



energy

The Big Energy Summit

26-27th May 2016

REview 2016 & Private Sector and public sector – the added value of working together

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GROWING THE RENEWABLE ENERGY ECONOMY

Who we are

Sector groups



Our various sector groups enable us to focus on sector-specific issues. Members can join our various groups concentrating on individual renewable technologies, energy market sectors, or application areas.



Subsidiaries



The Wood Heat Association is the UK's largest renewable energy trade body.

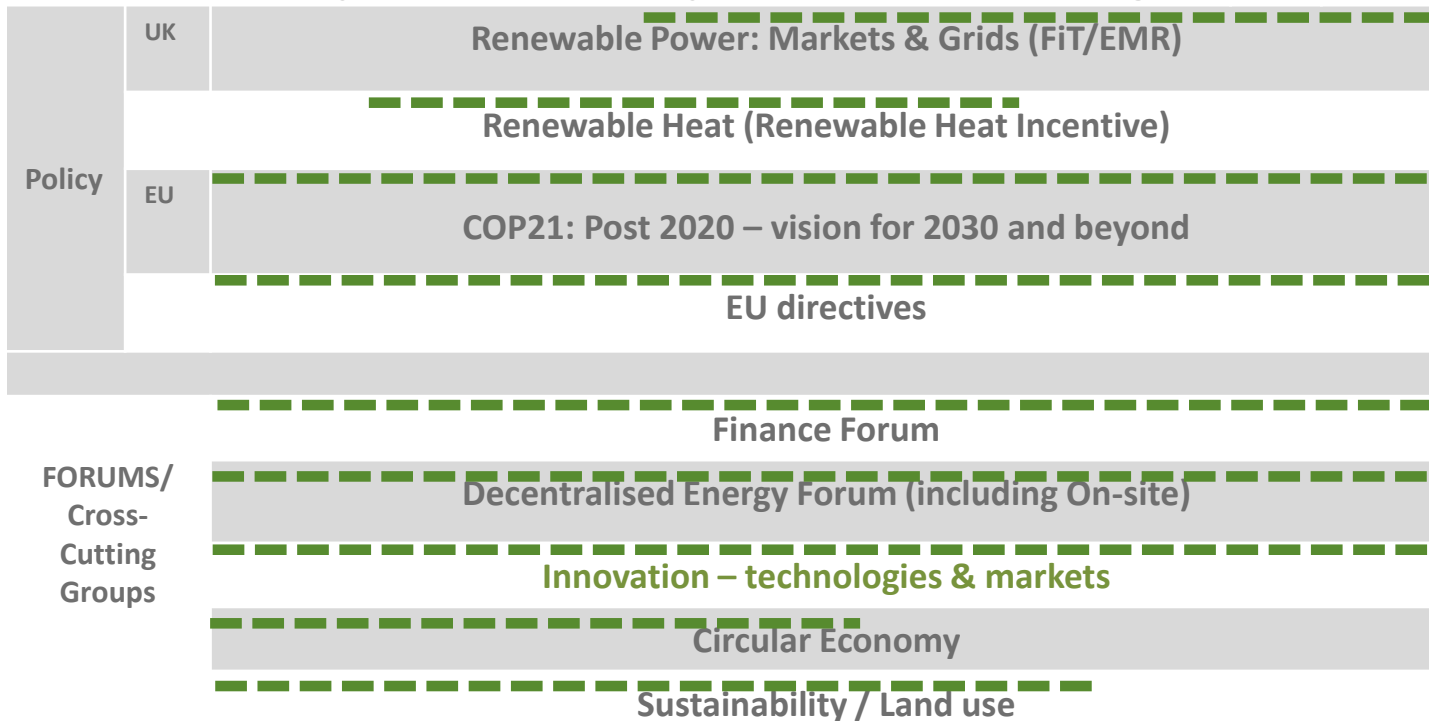


Renewable Energy Assurance Ltd carries out a range of certification and consumer protection activities all of which promote sustainable energy.

Extract from REA BP ...*REA Priority Cross-Cutting Groups/Forums for 2016*

	Policy Governance									
Sector Group	Organics Recycling	Renewable Transport Inc. EVs	Biomass Heat/ WHA	Biogas	Waste to Energy	Geo – thermal	Biomass Power	Ocean Energy	UK Solar	UK Energy Storage

Key Government Policy & Sector “Cross-Cutting” Priorities



The REA Policy Board works with the REA executive to set the important cross-cutting priorities that are vital to enable the growth of the renewable energy industry. This is reviewed annually.

The themes selected are important to more than one technology sector and in line with the strategic direction of the REA as a whole.

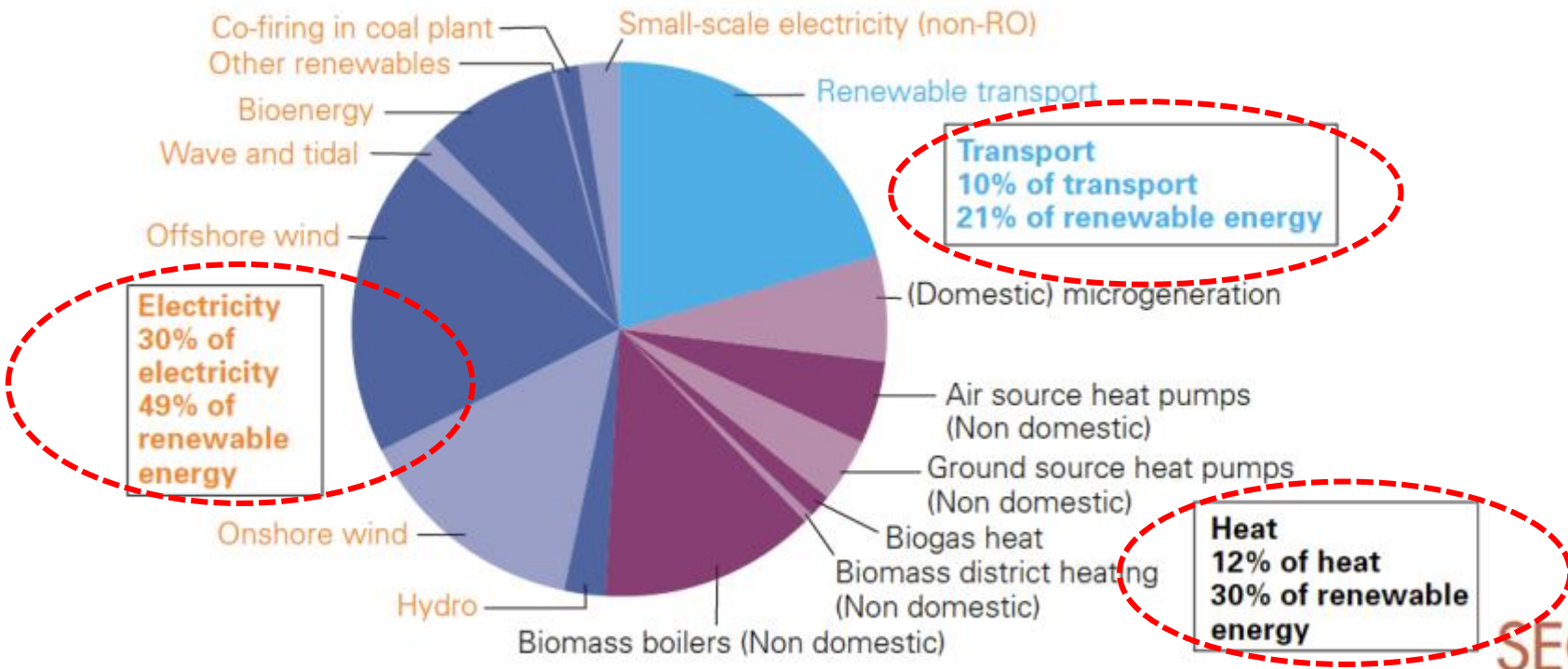
Any projects/forums proposed will be complimentary to specific work carried out to deliver identified priorities of an REA Sector or Association, in their “mini” business planning

It is core strategic belief of the REA that working to create a **single/ coordinated voice** across the technology sectors will have an enhanced impact on influential stakeholder decision making that affect the future of renewables.

The REA seeks to involve other influential groups and trade bodies to gain success for a low carbon energy future and hence for its members and the industry

UK Gov. Dept. of Energy & Climate Change's (DECC) indicative 2020 mix

Illustrative mix of technologies in lead scenario, 2020 (TWh)



Source: DECC analysis based on Redpoint/Trilemma (2009), Element/Pöyry (2009) and Nera (2009) and DECC internal analysis

REview – Renewable Energy View 2016



REA with their partners, Innovas and KPMG, has produced an industry-leading market report for a third year

The renewable energy industry has brought over £46 billion of private sector investment since 2010. This investment has enabled the industry to deliver over 117,000 jobs in 2015, up 3.5% from 2014, and deliver 7% of UK energy.

REA, Innovas & KPMG:

'REview – Renewable Energy View: 2016,' 10th May 2016

EMPLOYMENT: Jobs increased to over 117,000

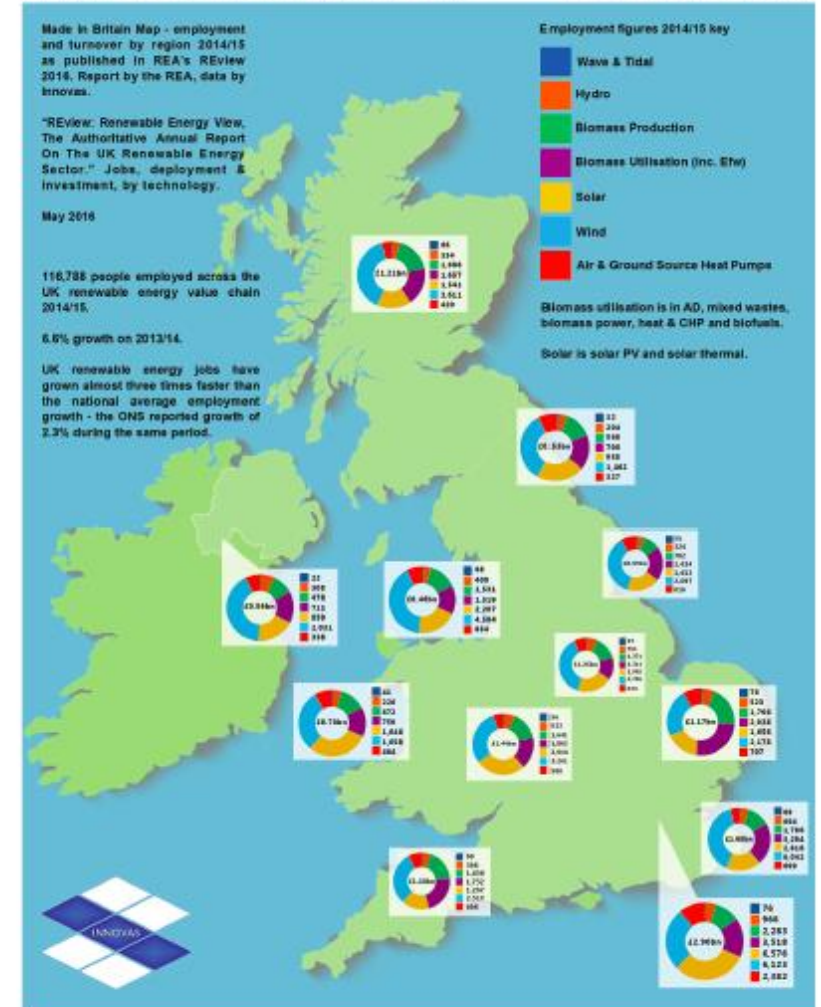
RENEWABLE ENERGY VIEW 2016

Analysis by *Innovas* reveals that:

- Growth in jobs across the UK renewable energy value chain from 103,000 people in 2012/13 to 117,000 at the end of 2015
- Grown *3 times* faster than national average employment growth in the last year: Office for National Statistics reported average growth of 1.2% during the same period
- Off shore wind sector employs greatest number of people

Renewable Energy MADE IN BRITAIN

Employment and turnover by region and technology 2014/15



Employment & turnover summary for renewable energy sectors 2014/2015

Renewable Energy Sub Sectors	Turnover £'millions	Employment Numbers	Company Numbers
Air & Ground Source Heat Pumps	1,158	8,611	421
Anaerobic Digestion (biogas)	347	2,865	148
Biofuels	538	3,914	211
Biomass Boilers	735	5,650	246
Biomass CHP	367	2,441	146
Biomass Dedicated Power	586	3,999	189
Energy from Waste	895	7,316	366
Hydro	615	5,508	278
Offshore Wind	2,929	20,570	924
Onshore Wind	2,712	19,210	863
Solar PV	2,477	16,880	2,005
Solar Thermal	1,058	8,926	375
Wave & Tidal	109	660	40
Production of biomass including wood for fuel	1,387	10,239	573
Totals	15,913	116,788	6,786

REA tracks progress: 2009 Renewable Energy Directive reporting summary

	2012	2013	2014	2015
Percentage of electricity from renewable sources ¹	10.7	13.8	17.8	22.3
Percentage of heating and cooling from renewable sources	3.7	4.1	4.8	TBC
Percentage of transport energy from renewable sources	3.7	4.4	4.8	3.2
Overall renewable consumption as a percentage of capped gross final energy consumption using net calorific values (<i>not directly calculated from the three percentage points above</i>)	4.7	5.6	7.0	-
RED target : RES Minimum Trajectory	2011-12 4.04%	2013-14 5.41%		2015-16 7.47%

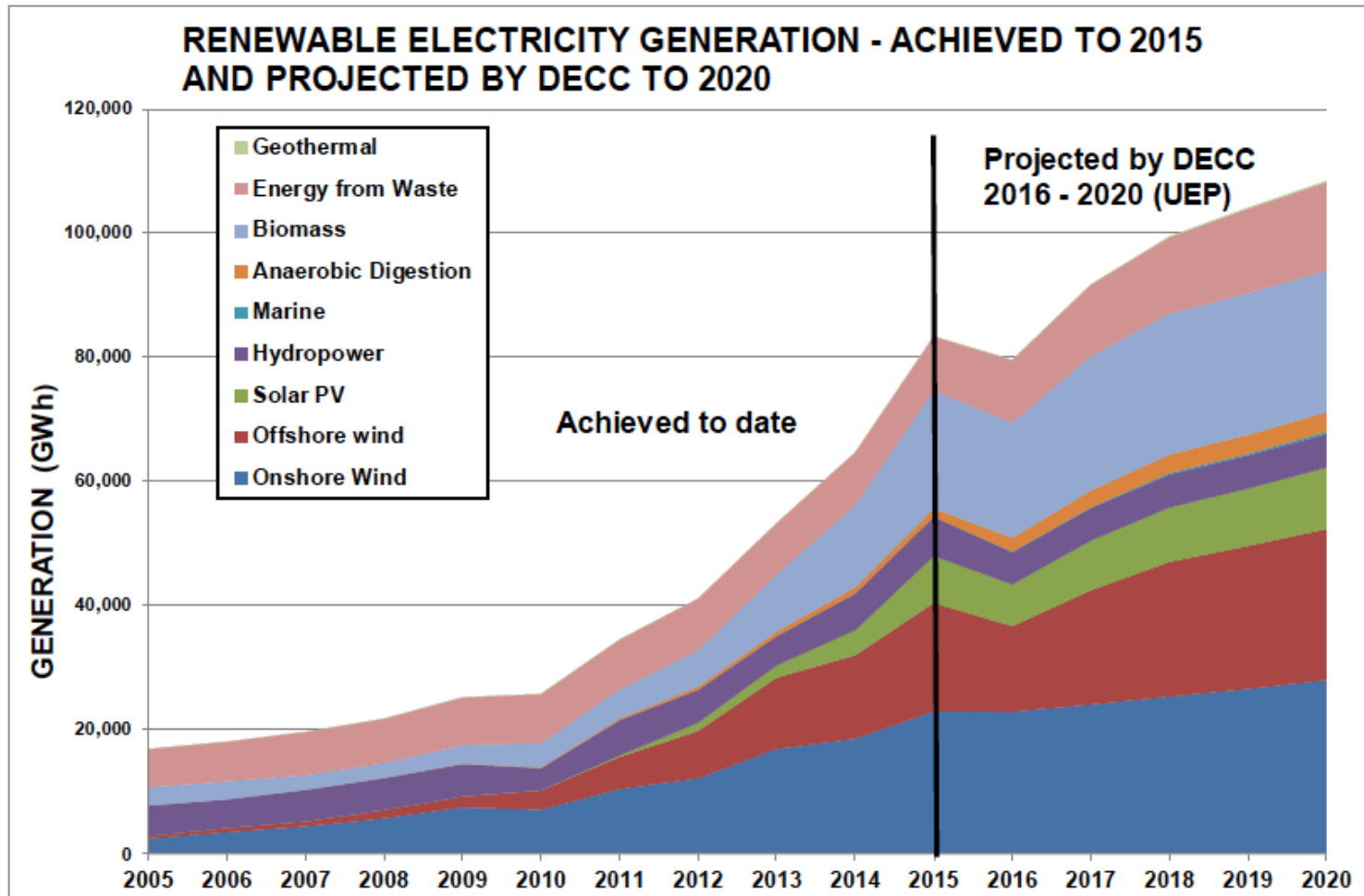
Source:

March 2016 edition of Energy Trends publication, DECC, published 31 March 2016

<https://www.gov.uk/government/statistics/energy-trends-march-2016>

Note: 2015 data are provisional. Finalised figures will be published 28 July 2016

Renewable Electricity Generation up to 2015

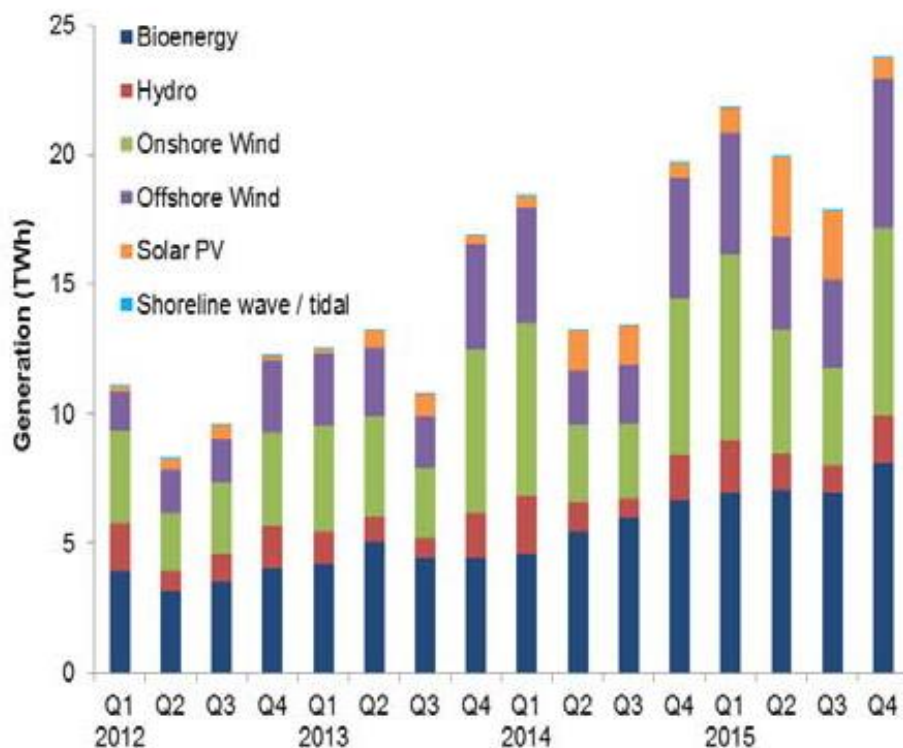


REA tracks progress:

Renewable electricity generation in more detail – record year!

In 2015¹:

- Offshore wind increased by 30% (13.4 to 17.4 TWh)
- Onshore wind increased by 24% (18.6 to 23.0 TWh)
- Hydro increased by 7.4% (5.9 to 6.3 TWh)
- Bioenergy² increased by 28% (22.7 to 29.0 TWh) of which plant biomass increased from 13.1 to 18.8 TWh (44% of proportion) due to 3rd Drax Unit conversion)



¹Source: March 2016 edition of Energy Trends publication, DECC, published 31 March 2016

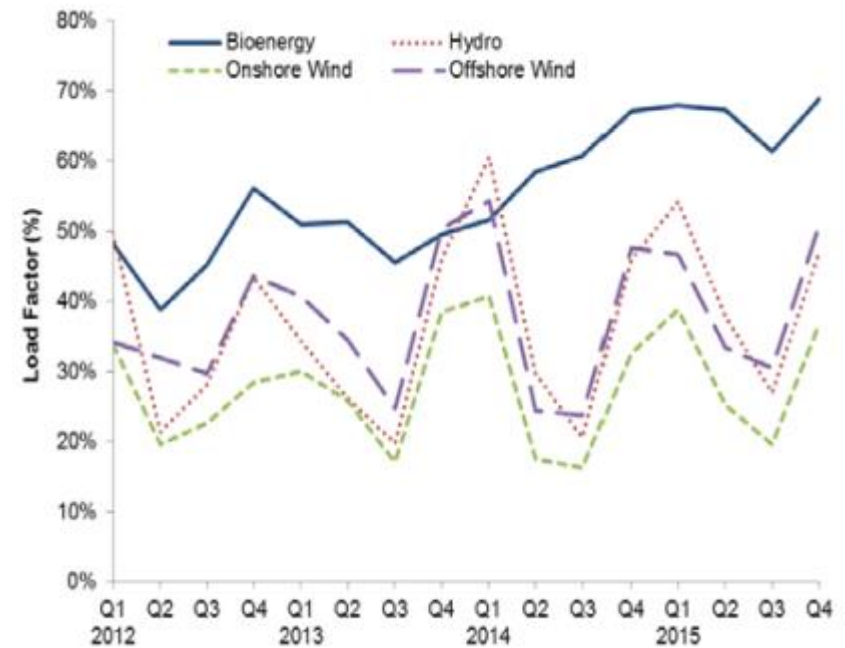
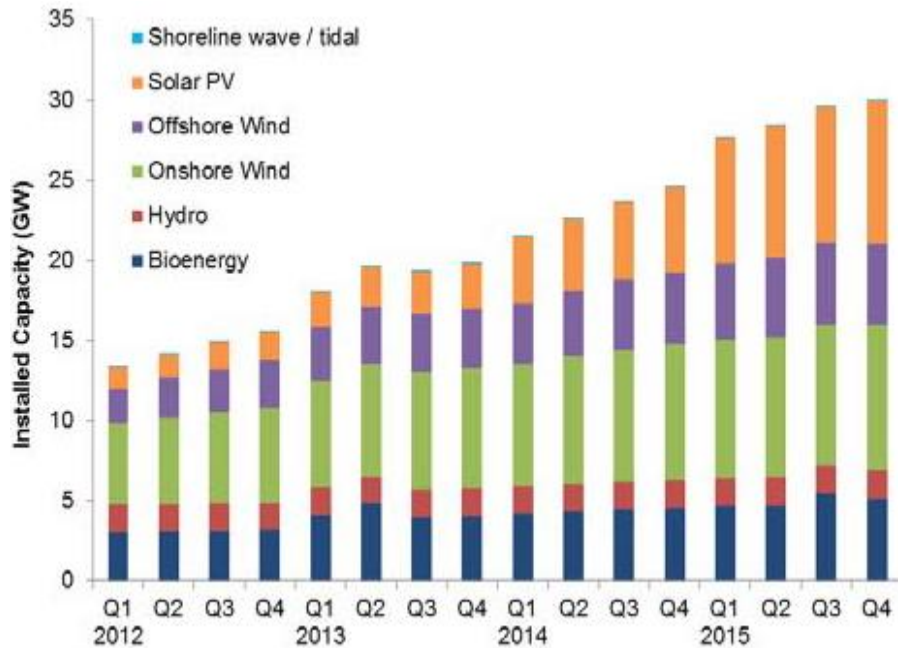
<https://www.gov.uk/government/statistics/energy-trends-march-2016>

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²Bioenergy consists of landfill gas, sewage gas, biodegradable municipal solid waste, plant biomass, animal biomass, AD and co-firing (generation only)

REA tracks progress:

Renewable electricity capacity & load factors – record year!



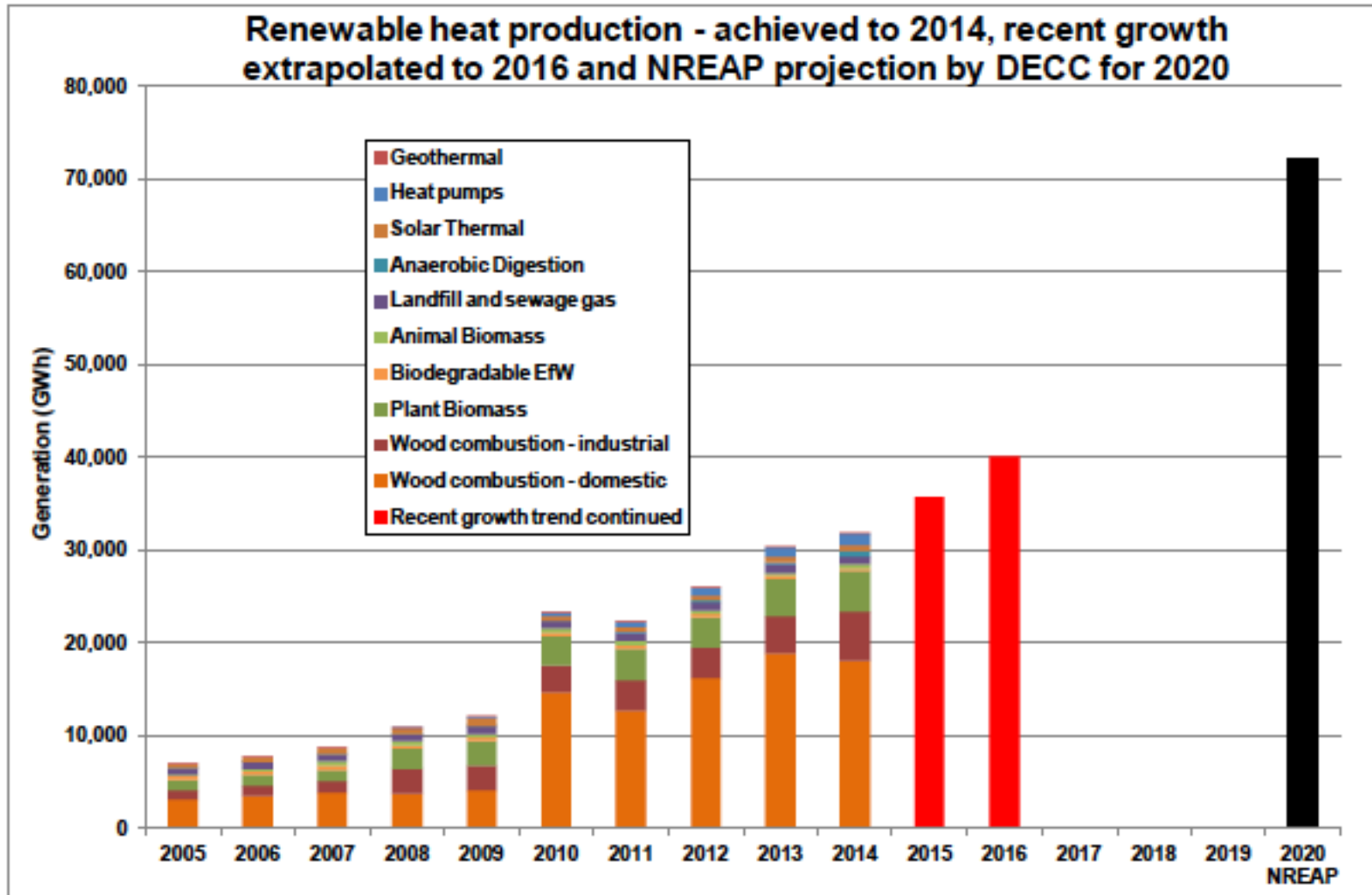
¹Source: March 2016 edition of Energy Trends publication, DECC, published 31 March 2016
<https://www.gov.uk/government/statistics/energy-trends-march-2016>

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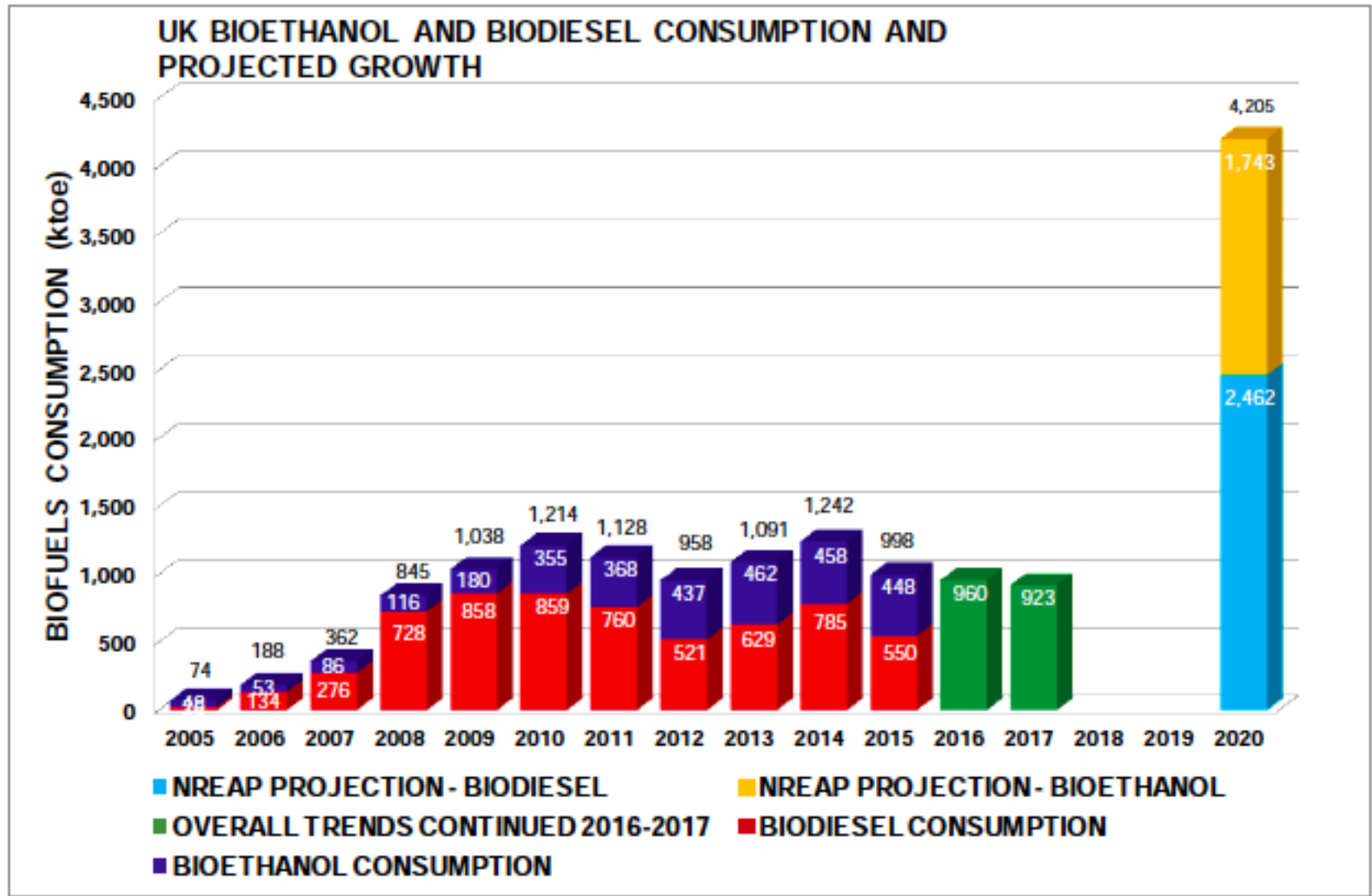
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Renewable Heat production achieved to 2014, recent growth extrapolated to 2016 and NREAP projection by DECC for 2020



Renewable transport.. Going backwards!



Achieving 2020 renewable energy targets?

PwC view of *interaction between technology targets to meeting overall energy basis target.*

FIGURE 5 RELATIONSHIP BETWEEN POWER, HEAT AND TRANSPORT TARGETS⁷

		Surface Transport								
		10%	9%	8%	7%	6%	5%	4%	3%	2%
Heat	12%	30%	32%	33%	34%	36%	37%	38%	39%	41%
	11%	32%	33%	35%	36%	37%	38%	40%	41%	42%
	10%	34%	35%	36%	37%	39%	40%	41%	42%	44%
	9%	35%	36%	38%	39%	40%	41%	43%	44%	45%
	8%	37%	38%	39%	40%	42%	43%	44%	46%	47%
	7%	38%	39%	41%	42%	43%	45%	46%	47%	48%
	6%	40%	41%	42%	44%	45%	46%	47%	49%	50%
	5%	41%	43%	44%	45%	46%	48%	49%	50%	51%
	4%	43%	44%	45%	47%	48%	49%	50%	52%	53%
	3%	44%	46%	47%	48%	50%	51%	52%	53%	55%
2%	46%	47%	49%	50%	51%	52%	54%	55%	56%	

Conservative Manifesto

- ***Halt the spread of onshore windfarms*** because they ‘fail to win public support’ and are ‘unable by themselves to provide the firm capacity that a stable energy system requires’. There is also a commitment to ‘end any new public subsidy’ for onshore wind and change the law so that ‘local people have the final say on windfarm applications’.
- ***Provide start-up funding for new renewable technologies and research***, but would ‘only give significant support to those that clearly represent value for money’.
- ***Push for a ‘strong global climate deal’ in 2015 with the goal of limiting global warming to two-degrees.***
- ***Continue to support the UK Climate Change Act***, cutting emissions ‘as cost-effectively as possible’, and not supporting additional ‘distorting’ and expensive power sector targets.
- Continue to support the safe development of shale gas, ensuring that local communities share the proceeds through community benefit packages.
- Create a Sovereign Wealth Fund for the North of England, so that the shale gas resources of the North are used to invest in the future of the North.
- Continue to support development of North Sea oil and gas.
- ***Support low-cost measures on energy efficiency, with the goal of insulating a million homes by 2020, thereby tackling fuel poverty.***
- ***Ensure that every home and business in the country has a Smart Meter by 2020, delivered as cost-effectively as possible.***



Let's reflect on the *UK Government's drivers*:

What the Government Says.....

- Delivering cost effective trajectory to meet 2020 Renewable Energy targets
- Deliver lowest cost carbon reductions through to 2020 and to 2030
- *Want* jobs in green technologies
- Energy Security
 - Diversity mitigates price and supply risk
 - UK supply (balance of payments)
- Ensure that energy is affordable in short, medium & long term and does not impact consumer bills.

UK Government policy changes since the election - I

Order announced	Policy changes affecting renewables directly	Applies from	Applies to
1	Removal of Levy Exemption Certificates ('LECs') for all renewable power generation. Some projects will lose circa 5% of revenue.	01 August 2015 (< 4 weeks notice)	Power: All existing & new renewable electricity projects
2	Watered down low carbon car incentives. Following the first year, all cars will pay the same vehicle excise duty, previously this varied based on emissions.	01 April 2017	Transport: Households paying Vehicle Excise Duty on cars
3	No new subsidies for onshore wind. This was implemented by removing onshore wind from the main government support scheme, the Renewable Obligation. This still requires Royal Assent which is expected to be implemented summer 2016. It has also been proposed to ban them from Contracts for Difference, although no new auctions for established technologies has yet been scheduled.	Varied	Wind: New onshore wind projects
4	Zero-Carbon Homes delayed. Initial 2016 target date scrapped. Some action will be required by 2019 (non-domestic) and 2020 (domestic) to meet European targets.	01 July 2015	Energy Efficiency: Developers of new build homes
5	Sub-5 MW solar subsidies withdrawn from Renewables Obligation (RO), and grandfathering rights removed.	01 April 2016	Solar: New solar PV projects from 22 June 2015
6	Ending 'grandfathering rights' for coal power stations converting to biomass in the RO. This is a key part of investor protection that will be withdrawn, impacting wider confidence in UK investments.	12 December 2014	Biomass: Existing and new RO projects
7	Contracts for Difference auction delayed. Planned auction for large scale power for October 2015 delayed, now will not take place till end of 2016.	01 October 2015	Power: New renewable electricity projects, mostly large scale
8	Green Deal energy efficiency scheme scrapped. Funding not renewed for Green Deal finance company, meaning no new applications can be accepted.	Immediate	Energy Efficiency: New applicants to scheme

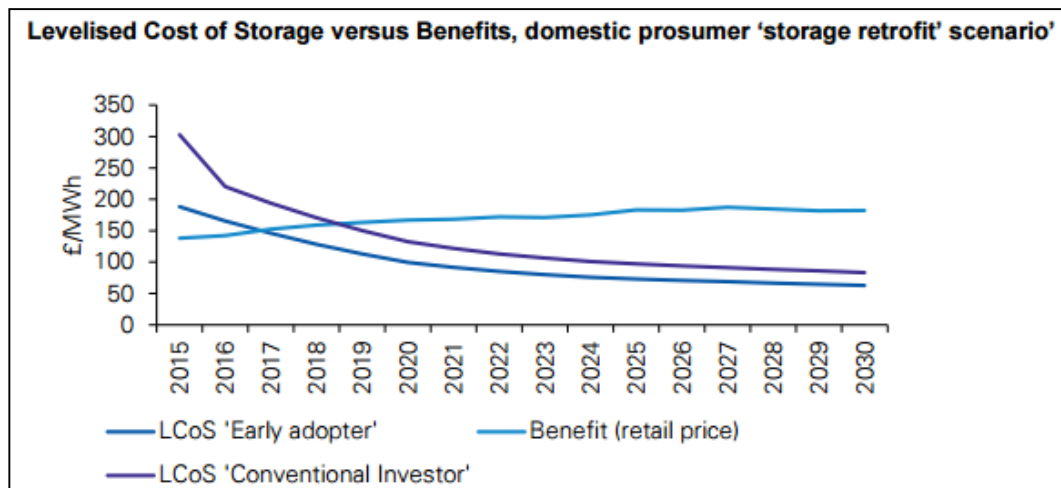
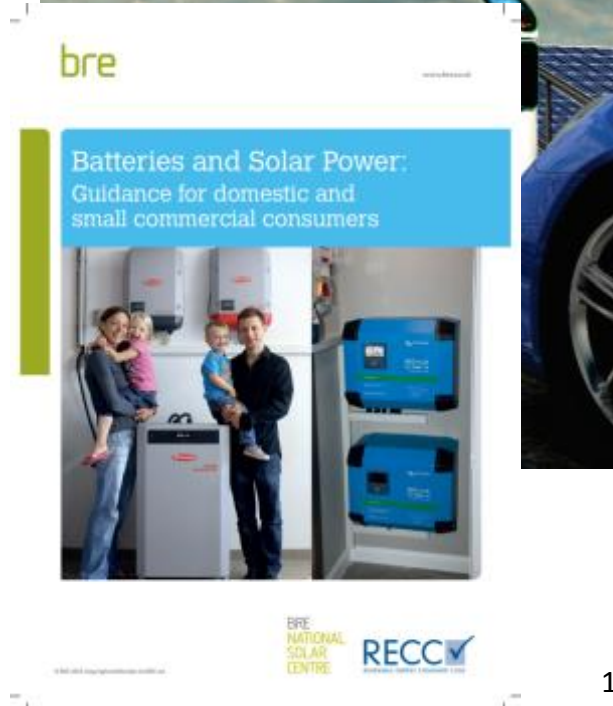
UK Government policy changes since the election - II

9	Green tax target scrapped. Government will no longer increase green taxes as a proportion of overall revenues, for example fuel duty.	Immediate	Wind, solar, transport, biomass
10	Cuts to Feed-in Tariff support rates and quarterly deployment caps. Significant cuts to generation tariffs and small quarterly deployment limits for FIT technologies. FIT scheme closure to new generation tariff projects by April 2019.	08 February 2016	Power: Solar PV, hydro, onshore wind, anaerobic digestion projects <5MW. Domestic and business renewable installations
11	Changes to tax incentives for energy schemes - following the removal of EIS, SEIS and SISR relief for Community projects, all other energy schemes had support withdrawn from 6 April 2016.	06 April 2016	All energy generation technologies
12	Proposed increase in VAT for solar, wind and hydro technologies. End of reduced 5% VAT rate for these technologies. EU mandated but interpreted in an anti-renewables manner by UK Government.	01 August 2016	All solar, wind, hydro projects. All energy efficiency projects unless exempted
13	EU mandated 10% levy on Chinese solar panels due to EU-China trade dispute. Adds 10% to every solar project's cost, likely to remain in place until end-2016 at least.	Immediate	All solar panels imported from China
14	Proposed Reform to the Renewable Heat Incentive. Significant cuts to the RHI tariff for biomass boilers, one of the most cost effective renewable heat systems. Also introduction of a budget cap and restrictions to support for crop-based biomethane production, along with steep degression triggers.	Expected 2017	All heat technologies including: Biomass boilers, large-scale biomass power, waste to energy plants, anaerobic digestion, heat pumps
15	Proposed Review of Embedded Benefits. Capacity Market Consultation March 2016 confirmed proposal to review 'embedded benefits' which could put up grid costs for the majority of renewable power generators.	Expected 2016/2017	All distribution connected generators

Future low carbon electricity market models

- centralised or decentralised?

- “competition” between low carbon generation forms to “complement” the variability of solar and wind and deliver secure energy systems
- Is it gas generation, biomass power or something else?
- Costs of solar and on-shore wind decreased significantly... as has energy storage systems
- Held REA UKES Energy Storage Conference: Jan 20th
 - KPMG report published for REA
 - Held round table meeting (22nd Feb) with the Minister Andrea Leadsom and REA members to discuss the report



Support for a decentralised energy future?

- DECC Report issued 17th Dec 2015
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/486362/Towards_a_smart_energy_system.pdf
 - potential consultation on key themes in Q2 2016 (discussed later)
- Further reports published in March/April along same lines as REA's position:

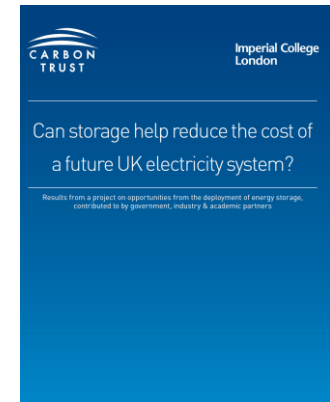
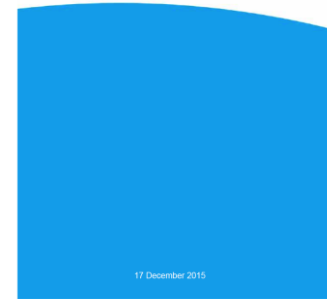
Energy UK
Carbon Trust

<https://www.carbontrust.com/media/672486/energy-storage-report.pdf>

NIC press release



Towards a Smart Energy System



Using ALL our resources?

- Biowaste (food & garden) presents a significant opportunity to boost recycling with more environmentally beneficial forms of treatment such as Anaerobic Digestion & reduce environmental impact of landfill
- Garden waste IS widely recycled by both households & businesses that produce it
- Despite significant policy developments in Wales & Scotland, the UK currently recycles just 10% of household waste & many food businesses do not recycle their food waste at all
- Cost worries are main reason for NOT separating.

REA report examines the **net** costs of introducing such measures to mandate source separation of food wastes by councils and businesses with the view that this would greatly increase the extent of separate collections in England.

- Separate food waste collections would likely yield savings but would it be enough to offset the cost of the collection process itself?
- Wide and diverse range of local authority collection systems so important to be able to model a “from” scenario in modelling options



May 2016

Online copy of the report can be found here:

<http://www.r-e-a.net/resources/rea-publications>

INVITATION to attend a ROUNDTABLE to discuss with Local Authorities and Councils on how they can be supported with increasing this opportunity



Some information

Biowaste makes a significant contribution to household recycling in England, comprising 42% of materials recycle. There remains a substantial opportunity for the contribution to increase. Estimates indicate food waste comprises 30% of residual waste overall!.. Likely to be higher where there is NO food collections in place

Composition of Recycling in England 2014 (Thousands of Tonnes)

Collection type	2010	2011	2012	2013	2014	% of Total 2014 Recycling
Total Recycling	9,112	9,596	9,684	9,523	10,025	
<i>of which:</i>						
Dry Recycling	5,557	5,618	5,652	5,675	5,807	57.9%
Separately Collected Food Waste	118	172	230	273	290	2.9%
Other Organics	3,437	3,807	3,802	3,575	3,928	39.2%

Source: Defra

Prevalence of Food Waste Collections

	Separate food waste	Food mixed in garden waste	Both scheme types	No food collection
England	31%	17%	8%	45%
Wales	86%	5%	9%	0%
Scotland	56%	19%	6%	19%

Source: WRAP

Other important *drivers* for a low carbon energy future

RE 100

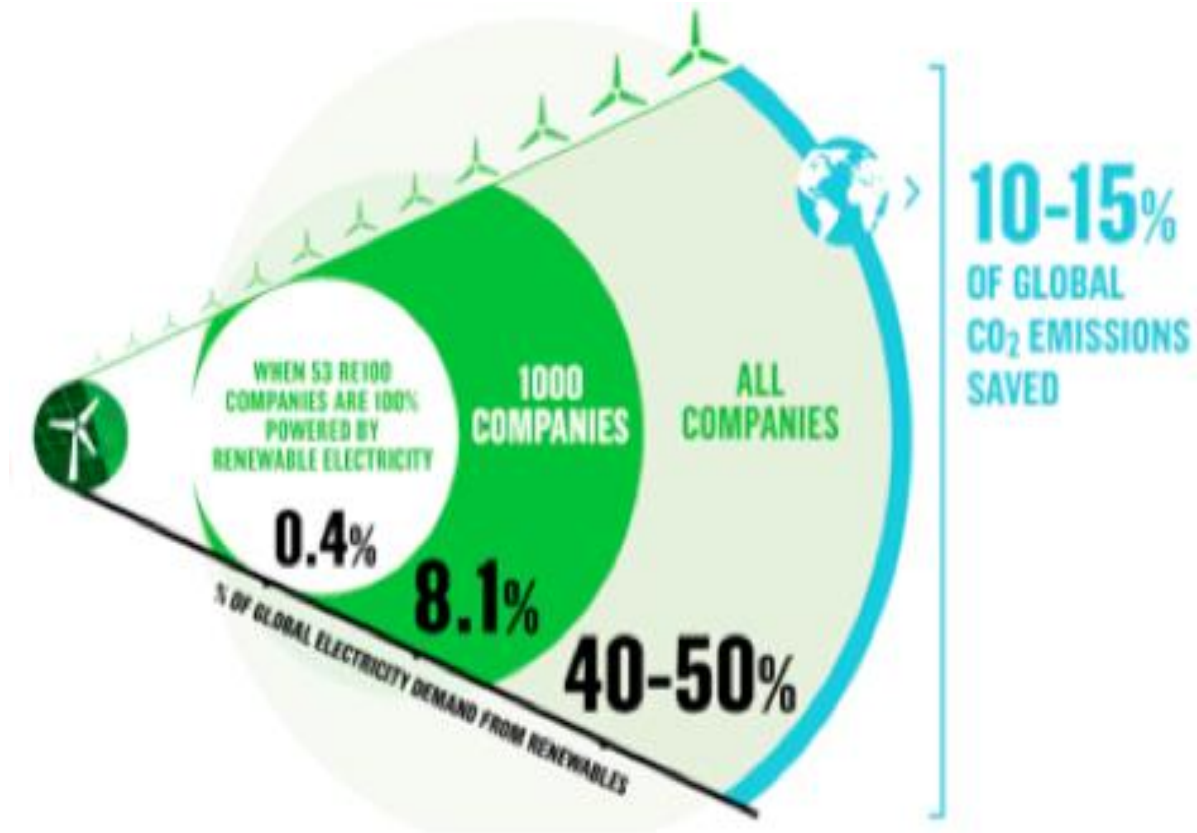
The world's most influential companies,
committed to 100% renewable power.



www.theRE100.org

Twitter: @theRE100 #RE100

Why 100% RE?



RE100 requirement

Minimum:

- Public commitment to 100% renewable electricity across global operations

Recommended:

- Timeline for reaching 100% electricity goal
- Interim goals for reaching milestone targets
- Current acceptable options:

Self-generated electricity
1. Generation from installations owned by the company
Purchased electricity
2. Purchase from on-site installations owned by a supplier
3. Direct line to an off-site generator with no grid transfers
4. Direct procurement from offsite grid-connected generators
5. Contract with suppliers (green electricity products)
6. Unbundled energy attribute certificate purchase
7. Other options

Goldman Sachs

Infosys



BMW GROUP



Johnson & Johnson
FAMILY OF COMPANIES



PHILIPS

TATA MOTORS



Coca-Cola Enterprises



MARS



H&M

YOOX GROUP



Thank you

Please join us on 16th June in London for:

REA's 1st conference on DECENTRAL

11th British Renewable Energy Awards Gala Dinner,
Savoy Hotel, London

For information - I: Department of Energy & Climate Change/Treasury Policy developments

Electricity:

Contract for Difference (CfD) auctions: *Will there be another auction?*

POT 1 Established – Solar & on-shore wind, etc.....**slim possibility**

POT 2 Less established – Off-shore wind, ACT, Marine, etc**YES** Autumn 2016..aiming for <£100 MW/hr

POT 3 Biomass conversion.... Unknown, though value for money recognised by Treasury!

Take forward the CfD mechanism with considerations for a “Market Stability Mechanism” CfD which would “recognise” value of base load generation e.g. biomass and combined variable renewables with storage.

Capacity Market: Review consultation yet focus to promote new gas build, Demand Side Management and interconnectors, with renewables and storage still excluded.

Carbon Price Floor & EU ETS: pressure from energy Intensives to water down mechanism

For information - II: Department of Energy & Climate Change/ Treasury Policy developments

Heat:

Renewable Heat Incentive (RHI) Consultation launched 3/3/2016, closed 27/4/2016

It proposes **drastic** reductions to tariffs that support growth in the biomass heat industry

- The reduction of biomass tariffs by up to 61%

DECC expects that changes to *non-domestic* biomass support will reduce annual installations from 7,132 systems in 2014, and 3,023 in 2015, to only **65 systems by 2021**.

This represents a reduction the installation of biomass boilers of 99.1% and 97.9% compared to 2014 and 2015 respectively.

DECC proposals foresee the installation of around 1,000 *domestic* biomass boilers per year by 2021, compared to 4,721 in 2015, a fall of 78.8%.

Heat Networks: £300M support available for Local Authorities to develop heat networks