



Introduction:

As a leader in the asset management industry, [BlackRock](#) has been engaged in sustainable investing for the last 15 years and in 2020 made sustainability our standard when our CEO & Chairman stated, “climate risk is investment risk.” Many investors consider environmental, social and governance (“ESG”) metrics and impact reporting when identifying investment opportunities and these investors include corporate retirement plans, university endowments, financial institutions, and non-profit foundations among many others.

The ESG factors considered by a client or a portfolio manager vary and can be used to align individual investments or whole portfolios with client requirements, interest, and beliefs. Unique data can be used to help identify opportunities in many ways - including screening or flagging certain investments, publicly traded companies or industries that could introduce a level of ESG related risks or exposures. For example, a client may only invest in publicly traded companies that have a diverse board of directors and have publicly stated a net zero plan or avoid publicly traded companies that they think would be less successful with stricter climate focused regulatory restrictions and changes to customer spending behavior as sustainability becomes more top of mind.

Many BlackRock investment teams focus heavily on **climate risk** and we challenge you to come up with a data driven solution that can be used to help investors tackle day-today questions:

- What **source (i.e. weather, waste, water, etc.)** of climate risk impact what industries? What types of climate change should investors consider? Climate change is a global issue, what regulator updates and restrictions do we need to pay attention to?
- What climate, environmental and regulatory **data** can we access for research? What data can we use to consistently visualize climate risk and impact? Are there factors we can consider like shipping volumes, supply chain or product packaging to consistently compare industries or publicly traded companies? Where can we be creative in connecting data sets?
- What **tools** do we need to better take in and understand raw data? Are there visualizations we can create to standardize research or quickly identify risks? Is there a scoring system that can be created to help clients understand how companies they invest correlate to climate risk? How can we quantify climate risk in standard reporting? Can we create tools that help investors see the industries and publicly traded companies that a positive or negative impact on the environment?
- What **investment solutions (i.e. mutual funds, ETFs, stocks, bonds, etc.)** can we create or invest in that address client’s unique climate & environmental needs? Can we screen out companies to create a fund or investment strategy?

These are difficult questions—and we’ve found that there is no one answer. We have to take a range of approaches to analyzing data in a creative way and to develop tools to better understand, address and help mitigate climate risk when making investment decisions. Our challenge is for your team to come up with a data driven solution that helps address day-to-day climate related questions our investment professionals face as it relates to climate risk and environmental concerns or identify consideration we may be overlooking. Whether you’re thinking about an educational tool for investors, sourcing new data you think should be considered, analyzing multiple datasets, assigning an ESG score to a given company, or something else entirely, we want to see your take on ways investors and clients can better understand climate risk from a Financial Technology (FinTech) perspective.

As you begin to research, you will see ESG themed investing has expanded over the years for large institutions while individual investors have remained less familiar and their objectives less achievable. With platforms like Robinhood and TD Ameritrade providing user friendly interface to buy & sell stocks and other platforms like Bloomberg, World Bank, Morningstar and [iShares](#) providing investment products and research data – investors still wonder where climate risk intersects investing, what companies are climate

friendly, how will climate related factors impact industries and most importantly, what tools and data are available to get started.

BlackRock has a strong history in managing products with ESG objectives for many of the world's largest institutions and we hope your team's solution can be used to integrate climate into day-to-day investment processes. *Think*: how can we educate investors on climate risk, provide easily digestible data, accommodate an individual's unique climate values and potentially even identify investment opportunities that fit a profile.

Requirements:

- Final solution must incorporate climate risk data and investment research
- Final solution can be an app, webpage, dashboard or interactive data visualization
- Final solution should have a name
- Final solution should cater to the needs of investors or clients who have at least entry level knowledge of investing
- Final solution should include functional prototype
- Final presentation should include an overview of how you analyzed the problem, background on your data sources & a demo of your prototype

Criteria to Consider:

- Use of climate risk related data
- Understanding how climate risk impacts an industry or a company
- User-friendly design
- Roadmap on how your solution could be enhanced over time
- Functionality & working features
- And foremost, your creativity

Still unsure of what ESG means, what climate risk is and what [BlackRock](#) does? We encourage you to check out the following resources that include high-level definitions, a timeline outlining the evolution of ESG investing, useful links and data resources. You can also connect with the BlackRock mentors on Discord with any questions.

Definitions

ESG Integration - The practice of incorporating ESG information into investment decisions to help enhance risk-adjusted returns. There is no one-size-fits-all approach but at BlackRock we see it as being about making research, data and insights available to all investors and working with them to identify process enhancements across all investment related activities.

Sustainable Solutions - A wide range of products available to investors looking for dedicated products with defined ESG objectives. As a thought starter, at BlackRock we distill client motivations into a spectrum from "Avoid" to "Advance".

- "Avoid" recommendations involve the elimination of certain companies or industries that are associated with increased ESG risk or which violate an investor's ESG values.
- "Advance" recommendations focus on increasing exposure to positive ESG characteristics that align investments with certain behaviors or target positive ESG outcomes.

Investment Risk: The likelihood that your investment will result in higher losses than your expected return. Think of investment risk as uncertainty in your decisions; you may expect your portfolio to do well, but there's always a risk that it will not. We can identify what contributes to this risk and even quantify it; and if investors are diligent in identifying risk, they can mitigate and measure risks.

Climate Risk: Risk introduced into an investments that originates due to climate, i.e. physical risks (fires burn down a building, floods may destroy viable crop land, storms may destroy power grids) or transition risks (a car company dependent on gas may no longer profit if consumers switch to electric cars as the standard).

Evolution of sustainable investing

Industry Milestones BlackRock Milestones



Examples of ESG Issues

Environmental	Social	Governance
Climate change and carbon emissions	Gender and diversity policies	Board composition
Air and water pollution	Human rights	Executive compensation
Energy efficiency	Labor standards	Audit committee structure
Waste management	Employee engagement	Bribery and corruption policies
Water scarcity	Customer satisfaction	Lobbying activities
Biodiversity and deforestation	Community relations	Political contributions

Source [Morningstar](#)

Hacker FAQ:

- Are we required to connect to an API?
 - API connection and access to BlackRock's Aladdin system is not needed or required for the 2021 challenge. We encourage you to get creative by utilizing open source data and put yourself in the shoes of an investor.
- Where can we find internship and job opportunities at BlackRock?
 - 2021 Summer Analyst Program (*summer internships*) positions are filled. 2022 Summer Analyst Program applications will be open until September 30th. Our Summer Analyst Program and all early career related opportunities can be found at the following link. Also, don't forget BlackRock & KSU partner across a range of activities to ensure KSU students are able to meet BlackRock team members, answer questions and share their experiences.
<https://careers.blackrock.com/early-careers>
- Where can I learn more about BlackRock's social impact work?
 - We partner with nonprofits, start-ups, corporations and our employees to create impact, whether in our local communities or on a global scale. Visit our social impact page to learn more:
<https://www.blackrock.com/corporate/about-us/social-impact>
- Where can I learn how BlackRock engineers are solving complex problems?
 - <https://medium.com/blackrock-engineering>

Useful Links & Data Resources:

ESG-Related Resources

BlackRock Explains Aladdin Climate:

- <https://www.blackrock.com/aladdin/products/aladdin-climate>

BlackRock Explains ESG Integration:

- <https://www.blackrock.com/ch/individual/en/themes/sustainable-investing/esg-integration>

BlackRock Explains Sustainable Investing:

- <https://www.blackrock.com/ch/individual/en/themes/sustainable-investing>

BlackRock ESG Products:

- <https://www.ishares.com/us/products/etf-investments#?type=ishares&esgclass=60522%7C60523%7C60525%7C60524&view=esgMetrics>

ESG is Going Mainstream:

- <https://www.blackrock.com/ch/individual/en/about-us/blackrock-sustainability-survey>

ESG Explained:

- <https://www.investopedia.com/terms/e/environmental-social-and-governance-esg-criteria.asp>

ESG Research Practice Areas:

- <https://www.morningstar.com/products/esg-investing>

Weekly Research Commentary – Don't ignore climate risks in portfolios

- <https://www.blackrock.com/institutions/en-us/literature/market-commentary/weekly-investment-commentary-en-us-20210816-climate-risks-in-portfolios.pdf>

Useful Data Resources

UN Data:

- <http://data.un.org/Explorer.aspx?d=CLINO> Lots of different categories and corresponding datasets (meteorological data, energy stats, greenhouse gas inventory, environment stats)

WHO Air Pollution:

- <https://www.who.int/airpollution/data/cities/en/>
- <http://maps.who.int/airpollution/>

The World Bank:

- ESG Data Portal
 - <https://www.worldbank.org/en/news/press-release/2019/10/29/world-bank-launches-sovereign-esg-data-portal>
- CO2 emissions (kt), csv available
 - <https://data.worldbank.org/indicator/EN.ATM.CO2E.KT>
- Methane emissions (kt of CO2 equivalent), csv available:
 - <https://data.worldbank.org/indicator/EN.ATM.METH.KT.CE>
- Carbon pricing:
 - https://carbonpricingdashboard.worldbank.org/map_data
- Electricity production from oil sources (% of total), csv available:
 - <https://data.worldbank.org/indicator/EG.ELC.PETR.ZS>
- Droughts, floods, extreme temperatures (% of population, average 1990–2009):
 - <https://data.worldbank.org/indicator/EN.CLC.MDAT.ZS>
- World Bank Data Country ESG Factors
 - <https://databank.worldbank.org/source/environment-social-and-governance?preview=on>

Dataset Search (google.com) Useful tool for looking up datasets

- <https://datasetsearch.research.google.com/>

Data.world Free access to search and use 100,000+ open datasets

- <https://data.world/>

Registry of Open Data on AWS Datasets

- <https://registry.opendata.aws/>

US Labor Statistics Company Employee Strikes

- <https://www.bls.gov/web/wkstp/annual-listing.htm>

US Health Data Chronic Disease Indicators

- <https://healthdata.gov/dataset/us-chronic-disease-indicators-cdi>

Kaggle Fake News

- <https://www.kaggle.com/mrisdal/fake-news>

UK Government Data Gender Pay Gap

- <https://gender-pay-gap.service.gov.uk/viewing/download>

World Bank Open Data | Data Global development data

- <https://data.worldbank.org/>

Global Health Observatory (who.int) Health specific datasets and statistics

- <https://www.who.int/data/gho/>

Statista - The Statistics Portal for Market Data, Market Research and Market Studies Repository for info

- <https://www.statista.com/>

Registry of Open Data on AWS Datasets

- <https://registry.opendata.aws/>

Explore — OpenData Bruxelles Brussels, Belgium related datasets

- <https://opendata.bruxelles.be/explore/?sort=modified>

Index of Open Data Sources an online article with a good overview of sources

- <https://www.freecodecamp.org/news/https-medium-freecodecamp-org-best-free-open-data-sources-anyone-can-use-a65b514b0f2d/>

Reddit r/datasets Open source online forum with data sources

- <https://www.reddit.com/r/datasets/>