

JLEN Investment Portfolio CO₂ Analysis Report

May 2020

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CO₂ Analysis Report

Executive Summary

Aardvark Certification Ltd (ACL) has been instructed by JLEN Environmental Assets Group Ltd to assess and report against the carbon savings achieved across their investment portfolio. The portfolio consists of a total of five asset classes, wind turbines, solar photovoltaic installations, anaerobic digestion plants and, hydro and waste and wastewater facilities. The portfolio consists of 32 individual assets with a total capacity of 303 MW. 30 of these assets have been assessed within this report.

Asset Introduction

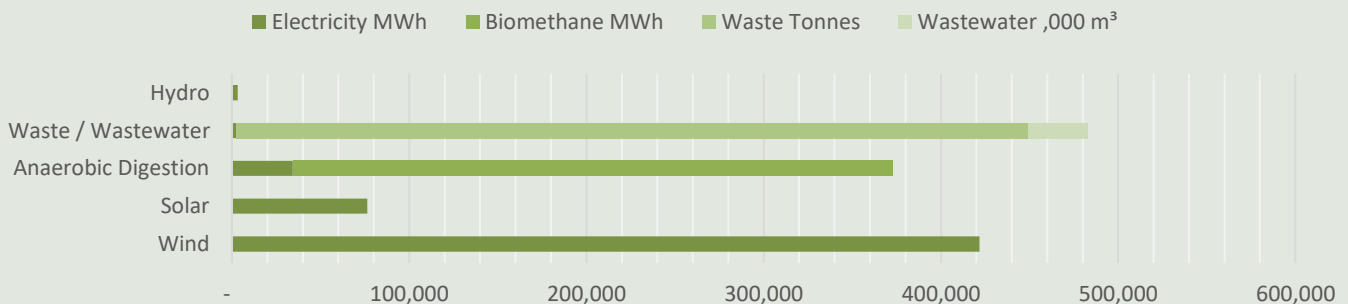
The JLEN Investment Portfolio is widely distributed across the UK with assets strategically located in order to benefit from the natural resources such as wind and solar irradiance. JLEN hold a 100% stake or controlling stake in virtually all of the assets within the portfolio with all assets are managed under service contracts with specialist O&M providers.

The portfolio has produced a total of 4,803,119 MWh of renewable energy to date. During the course of the portfolio's total lifetime it is anticipated that a further 15,741,022 MWh of renewable energy will be produced. In addition to energy generation, the assets within the portfolio also treat wastewater and residual household and commercial waste. The waste processing facilities process up to 518,494 tonnes of waste and wastewater per annum.



CO₂ Savings

The CO₂ savings achieved by the JLEN Investment Portfolio are achieved through the generation of renewable energy as well as through diverting waste from landfill. The types of renewable energy produced includes electricity and biomethane. An overall performance summary showing annual average generation or processed volumes for each asset class is shown below. The chart shows that the anaerobic digestion and waste/wastewater asset classes contribute to decarbonisation in multiple ways.



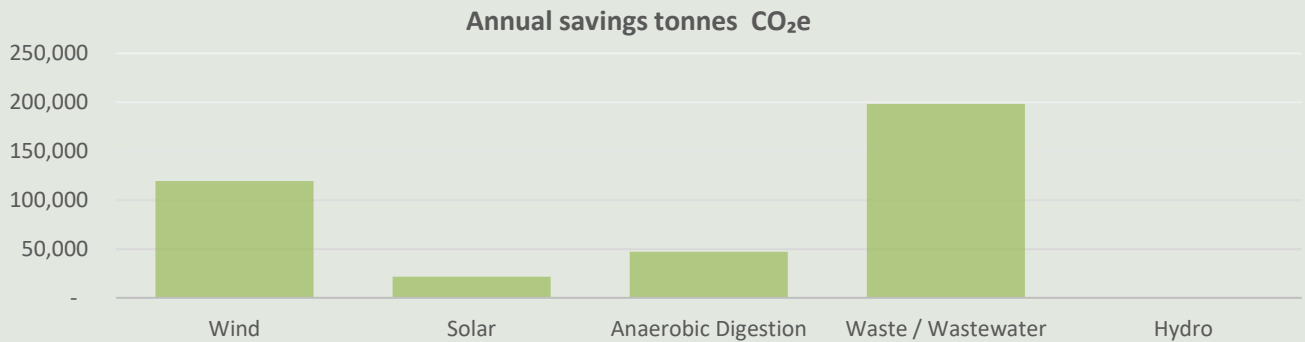
Energy production and waste volumes processed have been considered over the lifetime of the individual assets in order to quantify the contribution each asset will make over its operational lifetime.

Asset Class	Unit	Annual	Operation to date	Operational lifetime
Wind	MWh	421,769	2,122,995	10,407,306
Solar	MWh	76,420	444,594	1,684,466
Anaerobic Digestion	MWh	372,600	2,170,904	8,178,632
Wastewater	MWh	2,771	51,265	72,048
Waste / Wastewater	tonnes	479,960	6,719,446	11,999,010
Hydro	MWh	3,192	13,361	201,689

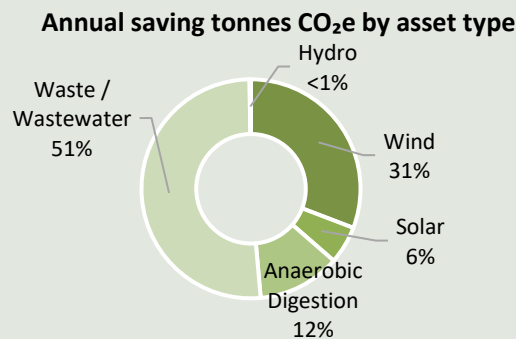
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The above renewable energy generation and waste processing data has been converted to show the tonnes of CO₂e per annum the various JLEN assets have avoided had the same amounts of fossil fuel derived energy been produced or the waste streams not processed.



From this data it is possible to illustrate by asset class the contribution made to overall CO₂e avoided. This data is shown as percentage contribution below. It can be seen that the contribution of the waste/wastewater assets is a significant contributor towards the overall emissions avoided contributing some 50%. This is due to the fact that diverting waste from landfill has a greater impact on avoiding emissions to atmosphere than the avoidance of emissions from fossil fuel derived energy at the scale being achieved via the renewable energy assets in this portfolio.



CO₂ Forecast

Based on the quantity of energy the JLEN portfolio produces each year and waste processed, it is possible to quantify historic emissions avoided as well full operational lifetime emissions which will be avoided by asset class. For those assets producing renewable energy, this analysis is shown below with the waste asset shown at the bottom of the table. It is expected that over the remaining lifetime of the JLEN portfolio, a further 5,979,289 tonnes CO₂e will be avoided. Over the total operational life of the JLEN portfolio, a total of 9,370,858 tonnes CO₂e will be saved.

Asset Class	Total Energy			t CO ₂ e			
	Generation to date MWh	Avg Annual Generation MWh	Forecast generation MWh	Emissions avoided to date	Avg annual emissions avoided	Lifetime emissions avoided	Forecast emissions avoided
Wind	2,122,995	421,769	8,284,311	600,956	119,390	2,945,996	2,345,040
Solar	444,594	76,420	1,239,872	125,851	21,632	476,822	350,971
Anaerobic Digestion	2,170,904	370,853	6,007,728	275,036	46,742	934,846	659,810
Wastewater	51,265	2,771	20,783	14,512	784	20,395	5,883
Hydro	13,361	3,192	188,328	3,415	816	51,552	48,137
	Waste			t CO ₂ e			
	Waste Type	Avg Annual Tonnage	Forecast Tonnage	Emissions avoided to date	Avg annual emissions avoided	Lifetime emissions avoided	Forecast emissions avoided
Waste	All Wastes	446,494	5,357,928	2,371,799	197,650	4,941,247	2,569,449

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What do these savings mean?

The forecast CO₂ savings the JLEN Investment Portfolio will achieve over its lifetime can be difficult to fully appreciate when stated in tonnes. We therefore convert these figures to real-life equivalents to assist the reader in interpreting the reporting. For the total portfolio, the above figures equate to:

- removing the combined emissions of 177,668 medium sized diesel cars every year from UK roads for the lifetime of the asset portfolio.
- power 234,649 residential properties based upon the national average electricity consumption statistics from the renewable electricity generated
- provide enough renewable electricity to drive a Nissan Leaf 2,573,545,283 miles a year – equivalent to driving 103,351 times around the circumference of the earth
- provide enough renewable electricity to boil enough water for 22 billion cups of tea

Community Benefits

As well as the various environmental benefits the JLEN Investment Portfolio delivers, the majority of individual assets also contribute directly to their respective local communities. The individual assets have in the last year contributed £363,840 to local community funds managed by local parish councils or foundations with ongoing commitments to donate to these funds over the lifetime of the projects. In most cases the funding is index linked ensuring that it won't diminish with inflation and will continue to make a meaningful contribution at a local community level. The projects the funds are allocated to are for the betterment of the local community with preference for projects which promote sustainability.

A summary of individual asset community funding for the last payment year is shown below:

Asset Class	Asset Name	Community fund contribution per annum (£)	Recipient/s
Anaerobic Digestion	Egmere	2,950	Various local groups
	Vulcan	9,650	Various local groups including scouts, brownies, schools and local associations
	Meden	5,000	Parish Council
	Merlin	7,600	Various local groups
Wind Portfolio	Bilsthorpe	15,000	Parish Councils
	CREPL	41,952	Community Foundation
	Hall Farm	39,520	Parish Council
	Burton Wold	14,573	Community Foundation
	New Albion	33,521	Community Foundation
	Dungavel	71,281	Community Foundation
	MM2	19,000	Borough Council
Solar Portfolio	Llynfi	96,000	Parish Councils
	Amber	1,000	Local parish
	CSGH	6,593	Parish Council

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Methodology

This report has been prepared in good faith by Aardvark Certification Ltd based on data obtained from the owner/operator of the asset reviewed. Our calculations of CO₂ savings are based on IFI Approach to GHG Accounting for Renewable Energy Projects. Baseline Emission Factors used in this analysis are taken directly from the Department for Business, Energy & Industrial Strategy Greenhouse gas reporting which prevailed at the time the asset was individually analysed.

Liability

This document contains information and may contain conclusions and recommendations. Every effort has been made to ensure that the information is accurate and that the opinions expressed are sound. However, Aardvark Certification Limited cannot be made liable for any errors or omissions or for any losses or consequential losses resulting from decisions based on the information.



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