Carbon Footprint

Introduction

Carbon Footprint: The total amount of greenhouse gases that are emitted into the atmosphere each year by a person, family, building, organization, or company. Units are metric tons of carbon dioxide equivalents ($mtCO_2e$).

Carbon Footprint for an Equity Portfolio: The carbon footprint for an equity portfolio is calculated by adding the carbon footprint of each equity position. The footprint for each equity position is calculated using the following formula, which considers percentage ownership of the company.

$$\textit{Carbon Footprint of Equity Position} = \frac{\textit{Market Value of Position}}{\textit{Market Cap. of Company}} * \textit{Total Carbon Footprint of Company}$$

The carbon footprint of a company is classified into 3 Scopes. However, most companies do not report Scope 3.

- Scope 1: All direct greenhouse gas emissions
- Scope 2: Indirect greenhouse gas emissions from consumption of purchased electricity, heat or steam
- Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

Carbon Intensity: The total amount of greenhouse gases emitted by a business to generate $1 million in sales. Units are tons per $ million in sales. Carbon intensity allows comparison between companies of different sizes.

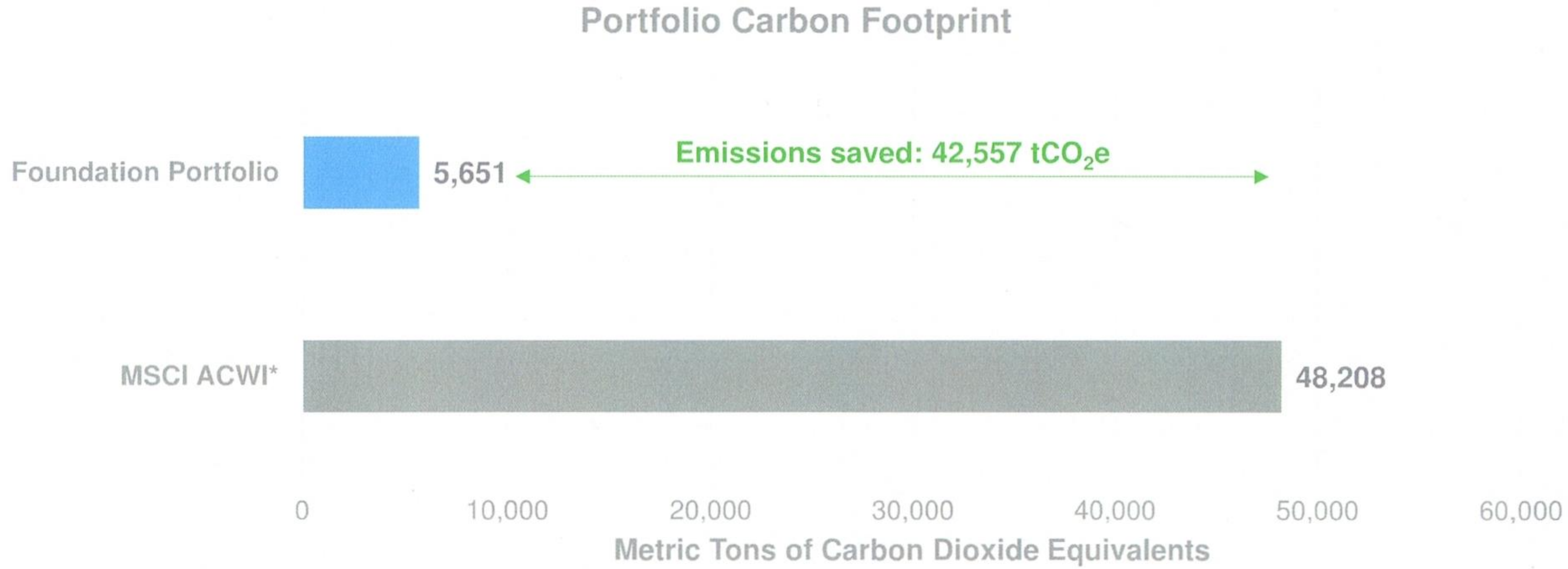
$$\textit{Carbon Intensity of Company} = \frac{\textit{Total Carbon Footprint of Company}}{\$\ \textit{Million in Revenues}}$$

Significance: The carbon footprint of an equity portfolio offers a way to identify climate risk in a portfolio. A high carbon footprint compared to a benchmark indicates a portfolio is more invested in companies that generate emissions causing climate change. A high carbon intensity compared to sector peers can signal a company's inability to manage climate risk, and broadly environmental risk.

Sources: https://www3.epa.gov/climatechange/glossary.html , http://www.ghgprotocol.org/calculation-tools/faq

Carbon Footprint (Contd.)

Carbon Footprint of the Equity Portfolio is 12% of MSCI ACWI's footprint.



$222 million of the total equity portfolio was considered for the carbon footprint analysis due to data availability. Only Scope 1 and Scope 2 emissions were considered, as most companies do not measure or report Scope 3 emissions.

Carbon Footprint: The carbon footprint company data is as of FY 2015, as provided by MSCI ESG Manager. MSCI ESG Manager estimates carbon footprint for companies that do not report footprint. The carbon footprint includes Scope 1 and Scope 2 emissions. Boston Common's carbon footprint information was directly provided by Boston Common Asset Management.
***MSCI ACWI** carbon footprint is provided by Boston Common Asset Management, and includes Scope 1 & Scope 2 emissions.
Sources: MSCI ESG Research https://esgmanager.msci.com/esgmanager, Boston Common Asset Management

Carbon Footprint (Contd.)

The saved 42,557 $mtCO_2e$ is equivalent to…

Greenhouse Gas* emissions from:	CO_2 emissions from:	Carbon sequestered by:
101,994,473 Miles driven by an average passenger vehicle	**4,788,680** gallons of gasoline consumed	**1,102,913** tree seedlings grown for 10 years
13,506 Tons of waste recycled instead of landfilled	**45,412,366** Pounds of coal burned	**40,285** acres of U.S. forests in one year

*Greenhouse Gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases.

Sources: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator, https://www.epa.gov/ghgemissions/overview-greenhouse-gases#carbon-dioxide