

# **Everybody Was Da-ta Mining**

### Featuring:

Mark Purdy, Managing Director of Purdy & Associates Rick Redding, CEO, Index Industry Association Raman Aylur Subramanian, Head of Solutions Research, MSCI

## Adam Bass (00:03):

This is MSCI Perspectives, your source for insights for global investors and access to research and expertise from across the investment industry. I'm your host Adam Bass. And today is July 22nd, 2021. Today ESG or environmental, social and governance investment strategies, they seem to be everywhere. While we haven't quite arrived at the point where ESG investing is simply investing, the last year has brought greater focus on climate change and biodiversity, social issues and the role of good corporate governance. Specifically how companies that get their handling of these issues right had done better, have delivered for investors and investors across the spectrum have noticed.

#### Rick Redding (00:52):

ESG index has increased by over 40%, which has blown away any previous year's record to see that kind of growth in any category whatsoever.

# Adam Bass (01:04):

That's Rick Redding, CEO of the Index Industry Association speaking on this program last October. We had Rick on to discuss the IIA's annual pulse of the industry survey. To put that 40% number in context, Rick also told us that usually they see increases of about 2 to 5% in the number of a certain type of index year over year. So, this drew their interest, you might say.

# Rick Redding (01:33):

Clearly there was a lot going on and a lot of investor interest and a lot of asset manager interest in ESG for them to request that many new indexes. With that said, we decided we should go out and talk to the asset managers who are primarily the IIA's clients to make sure we fully understand what's driving ESG. We wanted to quantify how large they thought the market would be and how much of their portfolios would be dedicated to ESG in the coming years, because everyone talks about it, but no one really puts any numbers to that. So in the ecosystem, if you think about it, there's kind of three main players. There are people that create the prices, the people that trade every day in the marketplace that create the prices. They're the index providers and administrators who sit in the middle and they're the ones who



calculate the index and make changes to the index, provide the methodologies for the index and do all that, kind of work in that middle piece.

Rick Redding (02:42):

Some of their indexes do become the basis for products and those products are created by the asset management community. So, the asset managers on the more passive side of the world create index funds. When you look at the 3 million indexes out there, you can obviously say most of that is for benchmarking purposes, not for the creation of products by asset managers.

# Adam Bass (03:08):

A key phrase there was, putting numbers around ESG. Remember that. It's pretty much the theme of the survey findings, and we will get to those. I mean, that's why we're here. But first...

# Mark Purdy (03:21):

I initially became involved in the proposal probably last October, November. At that time I was talking to Opiniun, the leading market research agency, and they had just received this proposal from the Index Industry Association to do some kind of survey looking at the role of ESG investment and the fuse of ESG asset managers.

Adam Bass (03:53):

That voice is our second guest today.

# Mark Purdy (03:56):

I'm Mark Purdy, I'm the managing director of Purdy & Associates, which is a company focusing on economics and technology research. I was chief economist of a major management consultancy for 20 years. I've looked a lot at ESG. I also write a lot about next wave technologies, especially AI and machine learning, and I work with a variety of clients on these topics. So in terms of the survey itself, Opiniun surveyed 300 asset managers across the U.S., UK, Germany and France, and they had sort of different roles, some were chief investment officers, some were financial officers, some were portfolio managers. And they were also organizations ranging in size. So some were very large firms, some medium size, some smaller firms as well. And there were also kind of a mix of kind of passive and active firms as well. So we wanted to make sure that we had a good degree of diversity in terms of the sample base so we could look at this issue of ESG investment from all sorts of different angles.

# Adam Bass (05:21):

That sounds like a wise approach if you're going to account for this sudden shift forward.



# Mark Purdy (05:26):

Yes. Well, it seems like a sudden shift all of a sudden lurch forward in ESG investing and certainly the recent growth in ESG funding has been astonishing. But actually I think if you take a longer term view, the momentum behind ESG has actually been building for quite some time. I mean, probably 20 years or more. I think there are a few different factors that are now bringing us to a kind of a tipping point. I think one is, people are beginning to sort of rethink a little bit the role of the corporation. The kind of the traditional views used to be that businesses are just to make profits. I think increasingly we now recognize that businesses also have responsibility to deal with a whole set of externalities around sort of pollution, around sort of resource depletion, around sort of climate change. And that, I think increasingly a lot of businesses and society. So I think that's kind of one of the things that sort of changed.

## Raman Aylur Subramanian (06:44):

Historically, investors when they thought about ESG investing, they were very mostly focused on what is called as faith-based investing or ethically conscious investing.

Adam Bass (06:53): Guest number three.

# Raman Aylur Subramanian (06:55):

So My name is Raman Aylur Subramanian, I'm part of MSCI research department. I head the global solution services team for MSCI. The idea was probably not go into certain sectors or certain stocks, which they didn't have a view upon, maybe a bad view, in fact. And so most of the investing was done beyond negative screens. Now, as the same processes move on, investors have started to think ESG a broader sense. They're saying that, can a better portfolio for the world can also be better for the investors. And that's where newer dimension of ESG investing has come in and here the financial materiality has become very important for investors. So today when we talk about ESG investing, yes, there is a segment of the investors who are still focused on what we call socially responsible investing or faith-based investing, or ethically conscious investing, but the largest set of investors are looking as this financial materiality around the aspect of going to ESG investing.

# Raman Aylur Subramanian (08:05):

What we have found the data more says that if you look at ESG characteristic or ESG factors for a company, companies which are better on the ESG front tend to do better in terms of managing their cash flows, they are more profitable, they are better off competing against the competition, they are less prone to systematic shrugs, or they also can withstand any kind of event of unrest the firm can face. So overall, a well profiled ESG company does better than a company which is less focused on ESG or in terms of ratings.



# Mark Purdy (08:45):

I think there's also increasing recognition around the importance of what we call the circular economy. The need to have a better approach to how we use resources and increasingly a lot of businesses are thinking about how do you recycle, how do you reuse and share resources? And particularly if you look at the younger generation of consumers, I mean, a lot of them, they don't have cars because it's increasingly a kind of a sharing circular economy. But I would say that the big sort of factor is really the investor pivot, which we've seen just over the last few years.

# Adam Bass (09:26):

Lots of great and important background there, always important to place things in context. Now, let's get to those numbers I promised.

# Rick Redding (09:35):

85% of the asset managers that were surveyed said that they put a high priority on ESG. When we then asked, how big is it now and where do they think that's going? And what the survey revealed is, about a quarter of the portfolios now are in ESG, within five years they thought it would be somewhere between 40 and 45%. And by the end of the decade, they thought it'd be well over 50%.

# Mark Purdy (10:04):

I think it's remarkable in some ways how uniform the support for ESG was across the four different markets. By and large there was a lot of enthusiasm for ESG and a strong fold-up confidence behind ESG. But having said that, there were some regional differences, particularly with the U.S., U.S. is kind of interesting. I would say that in the survey U.S. asset managers, if anything, were more bullish on ESG investment compared with their counterparts in Europe. So you had, for example, 94% saying ESG is a very high priority, which is significantly higher than the other geographies since it... My interpretation of that is that it reflects the degree of catch-up in the U.S. There's a lot of kind of new regulatory kind of initiatives coming on stream. There's a lot of excitement around ESG investment in the U.S. now. So I think there's a sense among U.S. asset managers, "Okay. We actually need to do a bit more just to make up for lost time and to get on to kind of level par with Europe and the rest." So, that's one sort of regional difference.

# Adam Bass (11:37):

The survey also pointed to the fact that when it comes to ESG, asset managers are looking beyond equities. I asked Rick about that specifically, how it's playing out in terms of product demand and product creation.

# Rick Redding (11:53):

I mentioned earlier that 40% increase in the number of ESG indexes, but as a growth rate, the fixed income ESG index has grew even faster. I mean, what we know from the survey results



is the investors or the asset managers are craving more non-equity ESG type products, because there's some data out there by Morningstar and some by ETFGI. But the Morningstar data showed that in 2020, 90% of ESG investment in the U.S. went to equities. And also, I think in the fourth quarter of 2020 that 68% of European ESG investment went into equities. It really helped focus the issue for us on if investors believe and want to invest along the lines of ESG, why wouldn't they want to do it in multiple asset classes? It's not just necessarily an equity issue. So I think that's going to be an important piece of the innovation puzzle going forward.

## Raman Aylur Subramanian (13:05):

Definitely a lot of things happening on the fixed income side, especially on the corporate bonds side, research clearly shows that ESG add value beyond credit ratings. So these measure can, if you're a credit analysts, you're looking for creating a better corporate bond portfolio, then the ESG can really help you to mitigate some of the downside risk. You can also look for... Going towards this cleaner technology, lots of green bond issuance is happening, or social bond issuance is happening, that's where the ESG comes in. So, that's where ESG data can provide that insights for people who are investing in those, a pool of assets.

## Raman Aylur Subramanian (13:50):

Now, when you go beyond equities and fixed income, and most of the actions taking place, we do believe that private equities and private real estate and other private assets is where more information is required. You can easily extend the robustness of the methodology for the listed equities into private equity space, even the real estate investment trust, which are profiled on the ESG, their methodology can be extended into a private real estate is the only place which... One of the challenge which we see is that availability of the data. So I will say that, eventually, if you are a investor, you're not going to focus just on equities and fixed income, you're going to take a holistic view on all the asset classes to get a better optimized portfolio.

#### Adam Bass (14:38):

Real estate. That's a great example, especially if you are talking about climate risk. We've certainly seen a lot of research around that area.

# Raman Aylur Subramanian (14:48):

Definitely, because if you look at climate risk is evolving and climate risk has multiple dimension. Some of the dimension is related to where the assets are located. So what we saw in Houston last year, or even in what is happening in California, some of this impact of climate change is happening on real estate portfolios. And we know geography and location are very key for real estate. And climate change has started to impact those portfolio and impact evaluation. So ESG and climate metrics are very valuable for any of those real estate investor, along with some of the financial metric in our fund.



# Adam Bass (15:33):

Well, this all sounds great. Large growing interest in ESG across the globe and across asset classes, recognition that ESG metrics are valuable financial information, all is well in ESG land, I guess.

# Rick Redding (15:47):

One of the big findings out of the survey was that over 60% of the respondents pointed out to difficulties in agreement on standards. And they also, what was even a higher was, the lack of data coming out of the corporates and enabling the investors to say, truly, this is an ESG investment or not.

# Mark Purdy (16:14):

The need for better data and standardization, I think that really came across loud and clear from the survey. 63% talking about the lack of quants data, the need for better standardization, the need for better compatibility. I mean, that was a very strong finding coming out from the survey. So respondent's tremendously positive and they see a lot of future growth, but they're also highlighting some of these potential kind of barriers that could stymie future progress.

Adam Bass (16:52):

Oh, okay. Well, let's start with standards.

# Raman Aylur Subramanian (16:57):

Standard allows a common language for everyone to communicate, especially in the investment world. So if you are an asset manager, if you want to go on the end of the year to show that you've done better than the market, then you require a measurement of how the market has performed. So that measurement itself is a standard. Now, when we go beyond equity, indexes and benchmark into the ESG space, you really want an objective measure. As I said before, ESG was all about faith-based investing or ethically conscious investing. That investment process has evolved. Today, it is more about financial materiality. So, we want to create a standard and fix solutions or key issues for how ESG is classified. You want to make sure that the metrics that they're using are relevant for today's investor.

# Raman Aylur Subramanian (17:47):

So yes, lot of progress has made, eventually data standardization will also come, what is reported, what is captured. So we are not far away from thinking about getting ESG standard. I think that it's a good sign, but again, availability of data will be the thing which will be crucial for feeding a transplant objective measure for investors to assess their portfolios against.



# Mark Purdy (18:12):

Well, I think the issue of data, it's the kind of \$64,000 sort of question really here on ESG. And I think that there are a few problems at the moment around the current data and kind of rating kind of set up. I mean, the first is that companies currently have a lot of discretion around what they choose to report and how they report it. And one of the reasons is that there's a lot of different ratings bodies out there. So you've got UN Principles for Responsible Investments, you've got the Sustainability Standards Accounting Boards, you've got lots of others. I mean, someone estimated that they're up to a hundred different organizations producing these ratings. And yeah, that creates a number of problems. I mean, one is that a lot of the data and the ratings aren't comparable, are not easily comparable.

# Mark Purdy (19:25):

Some are quant so some are qual. And although there are some efforts to produce consolidation, we're not really there yet. It also creates a problem that I would call it forum shopping, which is, that in a sense a company and you can look around and choose whichever body has the standards that most suit its preferences for reporting and the things it wants to report and ideally one shouldn't really have that kind of situation. So that's kind of where we are. I mean, in terms of where we need to get to, I don't think the ultimate goal is to have just one kind of set of standards or ratings or one sort of agency. I don't think there's really a monopoly on the kind of truth when it comes to ESG.

# Mark Purdy (20:23):

And in fact, I think there are benefits to having several alternatives because that can promote innovation and can ensure that you get good compatibility. And there are different ways of getting there. One might be obviously consolidation, another might be more interoperability, if you like, between the different sort of ratings. But I think it is sort of clear that sooner or later, we do need to get to a kind of a smaller kind of optimum number of ratings, all complemented with better data and probably more quantitative data as well.

# Adam Bass (21:04):

There have been improvements in the ability to collect data and some steps towards standards. The tilt towards stakeholder capitalism, which we've spoken about on previous episodes and that Mark alluded to earlier, that's led to at least the acknowledgement by companies that transparency around ESG issues is important. And more than that, in some cases, net zero commitments, for example, and some progress has come from governments, from regulators. You have laws, like in California, mandating the inclusion of women and underrepresented communities on corporate boards. You have the Sustainable Finance Disclosure Regulation, or SFDR in the EU, which is directed toward asset managers and other market participants. How do we get there though? Who decides how we get down from that more than 100 ratings bodies to a manageable few?



## Raman Aylur Subramanian (22:03):

I think the movement on ESG and more important in climate is not a single individual or a single stakeholder issue, it's a combined issue for all the people to combine solution, which is good for not an economy but for the world. And in that sense, I think every investor or every stakeholder has a role to play. For example, the government definitely has a role to play on, especially if you think about climate, we want to prioritize corporation going towards net zero operations and more, any incentives to kind of old energy and prohibit any kind of free riding that can happen. If you look at investors and asset managers have role to play, they definitely need to decarbonize the portfolio. Companies have their role to play because ultimately companies need to make sure that they are creating a sustainable business model that will move them towards net zero. And finally citizens like you and me have also a role to play because we should be demanding more greener product.

## Raman Aylur Subramanian (23:03):

Now, in some legislations and some areas that latest has taken a little bit of a leap of faith and went ahead because they think that there was not much action happening with other stakeholders. So that's, in some extent it's good, but in some other regions, the investors and other stakeholders have taken a little bit more of value than the government itself.

## Rick Redding (23:25):

This is a difficult issue right now and that is, some of the regulators are looking for answers to help quantify... To make sure that if an asset manager is representing themselves to be an ESG asset manager, that they truly are. But it's also, once you dig down into it, it really points out this problem with the lack of data in certain areas where right now everyone has been focused on climate benchmarks and climate related indexes. I think that was very intentional. Clearly it's something people have identified as a first priority, but it's also a place where there's better data and not every country looks at emissions the same way or reports in the same way. But at the end of the day, it's just math and you can kind of come up with some sort of standard. Unlike the climate benchmarks, there's differences of opinion on what the S really is because as societal issues, there tend to be national differences, there tend to be regional differences, there also tend to be cultural differences.

#### Rick Redding (24:44):

So, there has to be a better kind of meeting of the minds of how to define S and how to get the data. I think it depends how old you think ESG is. I mean, I've heard some people say it's in its infancy. I've heard some people say it's now mature based on how many investors are. I mean, I kind of look at it as we're kind of in the pre-teen years. There's a lot of questioning going on, there's a lot of growing pains. But I think it's those difficult pre-teen years that really set people up for the future, because one of the keys, I believe, in ESG and the reason why it's not as easy to fill in the S and G pieces at this point in time compared to the E is, if you believe that we're kind of in the pre-teen stage, that means there's going to be a lot of changes and a lot of changes coming quickly over the next few years.



# Rick Redding (25:42):

One of the messages that I like to tell people is, if we're in this pre-teen stage, this innovation is probably going to be faster and more important than what you ever have thought about it because once we get a little further along, I think with big data and with some of the AI work that's being done out there, I think you're going to see very sophisticated ESG benchmarks and data. And on top of that, I think what you'll see is people thinking about things like factor ESG, which people are just kind of imagining now, but why not? I mean, why not really get down to the specifics of what you want to invest in and what you believe in?

# Adam Bass (26:31):

And continuing with your analogy there, if I may, if we're looking for true change, if we're looking for looking at things differently, the parents, the regulators, governments, does not seem like that's where ESG investors are going to look to for these answers, but rather within themselves. They're going to look to their peers, right? Their fellow investors, perhaps even index providers have a role to play here, but where does that fit together? Where does this change come from?

# Rick Redding (27:08):

Well, and we surveyed for that. And the asset managers loud and clear said probably the best place for that to happen is within the asset management industry, working with their investors to figure out what they need to do and what some of this innovation may be and what data is missing rather than kind of having that top down approach with the parents telling the preteen, this is the only way that they have to do it. The only answers to all the questions I have. So if the results were very loud and clear that don't stifle innovation, don't stifle investors thinking about this by not having enough flexibility in the regulation.

Adam Bass (27:59):

On this one, Mark had a clear yes, but...

# Mark Purdy (28:03):

And it's sort of interesting from the survey that asset managers, they went displaying what I would call maybe the usual knee-jerk reaction to regulation. I mean, they recognized their regulation has a role, they trusted regulators for the most part to do the job, but they did have some concerns. One is that they kind of felt that there was a bit of sort of a regulatory disconnect in the sense that they felt the regulators often didn't listen enough to the industry about sort of ESG. And secondly, they sometimes felt that regulators were sort of pushing regulation before companies were ready to adapt. So I think regulation has a role, but we have to remember that regulation will always be somewhat backward-looking, by its nature. It's dealing with the problems of yesterday to some extent. And when you have something like-

Adam Bass (29:13):

We're fighting the last war, I've heard that expression.



# Mark Purdy (29:16):

Fighting the last war, yeah. And when you've got something like ESG which is not something that's fixed, it's very fluid, there's always new issues coming on to the ESG horizon, particularly on the kind of the social side. You need market mechanisms as well, that are going to be able to respond much more quickly. And one of the kind of beauty of the kind of the capital markets is that they can respond. They can pull recalcitrant companies into line much faster than any regulator can, because they direct where the investment goes and where the capital goes. So ultimately I think you need the mix, but I think you want to favor market-led mechanisms and indexes which kind of support that because they allow us to have a much faster response time to emerging ESG issues.

## Adam Bass (30:24):

Which brings us to the role that asset managers feel index providers can play. The survey was sponsored by the Index Industry Association after all. And so there were questions for the asset managers like...

## Rick Redding (30:37):

Are there impediments in the marketplace that we can work with them together about? Are there other issues out there that we could be working with regulators about to make much smoother market? Are the index providers providing good service? Are we providing the right services on ESG? Are we pushing and helping in the right ways to make this more accepted globally? And 84% of the asset managers trusted the index providers to push financial service innovation and standards in ESG. So we were quite pleased with that result and hopefully what we take out of this is we'll continue that role, is to provide independence. We're that other set of eyes to make sure that there's a different perspective and someone else's looking at this and to make sure that we continue to provide for that innovation.

#### Mark Purdy (31:41):

I think index providers can really be a force for innovation because index providers have to look ahead. They have to look at these ESG issues and look at the social and the governance and say, what emerging issues do we see on the horizon? And then what kind of index products and informational services do we need to create to reflect that in the market and to help investors make these decisions? So I think that by actually creating new indexes, by creating new information on products, new ways of looking at the market, index providers can really be a force for innovation and really helps to sort of push investment and push investment managers in the right direction. Index providers can really be a force for codifying consistent ESG standards. That doesn't mean that they're setting them, but they're sort of leading the discussion, promoting that discussion between asset managers, between investors, between regulators and government. So I think it's very important for index providers to continue to sort of lead that discussion.



## Raman Aylur Subramanian (33:04):

So, I would say that the main advantage of an index team or index provider has been that processing of tons of data in a very fast and quick fashion, but keeping all the quality checks and quality control in place. So as we go forward, we expect that definitely more data will come in and companies will definitely start to disclose more as we go into beyond years into climate and looking for solutions there, and the role of index teams, with our experience and the amount of time you spent in improving the technology and everything, bringing data science, data science platforms, we will be able to extract signals and information for people to take a meaningful decision on the ESG characteristic of a company. I think the biggest role of index provider is to provide, and not only benchmark standards but also bring transparency to the whole aspect of it is investing.

## Raman Aylur Subramanian (34:04):

Definitely there is lot of confusion in understanding what these ESG concepts are. So all the index providers, including MSCI have come with objective benchmark, which captures this ESG approach of investing so that they can easily differentiate between a traditional market benchmark versus ESG tilt or ESG profile benchmark. So they can understand how much often are performance differences coming. But eventually, editorial independence is required. How the data is captured on the ESG space index provider, the cause of the belt of knowledge on managing and manipulating large chunks of data, removing the noise from that to create more transparent objective measures whether it's benchmark or ratings, can help the investors to take a more prudent decision. Eventually, all of us want that we want to create better portfolios and better investment for the better world. And that's the role which I believe index provider can play a larger aspect in the future.

#### Adam Bass (35:13):

And that brings us back to the investment ecosystem we spoke about before and the interactions between all the players.

#### Rick Redding (35:21):

I kind of have a saying there that is, the better corporate data that's disclosed will help create better benchmarks. Those better benchmarks will help the asset managers create better products for investors.

#### Adam Bass (35:35):

That's all for this week. All thanks to Rick, Mark and Raman, and to all of you for listening. You'll find a complete IIA survey results at indexindustry.org. Next up on Perspectives, we continue down the path of investors need for high quality data as they work to improve how they assess the risks that come from climate change and the transition to a carbon free economy. We'll explore the latest climate science as well as investment strategies. Until then, I'm your host, Adam Bass, and this is MSCI Perspectives. Stay safe everyone.



#### About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process. To learn more, please visit **www.msci.com**.

Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.

The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.

None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.

It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to or seeks to provide an investment return related to the performance of any MSCI index (collectively, "Index Linked Investments"). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI Inc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.

Index returns do not represent the results of actual trading of investible assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.

The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.

Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on www.msci.com.

MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.'s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of www.msci.com.

MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Except with respect to any applicable products or services from MSCI ESG Research, neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI's products or services are not intended to constitute investment advice or a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such. Issuers mentioned or included in any MSCI ESG Research materials may include MSCI Inc., clients of MSCI or services or services from MSCI ESG Research. MSCI ESG Research materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body.

Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and Standard & Poor's. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and Standard & Poor's.

MIFID2/MIFIR notice: MSCI ESG Research LLC does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI ESG Research product or service supports, promotes or is intended to support or promote any such activity. MSCI ESG Research is an independent provider of ESG data, reports and ratings based on published methodologies and available to clients on a subscription basis. We do not provide custom or one-off ratings or recommendations of securities or other financial instruments upon request.

Privacy notice: For information about how MSCI ESG Research LLC collects and uses personal data concerning officers and directors, please refer to our Privacy Notice at https://www.msci.com/privacy-pledge.

This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), or MSCI's licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the "Information Providers") and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or redisseminated in whole or in part without prior written permission from MSCI.

The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.

The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.

Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.