Menhaden

Menhaden PLC
Reporting Impact 2019

Environmental Impact Statement

Sustained and Sustainable Returns

At Menhaden Capital Management LLP, our core aim is to generate long-term shareholder returns by investing in businesses and opportunities delivering or benefiting from the efficient use of energy and resources irrespective of their size, location or stage of development.

An assessment of resource efficiency is central to our fundamental, research-oriented investment process. It helps us understand whether a company, or other investable entity, is creating value by reducing its use of natural resources, recycling materials, or re-designing products to make efficiency savings. We also look at the extent of environmental disclosures and reporting. This approach helps Menhaden make investments that have a positive impact on society and the environment.

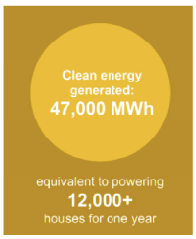
It is an approach that has helped the Company deliver strong performance in 2019 not just financially but also in its sustainability returns. This Impact Statement shows that Menhaden's holdings helped generate 47,000 MWh of clean energy in 2019, contributed to 32,000 tons of avoided greenhouse gases and 61,000 m^3 of water saved.

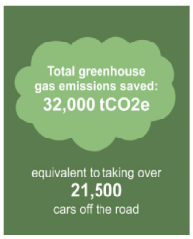
All allocations made by the Company help foster the low-carbon transition in some way, and in 2019 some of our newest positions were made in innovative firms such as Charter Communications and Microsoft which are providing the large-scale infrastructure that could power the smart, more resource-efficient cities of the future.

We are a passionate supporter of greater and more standardised environmental disclosure by companies across the market, using frameworks such as the Task Force on Climate-related Financial Disclosures (TCFD). That's why Menhaden Capital Management aims to deepen the Company's impact in the year ahead not only through our capital allocation, but also by engaging with our holdings to encourage them to improve their emissions disclosure and performance.

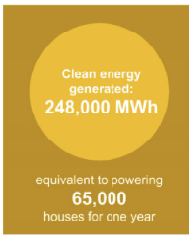
Ben Goldsmith
Menhaden Capital Management LLP
Portfolio Manager

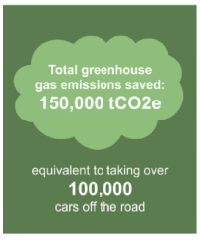
Menhaden's Portfolio Impacts in 2019:





Menhaden's Portfolio Impacts over the Last Three Years:





Environmental Impact Statement
continued

Progress by Theme

The Portfolio Manager has consistently organised the Company's portfolio around four investment themes: i) clean energy; ii) sustainable transport; iii) resource and energy efficiency; and iv) water and waste management.

Clean energy

The Company invests in two influential clean energy companies, **X-ELIO** and **Brookfield Renewable Partners**, who together generated over 27,000 GWh of electricity in 2019. Both firms achieved a year-on-year increase in clean energy generation with X-ELIO's production growing by 22%. The Company also invests in **Alphabet**, the world's largest corporate buyer of renewable power, which bought 10 billion kWh of renewable electricity in 2018.

Sustainable transport

The four firms held in the sustainable transport theme saved over three million litres of fuel[1]. New addition in 2019, **Canadian National Railway**, has trains that are 15% more fuel efficient than the rail industry average[2]. Although the aviation sector intrinsically produces some negative environmental impacts, the Portfolio Manager recognises that air travel remains a critical part of global transport and so invests in aviation firms setting the best standards on energy efficiency, including Airbus whose fuel savings compared to peers grew by approximately 10% in 2019.

Resource and energy efficiency

This theme covers a wide range of companies delivering efficiencies in the use of natural resources through their products, services or operations. **Microsoft**, a new holding in 2019, has announced a goal to become 'carbon negative' by 2030 and is, for example, helping bring energy efficiencies to enterprise data centres via efficient cloud computing hardware such as Azure, which uses at least 22% less energy to run common workloads[3]. Private holding **Calisen (formerly Calvin Capital)** has funded over 7.6 million smart meters in the UK and is playing a central role in the Government's plan to save the UK up to £40 billion by 2050 in energy costs[4].

Water and waste management

The Company's main holding in this theme is US firm **Waste Management Inc**, a company that annually recycles over 15 million tons of waste and optimises their landfills to minimise surface and groundwater contamination. Across the portfolio as a whole, the Company's holdings helped save over 61,000 m^3 of water, in part through the allocation to clean energy, one of the most water-efficient ways to generate power.

About this report

All impact data in this report is based on the proportion that Menhaden holds of each entity as of 31 December 2019 and is based on best estimates using publicly disclosed data. The scope of the assessment for all data is the Company's listed portfolio companies and its largest private holding, X-ELIO. A full account of the methodology is available in the technical annex online.

Sustainable Development Goals

The Menhaden Board and the Portfolio Manager support the UN Sustainable Development Goals (SDGs) and many of the Company's holdings contribute to the challenge of achieving them. The examples below offer a snapshot of how the Company's investments contribute to at least six SDGs:

Over 700 million people could be displaced by intense water scarcity by 2030[5] unless we better manage our water resources. SmartWater is an 'internet of things' product part-created by **Microsoft** which can proactively identify and fix water leakages, to help combat water scarcity. The recycling operations of **Waste Management Inc** also contribute, saving over 40 billion gallons of water annually.

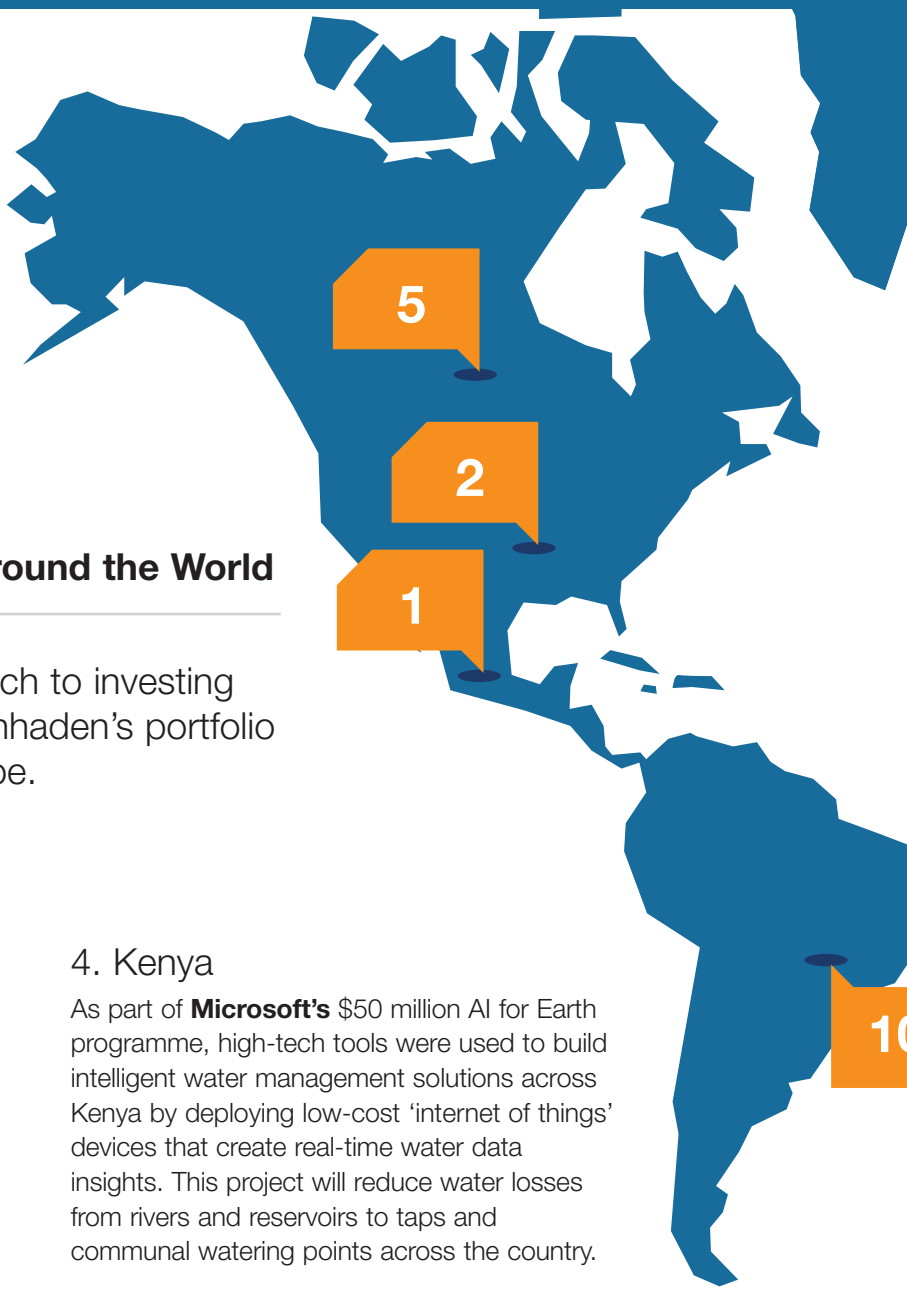
Brookfield Renewable Partners is one of the world's largest investors in renewables, with 18,800 MW of generating capacity across hydro, wind and utility-scale solar. In 2019, their clean energy generation increased by 4% to over 5,300 renewables facilities.

The two freight train companies in our portfolio **Canadian Pacific** and **Canadian National** employ over 38,000 people and carrying goods on a single-unit freight train of theirs keeps more than 300 trucks off public roads. **Charter Communications**, a connectivity company, is providing digital infrastructure to enable cities to reduce their environmental impact through shorter commutes and more efficient water, waste management and civic services.

Products designed by Resysta, the underlying holding in the **WCP Growth Fund** in which we invest, have the look and feel of natural tropical wood but are made largely from recycled rice husks. They are being used in the construction industry to replace timber and avoid deforestation, and recently won the Green Product Award.

Maritime services firm **Ocean Wilsons Holdings** is reducing GHG emissions by transitioning diesel-powered ships to more efficient diesel-electric hybrid systems and using electric cranes. **Microsoft** and **Canadian National** have both committed to a science-based target to reduce their carbon emissions at a pace aligned with keeping global warming below 2ºC.

Rail freight firm **Canadian National** has launched a project in coalition with the Port of Prince Rupert in Canada to recycle used concrete rail ties to enhance marine life on the coast of British Columbia by creating artificial reefs.



Menhaden Portfolio Impacts Around the World

A diversified, multi-regional approach to investing means the positive impacts of Menhaden's portfolio companies are felt around the globe.

1. Mexico

Solar provider **X-ELIO** has developed the 74MW Guanajuato operating plant, its first in Mexico, generating over 800 local jobs. A further plant is under construction in the city of Navojoa, which will displace the equivalent of 5.1 million tons of CO2 in the next 25 years[6].

2. USA

Canadian National's reforestation programme promotes the greening of communities including First Nations all along their North American rail network, planting over 2 million trees across the USA and Canada since 2012.

3. France

Aviation firm **Safran** joined a coalition of government agencies, airlines and industrial partners to foster the aviation biofuel industry in France. This marks the first partnership between public and private industry players in support of more sustainable aviation fuel.

4. Kenya

As part of **Microsoft's** $50 million AI for Earth programme, high-tech tools were used to build intelligent water management solutions across Kenya by deploying low-cost 'internet of things' devices that create real-time water data insights. This project will reduce water losses from rivers and reservoirs to taps and communal watering points across the country.

5. Canada

Canadian Pacific Railway has commissioned two new industrial wastewater treatment plants in Montreal and Winnipeg. The Montreal facility is capable of treating up to a million litres of wastewater per day. Canadian Pacific has reduced its annual water consumption by over 65% since 2015[7].

6. UK

Sustainability charity, CDP, based in the UK, last year placed current holdings **Alphabet**, **Microsoft** and **Waste Management Inc** on its top-ranked 'A-list' for their environmental reporting.

[6] Source: IDB invest
[7] Source: Canadian Pacific CDP disclosures

7. Germany

Airbus opened its new E-Aircraft System House near Munich, Europe's largest test facility dedicated to alternative propulsion systems and fuels. They report that the €50 million facility will allow them to test electric motors and hybrid-electric engines and develop their own low-emission alternative propulsion units.

8. Hong Kong, China

Resysta, a holding of the **WCP Growth Fund LP**, provided materials for a new 'Avenue of Stars' in front of the Hong Kong Museum of Art. Resysta is a hybrid recycled material that consists of 60% food industry waste in the form of rice husks. It is 100% recyclable and its production process is entirely free from deforestation.

9. Australia

Google, part of the Company's investment in **Alphabet**, launched the Environmental Insights Explorer tool designed to equip cities with the emissions data insights to accelerate their transition to a low carbon future. Adelaide, Melbourne, Sydney and Canberra are among the first cities worldwide to be offered high-resolution data to measure greenhouse gas emissions to help their governments plan and measure the impact of climate change projects.

10. Brazil

BRK Ambiental, part of the Company's investment in **Brookfield Renewable Partners**, is the largest private water company in Brazil, acquired by Brookfield, that serves 15 million people in over 100 cities across the country.

APPENDIX

Introduction

Menhaden PLC (the "Company" or "Menhaden") is a UK-listed investment company that seeks to generate long-term shareholder returns by investing in companies and opportunities, which deliver or benefit from, the efficient use of energy and resources.

Since 2017, Menhaden has commissioned sustainability consultancy Carbon Smart to quantify the environmental benefits of each publicly listed organisations included in Menhaden's portfolio. The following report details the quantification of benefits for each company and documents the approach taken and key assumptions made.

Approach

Carbon Smart reviewed each company in scope to calculate the resource consumption (electricity, fuel, water and waste) and greenhouse gas (GHG) emissions avoided. All calculations have been based on publicly available information shared by the individual companies.

To arrive at an environment benefit calculation, Carbon Smart followed one of the approaches listed below (in order of preference):

1. **Product/services** – Resource savings and GHG emissions avoided due to the products and services the business offers (e.g. renewable energy)
2. **Flagship product** – Resource savings and GHG emissions avoided from a flagship product (e.g. electric vehicles)

In cases where either:

– Insufficient information was publicly available to calculate the savings through the business' offerings or

– The products or services of the business did not have a specific environmental benefit, the following alternative approaches were applied:

3. **Peer efficiency review** – Resource savings and GHG emissions avoided in comparison to an industry peer (e.g. Airbus vs. Boeing)
4. **Sector efficiency review** – Resource savings and GHG emissions avoided based on efficiency gains across a sector/industry (e.g. maritime industry review)
5. **Internal savings** – Resource savings and GHG emissions avoided through internal, company-wide initiatives, helping the organisation to produce or deliver their products and services more efficiently

It is expected that the savings from product / services significantly outweigh the benefits of internal savings.

All environmental benefit figures have been calculated for the 2019 reporting year. Carbon Smart followed the DEFRA Environmental Reporting Guidelines and the GHG reporting protocol to calculate the emissions saved. The most recent available GHG conversion factors were used to calculate the GHG emission savings: for international electricity generated the 2019 IEA grid average factors were applied and for all other resources the 2019 DEFRA carbon conversion factors were used, unless otherwise stated.

Menhaden's share of avoided resource consumption and emissions production

The following table provides a breakdown of Menhaden's share of avoided resource consumption and emissions production for each organisation by theme. The share of benefits attributable to Menhaden is based on its % ownership (equity) in the company. Private equity companies have not been included in this analysis.

Theme	Company	% ownership	Electricity (MWh)	Fuel (litres)	Waste (tonnes avoided to landfill)	Water (cubic meters)	GHG emissions (tCO_2e)
Clean energy	X-ELIO	6%	43,286			56,272	19,328
	Brookfield Renewable Energy	0.012%	3,267			4,296	1,094
Sustainable transport	Airbus	0.004%		79,157	3		182
	Safran	0.015%			8		2
	Canadian Pacific	0.016%		3,194,863			8,022
	Canadian National	0.007%		221,891	24		598
Resource and energy	Charter Communications	0.012%			2	1	0
	Alphabet	0.001%			0.62	185	136
	Microsoft Corporation	0.000%			0.04	20	7
	Ocean Wilsons Holdings	1.025%					29
Water and Waste	Waste Management Inc.	0.004%	267		606	351	2,374
	Total		**46,819**	**3,495,911**	**643**	**61,125**	**31,773**

= Indicator not applicable to theme

= This year there were no environment benefit figures for Canadian Pacific (in relation to waste) and Ocean Wilsons Holdings (in relation to water and waste). Fuel savings and associated GHG emission savings from Safran's engines are incorporated in Airbus figures.

APPENDIX
continued

Calculation approach and assumptions

The following section details the calculations carried out, the approach taken and the assumptions made for each company.

Clean Energy theme

X-ELIO

Calculation: product/service

Annual clean energy generated and total GHG emissions avoided using renewable energy, rather than energy from a local grid, and water use avoided when compared to coal fired generation.

Approach

X-Elio disclose total clean energy generated (MWh) and GHG emissions avoided (tonnes of CO_2e) for 2018. The total energy generation figure was used to calculate water avoided.

Key assumptions

- Assumed 2018 generation figure is the most up to date and accurate figure for X-Elio's portfolio.
- Assumed all solar PV facilities replaced coal fired stations to calculate water avoided.

Brookfield Renewable Energy

Calculation: product/service

Annual clean energy generated and total GHG emissions avoided using renewable energy, rather than energy from a local grid, and water use avoided when compared to coal fired generation.

Approach

In 2019, Brookfield Renewable Energy disclosed total clean energy generated (GWh). Carbon Smart has used this total energy generation figure to calculate GHG emissions and water avoided. This represents an improvement in the scope of reporting considering, in previous years, Brookfield Renewable Energy did not disclose the total energy generated for the year but instead stated their generation capacity. Historically, Carbon Smart would use industry standard renewable energy calculation tools to calculate annual consumption estimates based on the type of facility, the generation capacity and the location of the system.

Key assumptions

- Assumed 2019 generation figures are the most up to date and accurate representation of Brookfield Renewable Energy portfolio. The company has only released generation figures for Q1-Q3 (capturing January – September 2019). Carbon Smart assumed the average monthly energy generation over the reported period were representative of average consumption for the remaining months of the year. Therefore, the reported 9 months of data were extrapolated to estimate generation across a full year.
- GHG emissions avoided calculations: based on grid emission factors of country/region that the clean energy systems are based in (e.g. USA, Brazil, Colombia, Europe). Split of generation by country/region was disclosed by Brookfield Renewable Energy.
- Water avoided calculations: based on the assumption that the clean energy produced by Brookfield Renewable Energy has replaced energy generated by a coal fired station.

Sustainable Transport theme

Airbus

Calculation: peer comparison & internal savings

Annual fuel and GHG emissions avoided using Airbus compared to Boeing airplanes (peer comparison). Waste diverted from landfill due to internal reduction initiatives (internal savings).

Approach

Fuel and GHG emissions saved by using Airbus airplanes rather than Boeing airplanes flying for one year. These calculations have been based on all Airbus aircraft delivered in 2019. The approach remains the same as last year and comparisons of new aircraft models have been included.

Key assumptions

- GHG emissions avoided calculations: Carbon Smart took the difference in GHG emissions attributable to distance flown by Airbus aircraft and comparable Boeing aircraft (Carbon Smart assumption).

- Flight distance: Weighted average annual distance flown in the US by aircraft of each type is a reasonable proxy for the average distance flown worldwide.
- Aircraft numbers: The delivered volume of aircraft for 2019 is a reasonable representation of the new aircraft in operation in 2019.
- Comparable aircrafts: Carbon Smart selected comparable aircrafts between Airbus and Boeing.

Safran

Calculation: internal savings

Annual water, waste and GHG emission saved through company-wide initiatives.

Approach

Safran disclose data on total waste recycled, GHG emissions and water use in their 2018 annual report. Since the previous reporting year, Safran has purchased a new business called Zodiac. Consumption from this acquisition has not been included in the scope of reporting as this would dilute savings. Carbon Smart has calculated GHG emission savings from landfill waste diversion. Safran did not achieve any water savings between 2017 and 2018, as such water was not included as part of this year's assessment.

Assumptions

- Assumed the figures that Safran report on are representative of the whole business, excluding Zodiac.

Canadian Pacific Railway

Calculation: flagship product

Annual fuel and GHG emissions avoided by freighting goods by rail compared to by road in trucks.

Approach

Canadian Pacific Railway disclose the fuel efficiency of their locomotives and the total gross tonne- km (the movement of one tonne of goods over a kilometre) for 2018. Using these figures Carbon Smart calculated fuel and GHG emissions associated with Canadian Pacific in 2018 and compared these figures to fuel use and GHG emissions associated with transporting the same weight of goods across the same distance by truck.

Key assumptions

- Assumed all rail trips were for the freighting of goods - Canadian Pacific Railway primarily specialises in the freighting of goods. The company runs a few passenger train services, but this is not a material part of the business.
- Assumed an average of medium- and heavy-duty trucks as an alternative to rail transport.
- Used US Environmental Protection Agency data to estimate fuel savings and GHG emissions avoided, as Canadian-based figures were not available.

Canadian National Railway

Calculation: flagship product

Annual fuel and GHG emissions avoided by freighting goods by rail compared to by road in trucks.

Approach

Canadian National Railway disclose the fuel efficiency of their locomotives in 2018. The company has also calculated the avoided tonnes of GHG emissions by displacing the need to freight goods by truck. As the company does not disclose its total gross tonne-km, Carbon Smart has used the company's own avoided emission calculations. Using these GHG avoidance figures and the fuel efficiency of the company's locomotives, Carbon Smart calculated associated fuel savings.

Key assumptions

- Assumed all rail trips were for the freighting of goods - Canadian National Railway primarily specialises in the freighting of goods. The company runs a few passenger train services, but this is not a material part of the business.
- Assumed an average of medium- and heavy-duty trucks as an alternative to rail transport.
- Used US Environmental Protection Agency data to estimate fuel savings and GHG emissions avoided, as Canadian-based figures were not available.

APPENDIX
continued

Resources and Energy Theme

Charter Communications (Spectrum)

Calculation: Internal savings

Annual water, waste and GHG emission saved through company-wide initiatives.

Approach:

Charter Communications (known as Spectrum in the public domain) disclose data on their annual Scope 1 and 2 GHG emissions. Carbon Smart has included this data and calculated avoided GHG emissions by also accounting for waste diversion. Waste diversion figures are reported on in their 2017 Corporate Citizenship Report. Using this data, Carbon Smart has calculated reductions between the two most recent reporting years. Safran also disclose the amount of renewable energy generated. This data was used to calculate water savings from using renewable energy as compared to creating power through coal fired plants.

Assumptions:

- Assumed the figures reported by Spectrum are representative of the whole business (i.e. Charter Communications)

Alphabet

Calculation: flagship product & internal savings

Annual GHG emissions avoided through Google Nest thermostat products[1], the procurement of renewable electricity and wider internal resource reduction initiatives. Waste avoided calculations are based on company-wide reduction initiatives. Water use avoided was calculated assuming use of coal fired generation instead of renewable sources.

1 Has energy saving features (e.g. helps you pick a temperature that will save energy) and has functions to turn down the temperature when the building is unoccupied to avoid heating empty spaces.

Approach

Carbon Smart has calculated total GHG emissions avoided by taking into consideration the following data as reported by Google in its 2019 sustainability report:

- Total GHG emissions avoided from staff commuting in electric vehicles and shuttle buses
- Total tonnage of waste diverted from landfill
- Total electricity consumption, of which 100% is reported to have been sourced from renewable sources. Carbon Smart calculated the associated avoided emissions by assuming the electricity would have otherwise been procured from the national grid. Assumed that large majority of electricity consumption occurs in data centres. GHG emissions avoided calculations were based on grid emission factors of country/region where data centres are based (e.g. Finland, Netherlands, Ireland, Belgium, Chile, Singapore, Taiwan). Water use avoided was also calculated by considering use of water in conventional coal fired generation.
- Total energy saved by Nest thermostat users and food waste prevented in cafes for 2018 were reported cumulatively as opposed to annually. Carbon Smart calculated the difference between the cumulative figures reported for 2017 and 2018 to account for energy savings in 2018.

Assumptions

- Assumed Google is a suitable proxy for Alphabet – Google is the only Alphabet subsidiary that appears to report on resource use and GHG emissions in detail (e.g. DeepMind and Waymo have limited information available in the public domain).
- Assumed the data reported by Google in sustainability report covers all Google's business activities.

Microsoft Corporation

Calculation: internal savings

Annual water, waste and GHG emission saved through company-wide initiatives.

Approach

Avoided GHG emissions were calculated by considering Microsoft's total renewable electricity consumption by region, as reported in their 2018 report. Associated avoided emissions were calculated by assuming electricity would have otherwise been procured from the national grid. Water savings were calculated from using renewable energy as compared to creating power through coal fired plants. waste diversion from landfill was reported by Microsoft in their 2018 report. Avoided GHG emissions from waste diversion was included in the total avoided GHG emissions figure.

Assumptions

- Assumed that large majority of electricity consumption occurs in data centres. GHG emissions avoided calculations were based on grid emission factors of country/region where data centres are based (e.g. Singapore, Ireland, Dubai, South Africa, USA, Brazil).
- Assumed the data reported by Microsoft covers all of Microsoft's business activities.

Ocean Wilsons Holdings

Calculation: sector efficiency review & internal savings

Annual GHG emissions savings from efficiency gains in sea freighting industry, attributable to Ocean Wilsons due to the company's role in facilitating sea freighting. Ocean Wilsons did not disclose annual water consumption or savings for 2018.

Approach

Ocean Wilsons has two subsidiaries: Wilson Sons Limited and Ocean Wilsons Investments Limited. Ocean Wilsons holds a 58% interest in Wilson Sons - one of the largest providers of maritime services and operator of two ports in Brazil. Ocean Wilsons Investments Limited is a wholly owned Bermuda investment company and has no published information that can be used to claim benefits. As such, benefit calculations are solely based on Wilson Sons business activities; only 58% of the benefits calculated from Wilson Sons activities have been included.

Wilson Sons reports on total container ships that have entered and exited its Brazilian ports in 2018. Carbon Smart attributed ship efficiency gains since 2016 to the volume of containers that entered and exited Wilson Sons' ports in 2018. To calculate efficiency gains, Carbon Smart used CO2e efficiency figures for an average container ship in 2017 vs. 2018, as reported by Business for Social Responsibility (BSR).

Note: Carbon Smart did not pursue a comparison of emissions avoided from sea freight in comparison to road freighting, as Brazil's main export/import markets are in Asia, Europe and USA. Therefore, a road transport comparison is not a suitable. A comparison to air freight was not deemed appropriate as the contents of the shipping containers is unknown. As such, it is impossible to say whether air freighting is a realistic alternative.

Assumptions

- BSR report is the most robust and recent database on shipping fleet efficiencies
- Emissions avoided calculations: Accounted for total volume of container ships that were exported and imported from Wilson Sons ports in 2017. Assumed average distance travelled for a container ship using main export/import markets (i.e. China, Germany, US) for Brazil. Applied 2017 and 2018 CO2 efficiency factor to the volume of container ships and calculated GHG emission savings, as containers have become 5% more efficient since 2018.Water and waste theme

Waste Management Inc

Calculation: product/service

Annual waste diverted from landfill, energy generated through waste products and GHG emissions avoided. Water use avoided calculated by assuming use of coal fired generation instead of renewable sources.

Approach

Waste Management Inc. discloses total tonnage of waste recycled in 2018. The company also reports on total GHG emissions avoided through energy generation, reuse / recycling of materials and carbon sequestration. Carbon Smart used reported GHG emissions avoided figures to estimate total energy generation figures (kWh) and water avoided.

Assumptions

- Assumed the total GHG emissions saved and waste diverted from landfill figures in the company's report are representative of the whole business.

If you have any queries or would like further information please contact:

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