

RURAL ANALYSIS OF THE RENEWABLE ENERGY CAPACITY DATA SET

Background

The Department for Business, Energy and Industrial Strategy publishes an annual data set which shows the renewable electricity installed capacity in each local authority area. The latest data available is that for the end of 2018. It presents figures in Megawatts (MW) of installed capacity and these can be disaggregated by the type of renewable energy source¹.

This note summarises findings from an analysis of that data set in which the English local authorities (LAs) have been split into three groups, namely:

- Predominantly rural LAs – where at least 50% of their population live in rural settlements;
- Urban with significant rural LAs – where between 26% and 49% of their population live in rural settlements; and
- Predominantly urban LAs – where up to 25% of their population live in rural settlements.

This is the rural classification of LAs which is widely used by the Office for National Statistics and Government departments. Rural settlements are those with a population below 10,000 plus some slightly larger ‘hub towns’, chosen where analysis shows they perform a key role as service and employment centres for a rural hinterland. Rural settlements can therefore be described as a mix of small towns, villages, hamlets and isolated dwellings.

It would not be surprising if most renewable energy production sites and capacity were found to be in rural settings. Whilst buildings in cities and towns can install certain technologies, such as photovoltaic cells and ground source heat pumps, it is undeveloped land that is the location for wind farms, solar farms, hydro power and the like. Nonetheless, having statistics to underpin that assumption is useful.

Furthermore, it should be emphasised that this analysis identifies renewable capacity within predominantly rural LAs. This is not the same as rural areas per se (let alone as undeveloped land). Potentially all predominantly urban LAs contain some undeveloped land and many include rural areas. Specifically, then, this analysis shows the extent to which renewable energy capacity is located within or concentrated within the most rural of LA areas.

¹ The data set excludes nuclear energy which some commentators classify as a renewable source, though such a viewpoint is subject to controversy.

Analysis

Based on data for all the sources of renewable energy covered by this data set, 60% of the installed capacity in England is allocated to predominantly rural areas. As Table 1 shows, this figure can be compared with the much lower 22% of households which are located in predominantly rural areas.

If offshore wind is removed from this calculation (on the grounds it has been allocated to the nearest coast, but is not technically within LA areas), then 62% of the installed capacity is found in predominantly rural areas. Either way the proportion is similar.

In a nutshell, we can conclude that predominantly rural areas are the location for most of the country's renewable energy capacity, whilst predominantly urban areas are the location for most of the country's residential users of energy.

Table 1: Renewable electricity installed capacity in England, by rural-urban classification (2018)

Type of LA area	Share of England households	Including offshore wind		Excluding offshore wind	
		Megawatts	Share of England total	Megawatts	Share of England total
Predominantly rural	22%	16,555	60%	12,873	62%
Urban with significant rural	13%	4,832	17%	2,816	13%
Predominantly urban	65%	6,421	23%	5,251	25%
England totals	100%	27,808	100%	20,940	100%

The data set covers twelve types of renewable energy source, but just four of these make up 90% of England's installed capacity. They are, in order of importance, photovoltaics, offshore wind, plant biomass and onshore wind. As Table 2 shows, the capacity for all these four sources is largely to be found in predominantly rural LA areas, albeit to a varying extent.

Table 2: Renewable electricity installed capacity for the four main sources, by rural-urban classification (2018)

Type of LA area	Share of England households	Photovoltaics	Offshore wind ²	Plant biomass	Onshore wind
Predominantly rural	22%	60%	54%	87%	64%
Urban with significant rural	13%	16%	29%	3%	14%
Predominantly urban	65%	24%	17%	10%	22%
England totals	100%	100%	100%	100%	100%

As Table 3 then shows, there are some distinctive patterns to the distribution of these renewable energy sources, with some clear geographic concentrations. Findings for the four main renewable energy sources are:

- Photovoltaics – just four predominantly rural LA areas are the location for 15% of the country’s capacity, two of them in the south west;
- Offshore wind – just four predominantly rural LA areas are the (assigned) location for 40% of the country’s capacity, all of them towards the southern end of the east coast;
- Plant biomass – just two predominantly rural LA areas are the location for 77% of the country’s capacity. Most notable is the district of Selby, which is home to the wood pellet burning Drax power station; and
- Onshore wind – just two predominantly rural LAs are the location for 19% of the country’s capacity, both of them towards the northern end of the east coast.

Table 3: Predominantly rural areas with the most installed capacity, for the four main renewable electricity sources (2018)

	Photovoltaics	Offshore wind	Plant biomass	Onshore wind
Hotspots for installed capacity among predominantly rural LA areas	Wiltshire (594 MW) Cornwall (588 MW) South Cambridgeshire (270 MW) Shropshire (212 MW)	Suffolk Coastal (857 MW) North Norfolk (719 MW) Swale (in Kent) (630 MW) Kings Lynn & West Norfolk (573 MW)	Selby (in North Yorkshire) (2,663 MW) Northumberland (448 MW)	East Riding of Yorkshire (318 MW) Northumberland (275 MW)

² Offshore wind sites are assigned to the local authority area at the nearest coastline by this data set.

Looking across all types of renewable energy source, this analysis finds that three of them are especially concentrated in the predominantly rural LA areas.

They are:

- Plant biomass – 87% of installed capacity is in predominantly rural areas;
- Hydro power – 72% of installed capacity is in predominantly rural areas; and
- Onshore wind – 64% of installed capacity is in predominantly rural areas.

There are, however, two renewable energy sources which stand out, because they are mainly concentrated in the predominantly urban LA areas. They are:

- Sewage gas – 8% of installed capacity is in predominantly rural areas; and
- Municipal solid waste – 9% of installed capacity is in predominantly rural areas.

This analysis concludes that it is predominantly rural LA areas which have been in the driving seat in the country's green energy revolution, which has seen renewables become a major part of the energy supply market and, allied to that, delivered a sizeable reduction in carbon dioxide emissions.

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