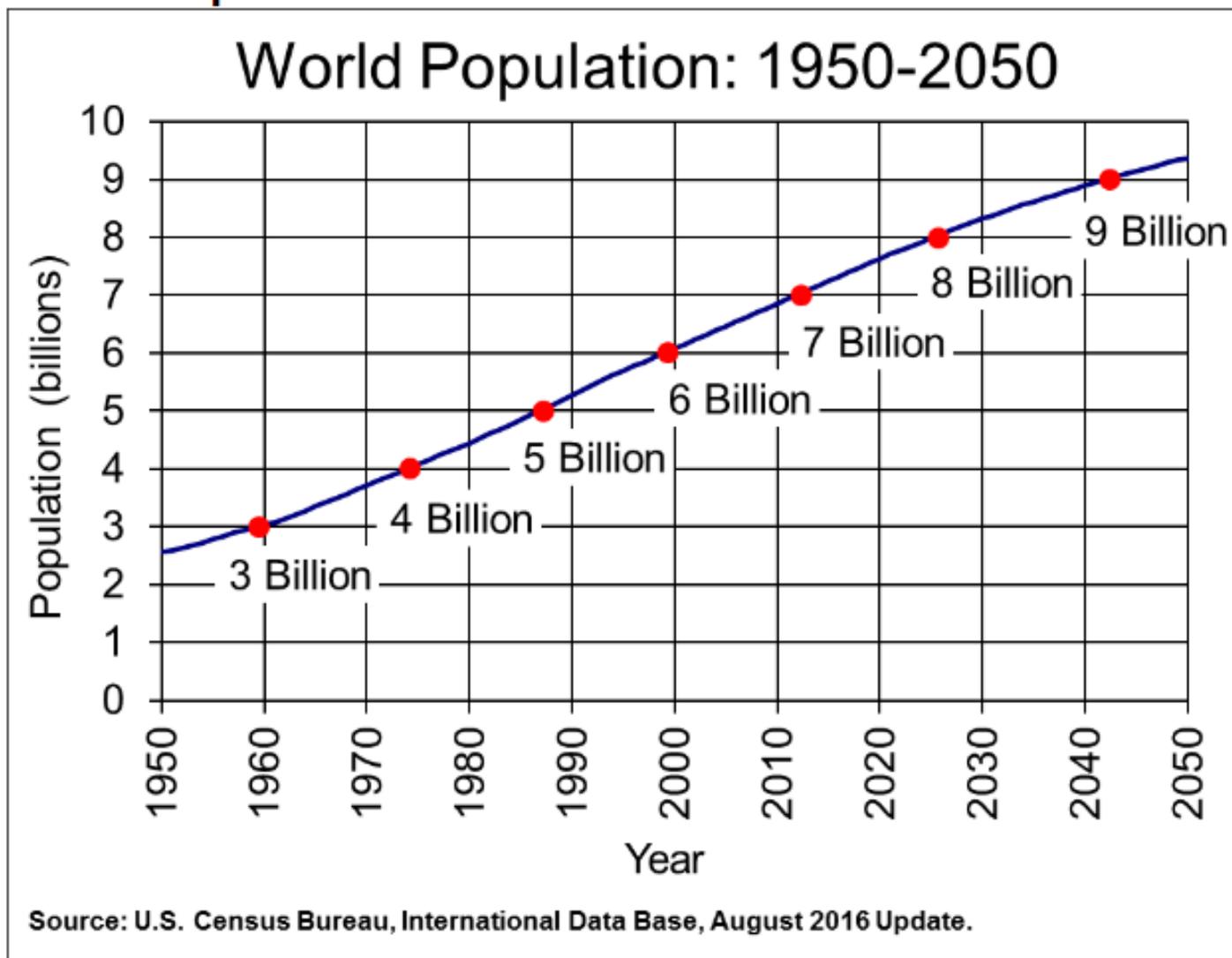
Relative To No Climate Change



With sustained effort up to and beyond 2030, the Paris pledges will limit the severity of key impacts on people and society.



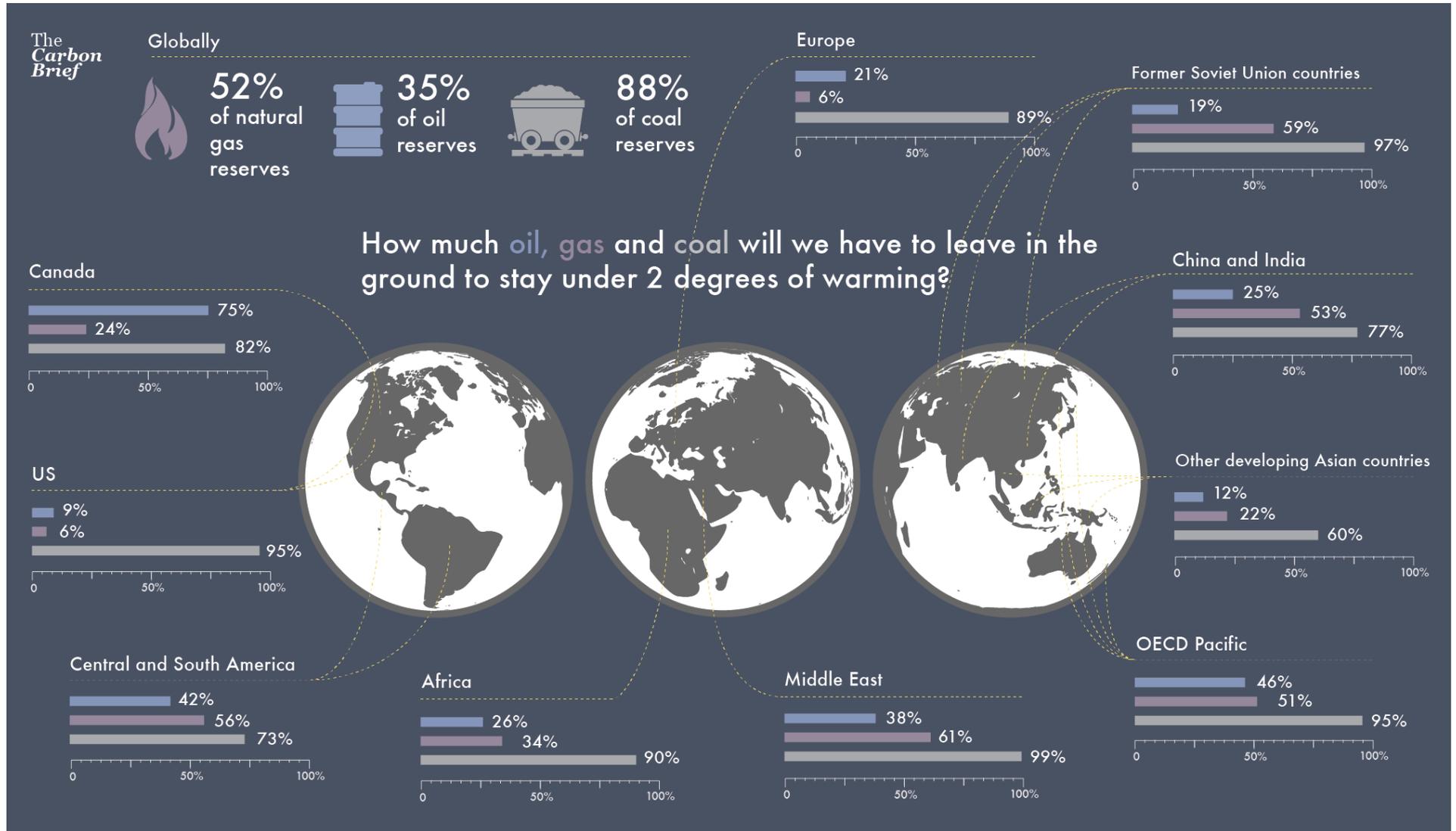
International Data Base World Population: 1950-2050



Source: <https://www.census.gov/population/international/data/idb/worldpopgraph.php>



We need to leave most of the oil, gas and coal in the ground to stay under 2 degrees of warming



Paris was a really important milestone in the International battle against Climate Change



- On 22 April 2016 (Earth Day), 174 countries signed the agreement in New York
- 4 November agreement entered into force with 193 signatories – 113 parties
- 7-18 November – COP22 Marrakesh, Marrakech more discussions and negotiations
- As of 25 November 197 signatories - 116 Parties



MARRAKECH
COP22|2016|CMP12
UN CLIMATE CHANGE CONFERENCE

SWEDEN

WILL BECOME ONE OF THE WORLD'S FIRST NATIONS TO GO 100% FOSSIL FUEL-FREE!

Source: <http://bit.ly/1VmhFvK>



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@CLIMATEREALITY FACEBOOK.COM/CLIMATEREALITY #CLIMATEHOPE The Climate Reality Project

99%

THAT'S HOW MUCH OF COSTA RICA'S ELECTRICITY CAME FROM RENEWABLES IN 2015.

RETWEET IF THIS POWERS UP YOUR #CLIMATEHOPE!

Source: <http://bit.ly/1UuLKJR>

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WIND wins!

Wind power produced the equivalent of 97% of Scotland's household electricity needs in 2015.

Source: <http://bbc.in/1RxCtmS>

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TOP 10 SOLAR COUNTRIES

Total Global Solar PV Capacity at the End of 2014

Adapted from REN21 Renewables 2015 Global Status Report

NO.	COUNTRY	GIGAWATTS
1.	GERMANY	38.2
2.	CHINA	28.2
3.	JAPAN	23.3
4.	ITALY	18.5
5.	UNITED STATES	18.3
6.	FRANCE	5.7
7.	SPAIN	5.4
8.	UNITED KINGDOM	5.2
9.	AUSTRALIA	4.1
10.	INDIA	3.2
	REST OF WORLD	26.9

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URUGUAY

NOW GETS AN INCREDIBLE

95%

OF ITS ELECTRICITY FROM RENEWABLES!

Source: <http://bit.ly/1C09Ey>

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SURPRISE COUNTRIES MOVING TO CLEAN ENERGY: SAUDI ARABIA, RUSSIA, SOUTH KOREA, IRAN, VENEZUELA, INDONESIA

THE WORLD'S LARGEST CONCENTRATED SOLAR PLANT IS SET TO OPEN IN MOROCCO.

"When we heard about the potential of solar energy, we thought; why not?"

HAKIMA EL-HAITE
MOROCCO'S ENVIRONMENT MINISTER

Source: <http://bit.ly/1Spnkb>



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The International Climate Change scene



48 countries just agreed to go 100 per cent renewable

Nearly 50 countries vulnerable to climate change have agreed to use only renewable energy by 2050. The 48 members of the Climate Vulnerable Forum made the decision while attending the United Nations Climate Change Conference in...

INDEPENDENT.CO.UK

The 48 members of Climate Vulnerable Forum who have agreed to the decision are: Afghanistan, Haïti, Philippines, Bangladesh, Honduras, Rwanda, Barbados, Kenya, Saint Lucia, Bhutan, Kiribati, Senegal, Burkina Faso, Madagascar, South Sudan, Cambodia, Malawi, Sri Lanka, Comoros, Maldives, Sudan, Costa Rica, Marshall Islands, Tanzania, Democratic Republic of the Congo, Mongolia, Timor-Leste, Dominican Republic, Morocco, Tunisia, Ethiopia, Nepal, Tuvalu, Fiji, Niger, Vanuatu, Ghana, Palau, Viet Nam, Grenada, Papua New Guinea, Yemen, and Guatemala.



The global Climate Change scene



Nick Hurd MP, Minister of State for Climate Change and Industry, who has been negotiating for the UK and promoting British business at the 22nd UN climate change Conference of the Parties (COP22) in Marrakesh said:

“The UK is ratifying the historic Paris Agreement so that we can help to accelerate global action on climate change and deliver on our commitments to create a safer, more prosperous future for us all.

COP22 in Marrakesh is an important milestone which marks the shift from aspiration to implementation. We are going to use this positive momentum to grow the UK low-carbon sector, which is already worth over £46 billion, as we continue to provide secure, affordable and clean energy to our families and businesses”.



The UK is on track to meet its climate change commitments today, but will soon be off-track without urgent action

- UK emissions were 35% below 1990 levels in 2014
- Provisional figures show emissions fell a further 3% in 2015 but this fall – much of it due to greater use of renewables - disguised rises in sectors like transport and buildings
- The first carbon budget has been met and the UK is currently on track to outperform the second and third carbon budgets
- **But we not on track to meet the fourth, which covers the period 2023-27 (only 6 years away)**
- Meeting future carbon budgets and the UK's 80% target for 2050 will require reducing domestic emissions by at least 3% a year
- We need more radical measures – and we need them now.



UK Carbon Reduction Targets – enforced in UK Climate Change Act

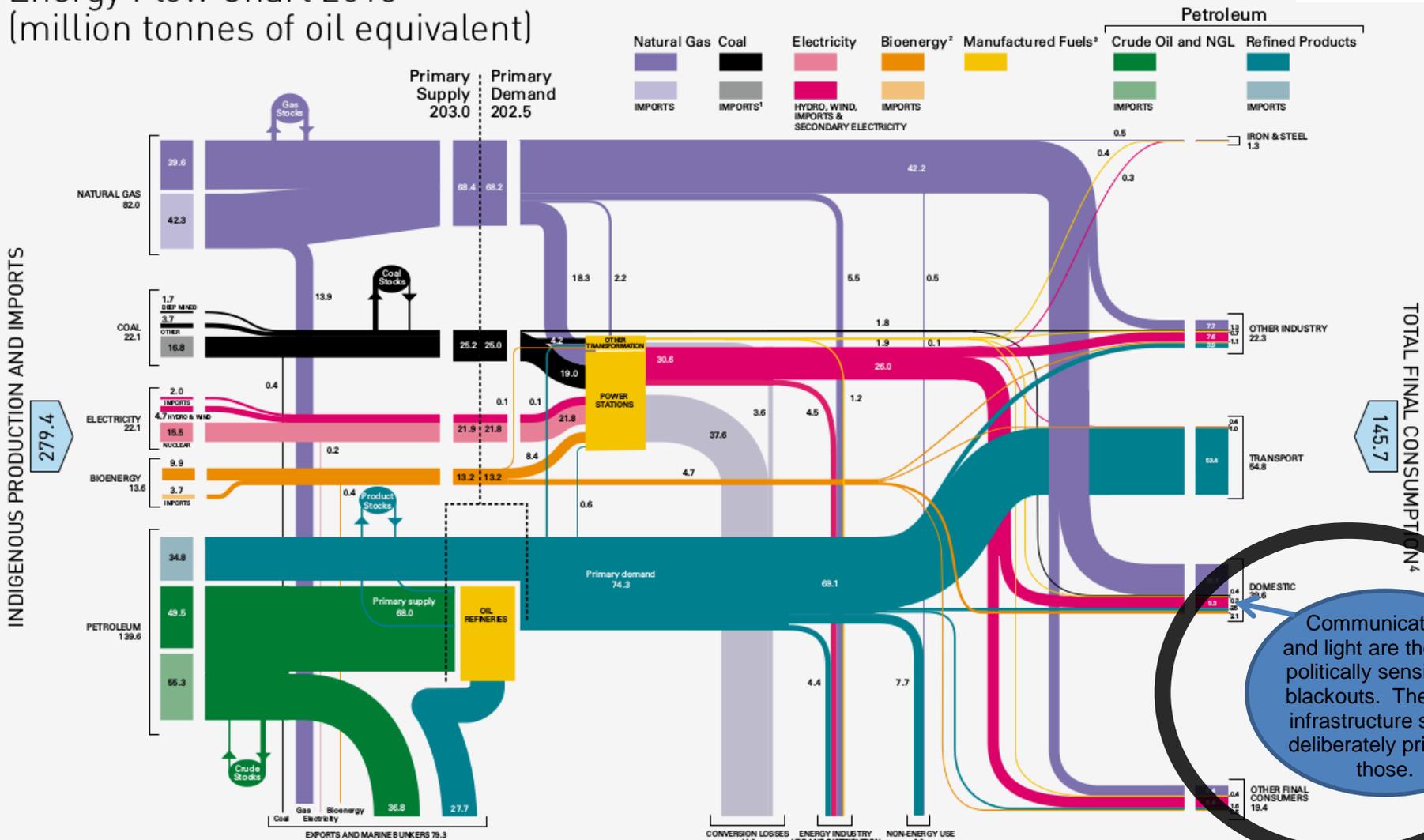
Budget	Carbon budget level	% reduction below base year
1st Carbon budget (2008-12)	3,018 MtCO ₂ e	23%
2nd Carbon budget (2013-17)	2,782 MtCO ₂ e	29%
3rd Carbon budget (2018-22)	2,544 MtCO ₂ e	35% by 2020
4th Carbon budget (2023-27)	1,950 MtCO ₂ e	50% by 2025
5th Carbon budget (2028-32)	1,765 MtCO ₂ e	57% by 2030

<https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/>



The flow of energy from source to use – BEIS

Energy Flow Chart 2015
(million tonnes of oil equivalent)



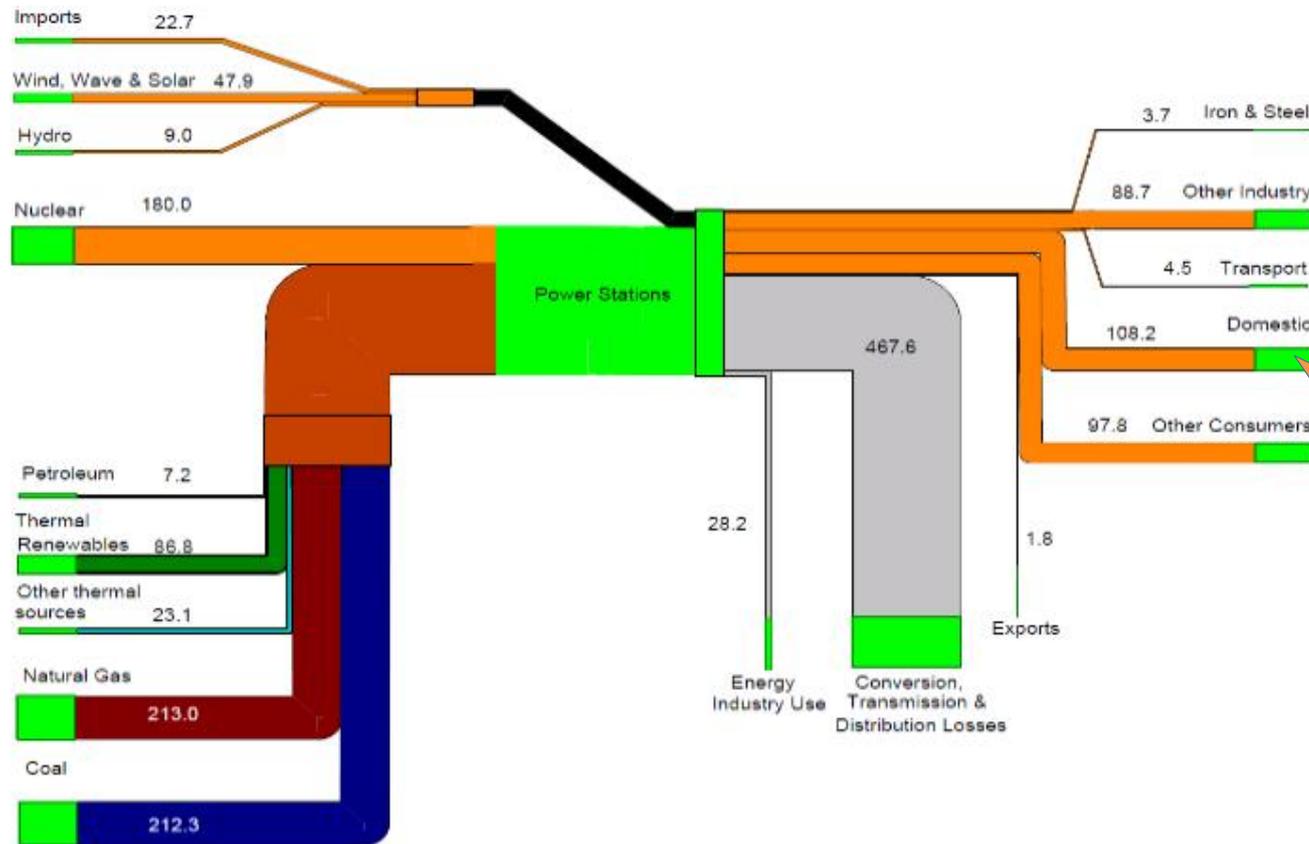
Communications and light are the most politically sensitive to blackouts. Therefore infrastructure should deliberately prioritise those.

FOOTNOTES:
 1. Coal imports and exports include manufactured fuels.
 2. Bioenergy is renewable energy made from material of recent biological origin derived from plant or animal matter, known as biomass.
 3. Includes heat & cold.
 4. Includes non-energy use.
 This flowchart has been produced using the style of balance and figures in the 2016 Digest of UK Energy Statistics, Table 1.1.

UK electricity use and source (TWh)



116



In an emergency situation they are the most immediate, practical, utilitarian and politically sensitive end uses.

Notes:

- This flow chart is based on the data in Tables 5.1 (for imports, exports, use, losses and consumption) and 5.5 (fuel used).
- 1. Hydro includes generation from pumped storage while electricity used in pumping is included under Energy Industry Use.
- 2. Conversion, Transmission and Distribution Losses is calculated as fuel used (Table 5.5) minus generation (Table 5.5) plus losses (Table 5.1).

We would be very happy to talk about the other two thirds of demand another time!



HMG allows Policy rather than Economics to affect Strategy

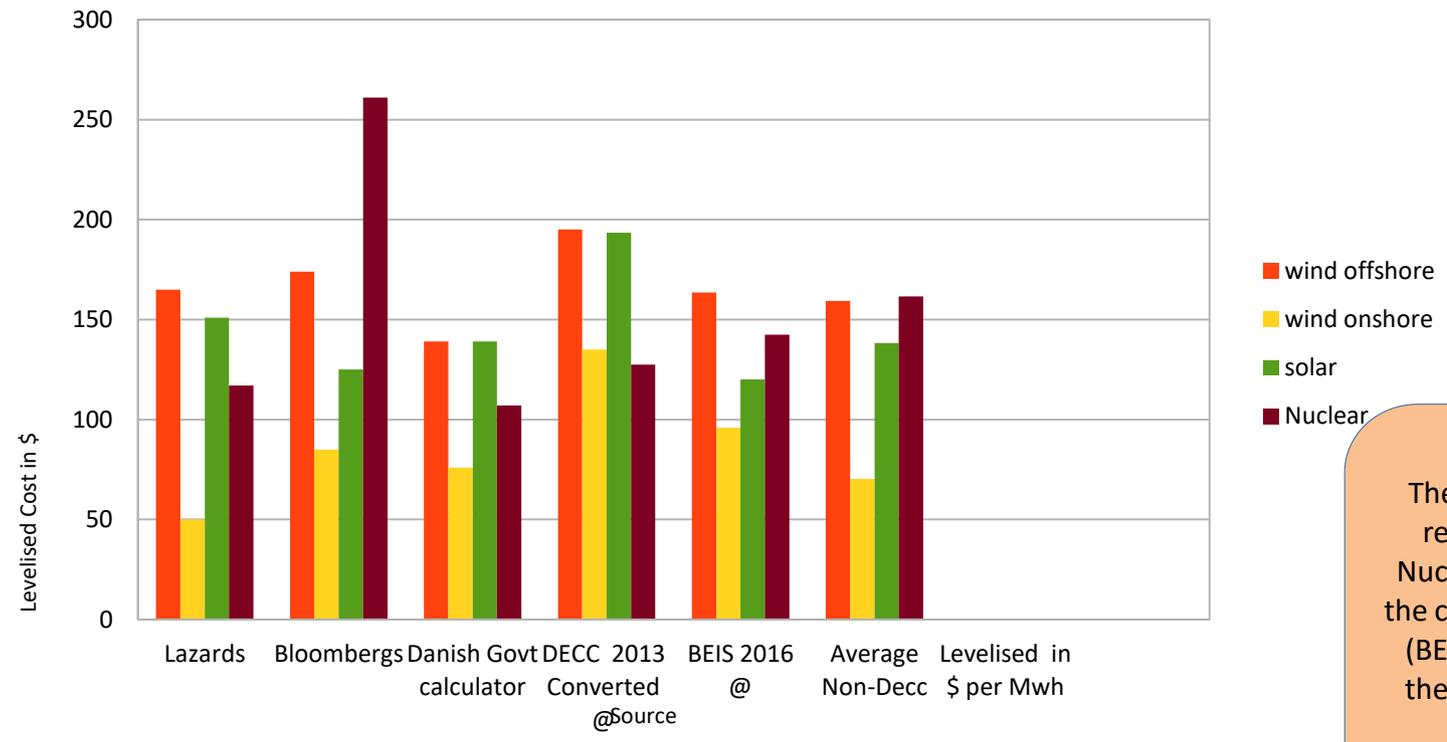
- Hydroelectric Energy. Currently around 1.5% - remaining viable potential of 1 to 2% of current UK generating capacity (1)
- Solar Energy: Currently around 2.2% and expected to go to 8% by 2020 (2) Could very easily go further, to 20% by 2030.
- Tidal turbines: Currently close to zero. Potential of 4% of overall supply. (3)
- Wind Energy. Currently 11% (2015), 17% (December 2015) (4)
- Biomass Energy. Currently 3% (home-grown), potential of up to 13% using imports.(5)
- Geothermal Energy. Currently zero, up to 20% potential (6)
- Existing interconnectors – currently 4.5% could be increased to c. 15% in 2020 – 2025 timeframe. (7)
- Interconnector with Iceland could add 1.2 GW (typical UK demand 35 GW) when needed: potential 3% of UK demand (8)
- Biogas Currently ¼ % but could be 18% by 2020. (Germany 4%) Fantastic dual purpose technology, it produces fertiliser too! (9)
- CCS _ Coal and Gas derived has potential for (say) 5% of total generation capacity by 2030 (14)
- The total clean green potential is a conservative 80% to a generous 120% of current electrical power capacity within in the Hinkley Point timeframe (2025), if it ever gets built! National Grid figures are a lot less optimistic and less visionary.
- NEGAWATTS Very easy way to boost all of the above as a % of total generation capacity; Reducing overall demand will increase % of renewables to meet legal targets at no cost to relatively low cost. (10) Negawatts are an EASY way to increase the proportion of renewables! A labour-intensive home retrofit insulation programme, £45bn over 5 years could insulate 9 million homes and create well over 100,000 jobs.(15)
- Smart Meters and Demand management: Potential to reduce and smooth demand on domestic and industrial levels, but urgently needs more research. Savings could amount to up to 1.3 times the cost of installing equipment (12).

Refs:

1. <https://www.gov.uk/guidance/harnessing-hydroelectric-power>
2. DECC / BEIS solar estimates 2015-2016
3. <https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix>
4. https://en.wikipedia.org/wiki/Wind_power_in_the_United_Kingdom
5. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246006/UK_wood_and_biomass.pdf
6. <http://www.r-e-a.net/news/deep-geothermal-resource-has-potential-to-produce-up-to-20-of-uk-electricity-and-heat-for-millions>
7. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/505222/080_Poyry_CostsAndBenefitsOfGBInterconnection_v500.pdf
8. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266460/More_interconnection_-_improving_energy_security_and_lowering_bills.pdf
9. <https://www.greenpeace.org.uk/newsdesk/energy/analysis/biogas-frackings-green-alternative>
10. <http://www.energyadvisoryassociates.co.uk/wp-content/uploads/2014/11/CHP-and-Renewables-Roadshow-Presn-Manchester-Mar-2013.pdf>
11. https://en.wikipedia.org/wiki/Smart_grid
12. <http://www.sciencedirect.com/science/article/pii/S0301421510004738>
13. <http://www.gridwatch.templar.co.uk/>
14. <https://www.globalccsinstitute.com/insights/authors/LawrenceIrlam/2015/07/24/levelised-costs-electricity-cs>
15. <https://www.greenparty.org.uk/assets/docs/Greening%20Brexit%20Nov16.pdf>



Levelised costs come from different sources - the DECC used a set which favoured Nuclear



The UK seems to under-represent the costs of Nuclear and overestimate the costs of Wind and Solar. (BEIS backtracked AFTER the Hinkley decision was made.)

Exchange rate used = \$1.50 to the Pound – as most Data was 2015.
BEIS exchange rate, post Brexit approx 1.20:1

	wind offshore	wind onshore	solar	Nuclear
DECC vs Non-Brit Dif. %	124%	195%	142%	80%
BEIS vs others Non-Brit Difference %	104%	139%	88%	90%

Work in progress: Transition Horsham has started to build a spreadsheet to test HMG estimates of the effect of moving to clean sustainable sources of electricity



UK energy scenarios Drive version.ods - LibreOffice Calc

Libertation Sans 10

F15 =SUM(F4:F14)

1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
2	Jurisdiction	Start Year	End Year	Current nuclear Mwh	strike price £92.60	Proposed	Quantity Twh	Proposed Draft strike price	Assumed use (Twh)									
3									303.0									
4				Current %	Potential %	Total %	Est Cost per Mwh	Levelised Cost of contribution (Bn/PA)	Timescale	Reference	Notes							
4	Hydroelectric Energy. Currently around 1.5			2	3.5%	10.605	95	1.0	2030	1	https://www.gov.uk/guidance/harnessing-hydroelectric-power							
5	Solar Energy. Currently around 2.2%			2.2	8.2%	24.846	126	3.1	2030	2	DECC / BEIS solar estimates 2015-2016							
6	Tidal turbines. Currently close to zero			0	2.0%	6.06	305	1.8	2030	3	https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix							
7	Wind Energy. Currently 11% (2015)			11	20.0%	60.6	65	3.9	2030	4	https://energydesk.greenpeace.org/2016/11/15/offshore-wind-power-vattenfall-denmark-f							
8	Biomass Energy. Currently 3% (home)			3	6.0%	18.18	120	2.2	2030	5	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246006/UK							
9	Geothermal Energy. Currently zero			0	20.0%	60.6	120	7.3	2030	6	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246006/UK							
10	Existing interconnectors – currently			4.5	10	14.5%	43.935	50	2.2	2030	7	http://www.r-e-a.net/news/deep-geothermal-resource-has-potential-to-produce-up-to-20-4						
11	Interconnector with Iceland could a			0	3	3.0%	9.09	50	0.5	2030	8	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/505222/08f						
12	Biogas. Currently ¼ % but could be 1			0.25	12	12.3%	37.1175	145	5.4	2030	9	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/505222/08f						
13	CCS – Coal			0	2	2.0%	6.06	150	0.9	2030	10	http://www.energyadvisoryassociates.co.uk/wp-content/uploads/2014/11/CHP-and-Rene						
14	CCS – Gas			0	9	9.0%	27.27	85	2.3	2030	11	Global CCS Institute analysis						
15						100.5%	28.2		30.6		Bn Annually which is c. 1.64%	of GDP per year						
16	TI:Dr								25.0		Bn Annually which is c. 0.13%	of GDP but an increase of						
17	Switching our electricity supply to all renewables by 2030 would require								95.0		Bn Annually which is c. 5.1%	of GDP per year						
18	bills to rise by an estimated 9% in real terms, the cost as a proportion of GDP would								45.0		Bn Annually which is c. 2.4%	of GDP per year						
19	be of the order of 0.13% over DECC's estimates.								117.2		Bn Annually which is c. 6.3%	of GDP per year						
20	This is equivalent of										Bn Annually which is c. 0.0%	of GDP per year						
21											Bn Annually which is c. 2.7%	of GDP per year						
22									50.0		Bn Annually which is c. 2.7%	of GDP per year						
23									106.1		Bn Annually which is c. 6%	of GDP per year						
24									1869.56		Bn Annually which is c. 100%	of GDP per year						
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Sheet 1 of 1

Default

Sum=100.5%

89%

Switching to all renewables by 2030 would require bills to rise by an estimated 9% in real terms.

The added cost as a proportion of GDP would be of the order of 0.13% over DECC's estimates

This increase is equivalent of just 2.31% of our annual spend on tobacco and alcohol.

The assumptions can be altered, and various scenarios tested, here:

<https://docs.google.com/spreadsheets/d/1md15LPIKcPhZkQe0faL7PPhMGPz3Rny7OCTW0yNzzgk/edit#gid=647831197>

Liberation Sans 10 B I U T A \$ % 0.00 .00 .00

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Jurisdiction	Start Year	End Year	Current nuclear	strike price		Quantity	Proposed	Assumed use	(Twh)								
2	Brexit UK	2016	2030	Mwh	£92.60	Proposed	Twh	Draft strike p	303.0									
3									Levelised Cost of contribution (Bn/PA)	Timescale	Reference	Notes						
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8	Biomass Energy. Currently 3% (home			3	3	6.0%	18.18	120	2.2	2030	5	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246006/UK						
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10	Existing interconnectors – currently			4.5	10	14.5%	43.935	50	2.2	2030	7	http://www.r-e-a.net/news/deep-geothermal-resource-has-potential-to-produce-up-to-20-c						
11	Interconnector with Iceland could a			0	3	3.0%	9.09	50	0.5	2030	8	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/505222/080						
12	Biogas. Currently ¼ % but could be 1			0.25	12	12.3%	37.1175	145	5.4	2030	9	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/505222/080						
13	CCS – Coal			0	2	2.0%	6.06	150	0.9	2030	10	http://www.energyadvisoryassociates.co.uk/wp-content/uploads/2014/11/CHP-and-Rene						
14	CCS – Gas			0	9	9.0%	27.27	85	2.3	2030	11	Global CCS Institute analysis						
15						100.5%	28.2		30.6		Bn Annually	which is c.	1.64%	of GDP per year				
16											ie additional	0.13%	of GDP but an increase of					
17	Ti:Dr						Existing required investment according to DECC			25.0	Bn Annually	which is c.	1.1%	of GDP per year			8.71%	on today's generation
18	Switching our electricity supply to all renewables by 2030 would require						Total value of UK electricity market			95.0	Bn Annually	which is c.	5.1%	of GDP per year				DECC estimates £100 billion of further
19	billings to rise by an estimated 9% in real terms, the cost a sa propotyion of GDP would						Defence Budget			45.0	Bn Annually	which is c.	2.4%	of GDP per year				
20	be of the order of 0.13% over DECC's estimates.						NHS			117.2	Bn Annually	which is c.	6.3%	of GDP per year				
21	This is equivalent of						2.31% of our annual spend on tobacco and alcohol				Bn Annually	which is c.	0.0%	of GDP per year				
22							Annual sales of ICE cars 2015			50.0	Bn Annually	which is c.	2.7%	of GDP per year				(57.2 bn derived from annual sales
23							Total value of tobacco and alcoholic sales industry			106.1	Bn Annually	which is c.	6%	of GDP per year				https://www.statista.com/statistics/2
24							Total UK GDP			1869.56	Bn Annually	which is c.	100%	of GDP per year				
25							Extra jobs – Redundancies			?								



Balancing demand and supply for energy using renewables can be resolved

Much of the argument for use of fossil fuels and nuclear rests on the need to provide regular “baseload” - to which renewables act as top up.

If renewables are the main source, you need “dispatchable power” - generators that can quickly go up and down to balance out variations in renewable supply . Eg. Gas power stations, possibly methane powered.

There are two ways to balance energy demand and supply

1. Demand management eg using smart appliances, including electric cars
2. Storing energy – a combination of pumped storage, batteries, heat storage, hydrogen, biogas and synthetic gas (for methane)

From Zero Carbon Britain



Grid balancing and intermittency is resolvable

Steve Holliday said “The idea of baseload power is already outdated. I think you should look at this the other way around. From a consumer’s point of view, baseload is what I am producing myself. The solar on my rooftop, my heat pump – that’s the baseload..... The future will be much more driven by availability of supply: by demand side response and management which will enable the market to balance price of supply and of demand. It’s how we balance these things that will determine the future shape of our business.” (1) Steve Holliday is the CEO of the National Grid, this is a significant shift in thinking.

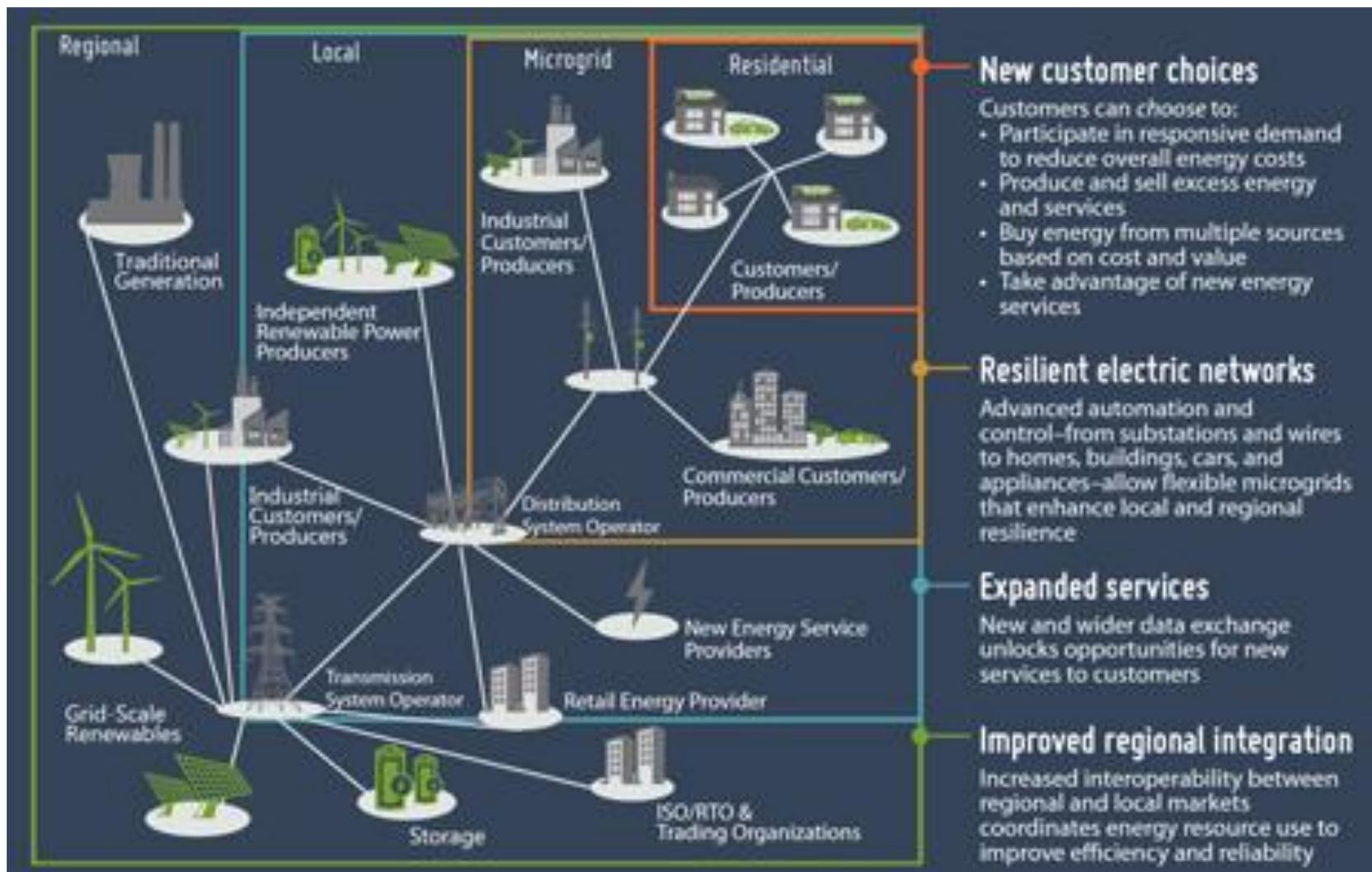
- Responsiveness and backups will still be needed, but to fill in gaps we need energy reserves that can be ramped up quickly:
- Hydroelectric Energy including pumped storage. (2%)
- Geothermal Energy. (20%)
- Existing interconnectors (15%)
- Biomass Energy. (13%)
- Biogas (18%)
- CCS _ Gas (5%)

All these would act as flexible reserve, and of course due to severe conservation measures, there will be fossils to fall back on in an emergency for an extended timeframe.

*<http://energypost.eu/interview-steve-holliday-ceo-national-grid-idea-large-power-stations-baseload-power-outdated/>
<http://www.decentralized-energy.com/content/dam/cospp/print-articles/DEN/2016/02/Picture1.jpg>*



Other technologies are emerging, and the future balancing act might look something like this:

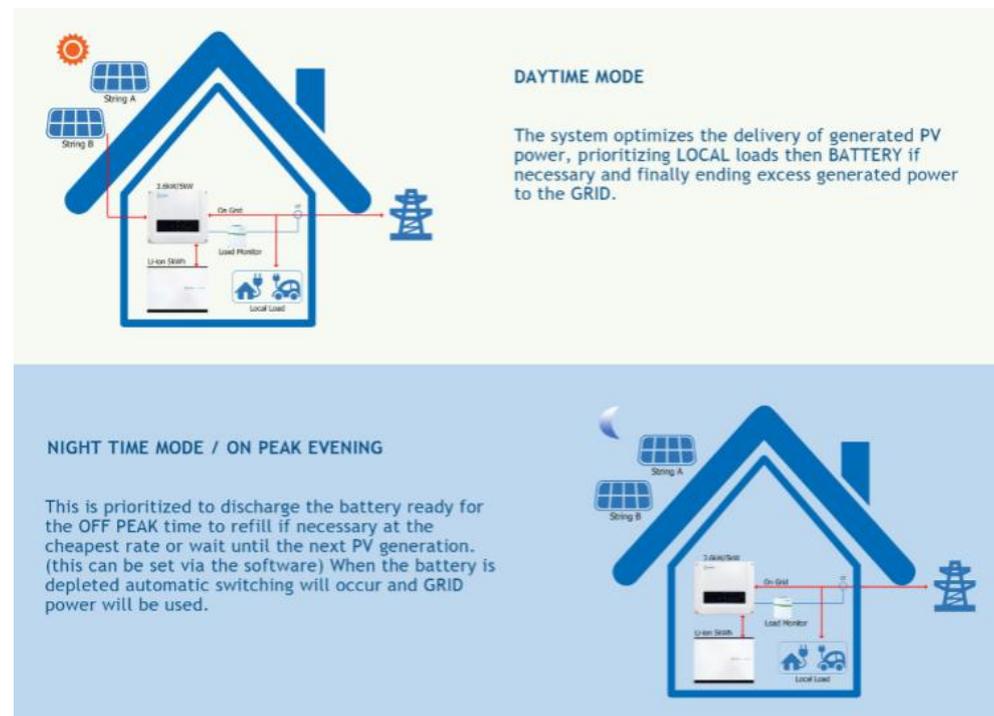
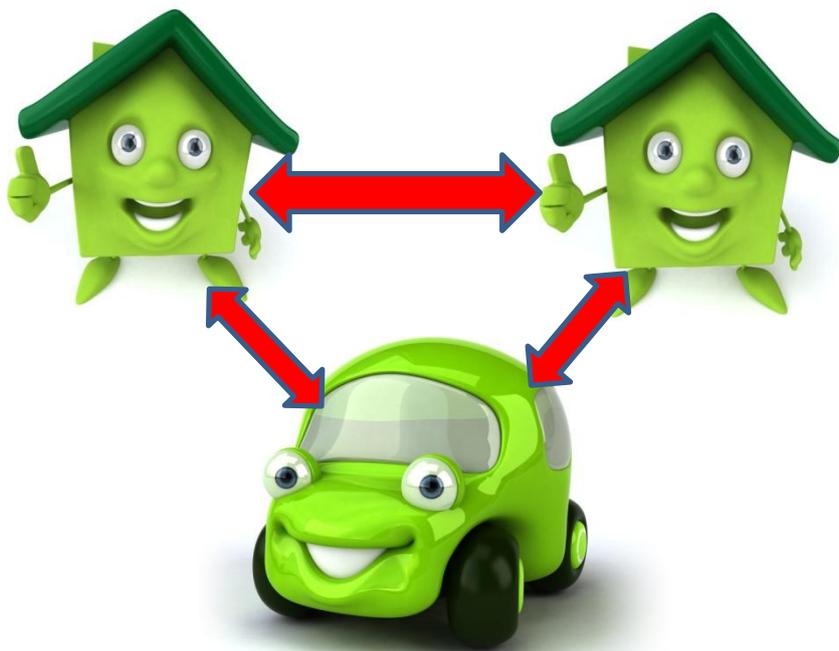


If we were to rebuild the grid from scratch it might look something like this



Baseload begins at Home the future grid will be “top-up and sharing”

Home autonomy is terrorist and powercut proof i.e. resilient and electronics allow efficient pooling and balancing



Ways of changing the social norms: create a robust, practical vision worth striving for!



Targeted investment based on careful research

- Waste treatment at Warnham
- Stern Review – when the true costs are evaluated, including the externalised costs of polluting activities, a cleaner future carries lower costs than the unsustainable alternatives
- Stern+10 investing in sustainable infrastructure requires a shift in investment but does not need to cost much more

Create replicable initiatives and show they work

- Edible gardens (impact on eating patterns), recycling, community energy schemes Eco Open Houses schemes Bedzed

Technology that changes ways of working and living

Mobile phones, solar panels, smart meters



Of corporations as well as governments

- Walmart requiring suppliers to meet environmental standards
- Examples from all parts of political spectrum of shift in policy being supported e.g. Green Tea Party, Florida examples of right wing environmental realism
- Recycling and plastic bags – policy shifts have had impact

Hard hitting ad campaigns

- Smoking, seat belts, drink and drive are non-environmental examples
- Al Gore An Inconvenient Truth and other initiatives



Smart meter

What is a smart meter?

Smart meters are the new generation of gas and electricity meters being rolled out across Great Britain. They show you how much energy you are using in pounds and pence, in near real time and bring an end to estimated bills.

How many Smart meters are required?

A total of 53 million covering both gas and electricity should be fitted to 30 million properties by 2020.

How many trained Smart meter engineers required to complete objective?

A total of 11,000 trained and qualified engineers are required. There is a skills gap with a shortfall of 6,500+ with the industry ramping up trawling for starters. HOWEVER the training costs up to £6,000 over up to 12 weeks!

How much will the smart meter rollout cost Great Britain?

Smart meters are an essential upgrade to a creaking system. The savings of nearly £17 billion will far outweigh the investments of almost £11 billion – meaning an overall saving of nearly £6 billion between now and 2030.

Ten years on from the Stern Report sustainable infrastructure, cities and lower impact higher value developments are talked about a lot but mainstream policy lags behind.

Much bolder, integrated thinking is required.

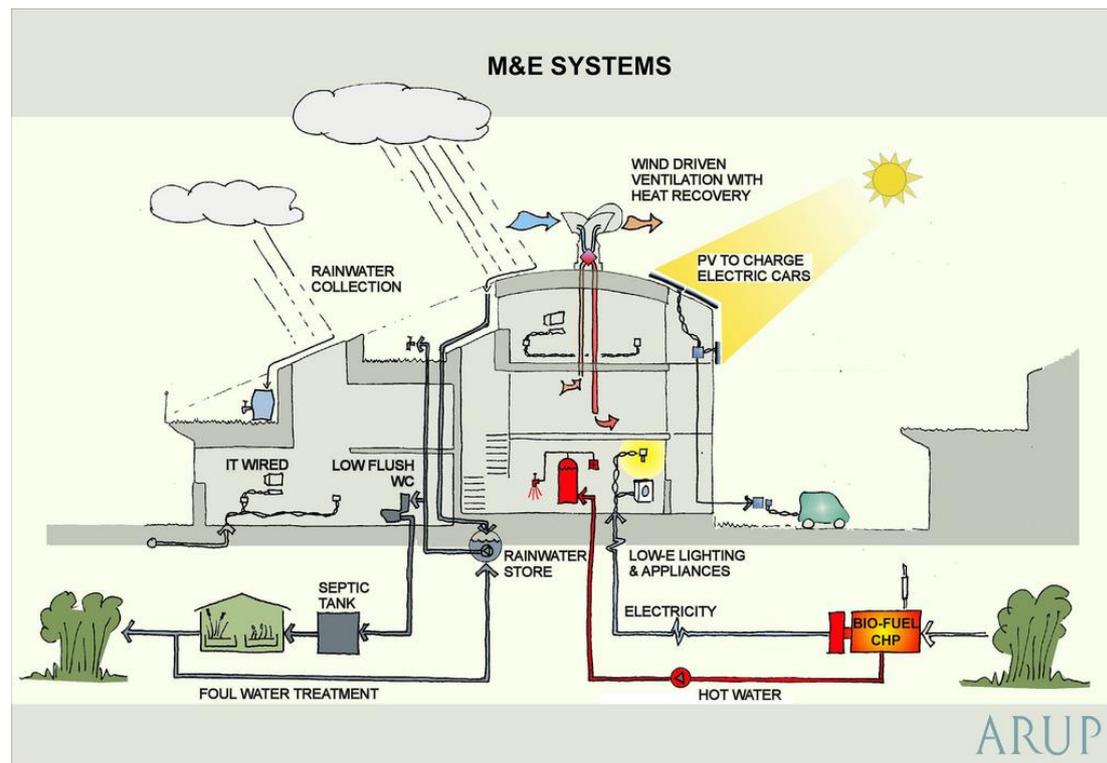


BedZED in Surrey is an example of an informed, integrated design and innovative procurement. The value of carbon saved was recognised as part of the value of the bid for the site, but its long term social value is reflected in the **sale prices of properties, which are 5 – 25% above similar sized ones in the locality.**

The problem is with developers who are poorly motivated and risk averse, and not regulations holding them back. BedZED complies with all building regulations and delivers a desirable lifestyle to its residents at one half of the impact of the average Horsham District resident.



The project was pioneering by being the first construction project where a **local authority sold land at below market value to make sustainable economically development viable.** The 100 homes, office space, college and community facilities was built in 2000–2002



ARUP



For discussion.....

“The UK is committed to reducing its greenhouse gas emissions by at least 80% by 2050, relative to 1990 levels”.

The use of renewable energy rather than fossil fuels will make an essential contribution to this.

Bedzed provides a replicable initiative for Horsham District.

National and local policies state that we should move towards renewables – but, at the moment, national and local action seems to, at best, ignore this intention.

Can we ask you as our MP – and a member of the Conservative Party that has a large majority in Horsham District Council?

- **What vision do you have for 2050 for Horsham District with 80% reduction in greenhouse gas emissions?**
- **What scope do you believe you have to influence this?**
- **What could we do to support you?**

Further reading:



WSSC Sustainability Strategy 2015 – 2019 - https://www.westsussex.gov.uk/media/7357/sustainability_strategy.pdf

WSSC Sustainability Action Plan 2015 – 2019 - https://www.westsussex.gov.uk/media/6556/sustainability_action_plan.pdf

WSSC Energy Study - <http://www.crawley.gov.uk/pw/web/PUB233087>

Marrakech, a group of 47 developing countries that are highly vulnerable to the climate crisis (The Climate Vulnerable Forum <http://www.thecvf.org/>) announced their intention to run on 100 percent renewable energy "as rapidly as possible." - <https://insideclimatenews.org/news/18112016/climate-changes-most-vulnerable-countries-vow-complete-transformation-clean-energy>

The Stern Review (10 years on) and new opportunities for growth and development <http://www.cccep.ac.uk/event/the-stern-review-10-new-opportunities-for-growth-and-development/>

BedZED pioneering eco-village in south London suburbia, an inspiration for sustainable neighbourhoods and One Planet Living Communities across the world. <http://www.bioregional.com/bedzed/>

100% renewable Climate Reality campaign <https://www.climaterealityproject.org/content/roadmap-100> . **Step up to the plate:** Help to transition your business or community's total annual electricity use to renewable sources like wind or solar by 2030 or as soon as possible.

'24 Hours of reality – The Road Ahead' from Al Gore and the Climate Reality Corp <https://www.24hoursofreality.org/>. For 24 hours over 5th and 6th December Climate Reality live streamed their sixth annual multimedia show where we will travel around the world highlighting the top 24 carbon dioxide emitting.



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