

No Time to Waste Our Organic Waste

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As we enter 2022 after a turbulent couple of years, you, perhaps like me, have been considering possible New Years' resolutions.

I've also been thinking about what the West Midlands might have as its New Years' resolutions as we look ahead to the next decade.

I'm conscious of our ambition to be net-zero by 2041 but I'd like to see some place-based targets to improve our region's competitiveness and quality of life.

We do have some exciting times ahead. We can look forward to the Commonwealth Games this year delivering, we're told, £778m investment, including redevelopment of the Alexander Stadium and the brand new Sandwell Aquatics Centre. Post-Games, the Perry Barr development is due to be converted into around 1,400 homes as part of a long-term regeneration plan providing up to 5,000 new homes. Investment in HS2 is ongoing, at least to Manchester/Marsden and up to East Midlands Parkway on the Eastern link, if not to Leeds.

But alongside Coronavirus and Brexit, we have an energy crisis to confront. Admittedly not only confined to the UK, but one that is, together with other crises, affecting both quality of life and standards of living.

How will we fare in the West Midlands with regards to reasonably-priced low-carbon energy over the coming decade?

Nationally, too many are falling into fuel poverty and 'fuel stress' where 10% or more of household budgets are spent on energy. [The Resolution Foundation brought out a report this month](#) stating that average domestic monthly fuel bills will rise from £100 to £150 when the energy price cap is adjusted to an anticipated £2,000 in April, putting 6.3 million (or 27%, up from 9%) of UK homes into fuel stress.

This will hit the West Midlands badly with over 300,000 homes already in fuel poverty and [amongst the highest levels in the country](#).

Energy is the backbone of any economy and the UK currently uses about **1873** terawatt hours (TWh) of energy each year. Sources vary on percentages generated from different sources with one suggesting oil accounting for 756 TWh, Natural Gas – 872 TWh, [Coal – 59 TWh, with Electricity from non-carbon sources contributing 186 TWh](#) (renewables, nuclear, hydro, bioenergy and imports).

[In 2020, one source suggests the UK obtained 21.5% of its primary energy from low carbon sources](#), with 37% of this from biomass, 31% from nuclear, and 18% from wind. Another source suggests that last year [24% of our energy was generated by renewable sources](#) – wind, solar and hydroelectric with 25% from nuclear, biomass and other sources.

It appears energy from solar increased by 4.4%, nuclear fell by 11% due to numerous outages at all 8 of the UK's power stations during 2020, wind increased by 18%, with capacity up by 2.5% and higher wind speeds and biomass supply increasing by 3.9%.

The Chair of Energy Capital West Midlands, Matthew Rhodes, has long argued that without [greatly enhanced devolution](#) in England our chances remain very low of providing a 'just energy transition' and tackling fuel poverty levels which have been at 11% rising dramatically as prices have risen.

Certainly we need to consider our regional assets, ensuring these are harnessed as efficiently as possible if we are to deliver sufficient energy to both eliminate fuel poverty and ensure sufficient low-carbon energy access for our manufacturing, especially in light of our position as the UK's industrial heartlands.

'*WM2041: A Programme for Implementing an Environmental Recovery*', published in June 2020, is referenced in the [WMCA's Five Year Plan](#) which in turn builds on consultancy support from WSP. The report makes no mention of the opportunities for biofuels, in particular biomethane, nor does it include any reference to geothermal with some parts of the West Midlands, [including Worcestershire](#), providing viable commercial opportunities in this sector. Equally it does not include reference to any audit of West Midlands energy assets and it certainly seems no one is looking to take advantage of these highly local opportunities.

The West Midlands should look carefully at its position in terms of energy requirements and assets – we have little wind capacity, no off-shore, no hydro, but one thing we do have plenty of, given food and crop production in our neighbouring shire counties, is the organic waste materials which, properly harnessed and managed, can make a far greater, cost-effective contribution in meeting our energy needs.

For example, the WMCA Five Year Plan suggests accelerated scenarios for net-zero deployment in industry include 33% hydrogen use. Whilst government's hydrogen strategy envisages between 20-35% energy consumption provided by hydrogen by 2050, I'm told by industry experts that appropriate hydrogen infrastructures are only due to reach the West Midlands towards the end of the national upgrades, in around 2045.

The same report suggests 100% of cars, buses, taxis and HGVs should be electrified and yet an [earlier WMCA report](#) highlighted the impracticality of transferring everything over to electric vehicles. The Regional Energy Strategy sets out that 42,547 GWh of energy is currently delivered to vehicles operating in our region as petrol and diesel. This amount equals the energy delivered through the entire regional gas network or is almost twice that delivered by the electricity system.

The [#WM2041 discussion document](#) states: "The implications for local energy infrastructure of shifting transport fuel use from petrol to electricity or gas are significant. As such, a lot of that demand will need to be met or otherwise eliminated by mass transit or active travel."

[A report](#), supported by gas utilities, including Cadent Gas, prioritised biomethane use in transitioning to green hydrogen. They saw the opportunity to increase biomethane's energy contribution from 2TWh to 120TWh or just under 14% of the gas energy consumed today, by using currently available wastes. By immediately using accessible biomethane we can reduce HGV CO2 emissions by between 22-38% over the coming decade whereas waiting for hydrogen results in just 6% emissions reductions by 2030.

Severn Trent and Cadent Gas are already producing and distributing biomethane on an industrial scale and have green hydrogen aspirations planning to produce this from biomethane reformation.

By properly capturing organic wastes we can harness fugitive methane emissions, as envisaged in the *COP26 Methane Pledge*. These waste streams are abundant including more of the 90mT/yr of UK manures (only 3% is currently treated), sewage, industrial and institutional food wastes, crop

residues and more than 12mT/yr household food wastes due to be collected following implementation of the Environment Act from 2023. These actions would, in turn, enable greater use of digestates, produced following anaerobic digestion and replacing fossil-fuel chemical fertilisers whilst also helping to alleviate fuel poverty by using a gas that already is viable for distribution and use through our established gas grid and is well understood, readily available and therefore available at a much lower cost than green hydrogen.

Niclas Svenningsen, Manager of Global Climate Action at UNFCCC has outlined local 'wins' from producing biomethane through opportunities to:

- use biomethane replacing fossil fuels
- turn more than 2% currently used of the 105bn tonnes of organic wastes currently produced globally each year into bioenergy
- prevent releases of methane gas – 85 times more harmful than CO₂
- create energy and new jobs, contributing to the new low-carbon economy through a stable energy source that can be built and used, even at household scale.

Locally Birmingham City University [IDEAS think tank](#) brought together the Birmingham Biomethane Cluster in 2020 to promote this opportunity. The cluster brought together world-leading specialists and businesses based in our region including Severn Trent Water, Cadent Gas, Air Liquide, CNG Services – all businesses already investing in this opportunity in our region. With one kilo of biomethane equivalent, in energy output terms, to one litre of diesel, the biofuel provides a real alternative to fossil fuels and is already available for use in transport, being especially practical for heavier vehicles – HGVs, trains, trams, buses, refuse trucks, cement mixers, tractors, as well as for use in heating and energy generation.

Severn Trent Water currently produces just under 600 gigawatt hours (GWh) per annum of biogas from anaerobic digestion, with 118 GWh of this converted into biomethane and injected into the grid (the remainder is used for CHP generation). The current combined biomethane produced by both Severn Trent Water and Severn Trent Green Power would heat 22,000 homes or power over 500 HGVs.

With energy prices in the news over the past year through vast gas price rises, up over 70% since August 2021 and 250% since start 2021 and big electricity price increases too, biomethane needs to gain greater policy recognition for the role it can play over the coming decade and especially in transitioning to green hydrogen.

Rather than slicing through national assumptions to come up with a set of regional data why not sum up our own strengths and come up with our own ideas based on our West Midlands assets? What about promoting the West Midlands as the centre of renewable net-zero energy by facilitating bioenergy exports to neighbouring counties through local energy networks?

Let's see some clear goal setting (not ambitions) across WMCA this year combined with more social entrepreneurship to drive our 2041 net-zero ambitions into reality by harnessing our own circular economy solutions.