Impact investing: an emerging asset class

Master Thesis

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ivm caring capital

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Abstract

In the early days of investing there only was a financial argument: the allocation of money in the expectation of some benefit in the future. A few decades ago, socially responsible investing (SRI) emerged. This investment strategy not only seeks to attract a financial return, but also to bring about social change. However, recently the term impact investing emerged. This strategy also considers both aspects as in socially responsible investing, but uses a positive screen rather than a negative screen. The former results in a list of companies that *do* good, whereas the latter results in a list of companies that *look* good, or minimize negative side effects. This paper examines impact investing.

First, we discuss socially responsible investing and its current state. SRI differentiates itself from traditional investing by taking into account sustainability factors: environmental, social, and governance, or ESG in short. A social investor only invests in companies that have a sufficient sustainability score. Based on historical data, SRI portfolios are found to be profitable. However, historical performance is no hard evidence for future performance.

Subsequently, we define impact investing and explore its underlying characteristics. Impact investing can be seen as an improvement over socially responsible investing. It is not about minimizing negative side effects, as in SRI, but to actually create positive side effects. The definition of impact investing comprises three main elements: intentionality, nonfinancial measurement, and return. First, investors should have the intention to do good. Secondly, to understand impact, it must be measured and evaluated. At last, since it is not about charity, investors demand a financial return.

Afterwards, we build a measurement framework that allows us to grasp impact. As in SRI, by taking into account ESG factors, companies should be assessed on impact indicators. We propose to score all companies on general indicators to capture intentionality. Depending on its industry sector, a company will be scored on specific indicators to grasp impact in that industry sector. As expected, each industry sector delivers impact in a totally different way. The framework produces a list of companies that could be used to actually build impact portfolios.

Finally, the list of companies suitable for impact investing is used to construct different portfolios. Risk and return of each portfolio is compared with a benchmark for a certain time period. Although it is no hard evidence, these results can be used to make a statement about future profitability.

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Acronyms

BoP	Base of Pyramid
BP	British Petroleum
CDS	Credit Default Swap
CFP	Corporate Financial Performance
CSR	Corporate Social Responsibility
DFI	Development Finance Institutions
ESG	Environmental, Social, and Governance
GHG	Greenhouse Gas
GIIN	Global Impact Investing Network
GIIRS	Global Impact Investing Rating System
IRIS	Impact Reporting and Investment Standards
IRR	Internal Rate of Return
IVM	IVM Caring Capital
KPI	Key Performance Indicator
NASDAQ	National Association of Securities Dealers Automated Quotations
NPV	Net Present Value
NYSE	New York Stock Exchange
PRI	Principles for Responsible Investing
SIB	Social Impact Bond
SRI	Socially Responsible Investing
UN	United Nations
USAID	United States Agency for International Development
VAR	Value at Risk
WWF	World Wildlife Fund

1 Introduction

In this first chapter of this thesis, the background of the company will be discussed. After that, the approach to achieve the objective of the research will be explained. To start the approach, we introduce the main problem and how the current situation will lead us to the research questions. Followed by the scope, questions, and methodology. At the end, the outline of the thesis is given.

1.1 Background of IVM Caring Capital

IVM Caring Capital is an independent asset management organization in Haarlem in the country of the Netherlands. The organization focuses on private customers and small institutional investors. IVM Caring Capital, from now on abbreviated as IVM, is a sustainable asset management organization which strives for a high financial return but also has a policy to take into account aspects of social returns. IVM invests on behalf of their clientele and does not guarantee a positive return. All risks lie with the client. However, to earn an income, IVM takes a fixed percentage every year from each client's portfolio, whether the yearly return was positive or negative is irrelevant. Of course, if the portfolios perform better, the income earned will consequently also be higher. That is why IVM wants to build portfolios that earn yearly positive returns. Not only for its clientele, but also for itself. The team currently consists of five men who held senior positions at leading financial institutions.

In order to build a sustainable investment portfolio, IVM needs to know whether a stock, fund or bond actually is sustainable. However, IVM does not execute this process itself. A big consultancy firm called Sustainalytics, based in Amsterdam, does this research for IVM. Sustainalytics has a big analysis team which has created an ESG model to determine the sustainability of a company or organization. ESG stands for Environmental, Social, and Governance. ESG is a qualification within socially responsible investing, or SRI. IVM buys stocks or bonds of firms that are part of the MSCI World Index, which consists of large capital firms across developed markets such as the Americas, Europe & Middle East, and the Pacific. All of these investment opportunities are checked for sustainability, resulting in a shorter list with possible investment opportunities. This list is divided into different categories, ranging from health to energy and from industrial goods to technology. Each category is scaled from best performance in sustainability to worst. In this manner, one obtains the best 0%-10%, 10%-20% up to 90%-100% per category. IVM only considers the best 0%-50% investment opportunities of each category to make it to their portfolio. So IVM has outsourced the research activity and has faith in the quality of the work of Sustainalytics. IVM would like to research private equity or emerging market opportunities, but is restricted in both time and employees to do this. However, this could be a future research opportunity. For these investment opportunities it buys sustainable funds which consists of many of these underlying companies.

The primary activities of IVM are investing on behalf of and consulting with its clients. Besides being sustainable, IVM also wants to offer its clients an opportunity to invest in a 100% impact portfolio. In other words, in the near future IVM would like to offer portfolios that only consist of impact stocks, bonds or funds. It is currently busy to establish such a portfolio with the objective of really offering it to its clients within a maximum of three years. Impact investing developed quite recently within ESG and needs to be researched. IVM has clients that already said they would like to invest in this new 100% impact portfolio. As mentioned above, to qualify whether a stock that is to be picked is sustainable or not, is analyzed by Sustainalytics. This firm however, has not been looking into the new subject, so there is a challenge for IVM. From the job interview it is concluded that IVM does not

have the time to do this because it is too busy with its primary tasks, which presents an opportunity to do a research project on this subject.

1.2 Problem

The main problem is that there is limited knowledge on impact investing. This term emerged only a few years ago. There are some big financial firms, along with family offices and private investors, which have published articles about this subject. Unfortunately, these articles are very conceptual, in a very theoretical context. For now, there is a lack of detailed information on how to implement this concept. At this moment IVM is not able to tell if a company's stock is suitable for an 100% impact investing portfolio. Within the (impact) investing community there is no consensus about what really qualifies as impact. To make this concept more concrete, there is a need to research this sustainable concept more deeply. Before an impact investment can be made, we need to know what the potential environmental or social impact will be.

1.3 Objective

The objective of this research is to develop an impact investing framework, thereby differentiating itself within existing ESG frameworks. Based on a literature study we are able to define impact investing and create a list of criteria we can use to determine whether an investment opportunity qualifies as impact or not. Then analysis and simulation are tools we will use on financial data. In this way IVM Caring Capital is able to build for the near future an 100% impact portfolio and inform clients who have an interest in impact investing.

1.4 Scope

As mentioned in Sections 1.1 and 1.2, this research will help IVM to build 100% impact portfolios. The scope of this research consists of all listed companies and/or funds in the United States, Europe or Japan, commonly known as the developed markets, as these are the only ones taken into consideration by IVM. A literature study will be performed to gain insight into the world of impact investing. When accurately defined, it will be used to narrow down the big scope we currently have in the same way as for ESG investments. Eventually, we are able to focus on the stock returns to assess the financial performance of such an impact portfolio.

1.5 Research questions

The expected outcome of this research is to give a clear definition of impact investing and its characteristics. The intention is to build an impact investing portfolio based on historical financial data in order to determine its (future) profitability. Ideally the outcome of this research should help IVM implement its characteristics to build an impact measurement framework to turn future possibilities into actual opportunities for its clientele. This leads us to the following main research question:

"Can a measurement framework be implemented in order to construct an impact portfolio?"

In order to give an answer to this main research question, the following sub questions are defined:

- What exactly is socially responsible investing and what is its current state?
- How can we define the niche market of impact investing?

The first and second sub questions are supposed to give a clear overview of what actually comprises the world of social and impact investing. To answer the first two questions, we will start with the world of SRI, ESG and impact, in order to compare the differences. Then we have the theoretical tools to explore the more practical nature of this investigation. In order to qualify an investment as impact, by using a framework, and determine future profitability, the following sub questions are defined:

- How can we create a framework that makes a weighted grouping of investments into different impact themes?
- Based on historical financial data, would our impact portfolios have been profitable?

1.6 Methodology

The methodology has been developed sequentially throughout this research in the following manner:

1. ***Literature review***
   The literature review in this research helps to answer the first and second sub question and partially the fourth. The literature review gives us an idea of impact investing and how we are able, by means of variables of indicators, to narrow down the big world of SRI investing to impact investing. Literature is also used in combination with more practical work to develop a framework to score investments on an impact scale.
2. ***Data collection***
   Finding metrics and benchmarks suitable for the development of an impact investment measurement framework. Data used for measurement can be found on corporate websites and in the database of Sustainalytics. Besides that, we need to find historical prices of funds, stocks, and bonds for our own impact portfolio we want to construct. These can be found in the database of Reuters. The database can be accessed through an annual subscription.
3. ***Data analysis***
   After the data collection, we are able to score the companies on the indicators of our created framework. The best performing companies on the impact scale can then be used for the portfolio, which can be tracked over time and be quantified as profitable or not. This is done in Microsoft Excel and software from Reuters.
4. ***Results analysis***
   The last step of the research is to analyze the results of the impact measurement and the portfolio construction, where the former is used to continue with the latter. The conclusion of these two steps is formulated to answer the main research question.

1.7 Outline

The outline of this research will be in line with the sequence of the developed methodology as described above. In Chapter 2 we will discuss the conducted literature review where the theoretical foundation of socially responsible investing is laid. The available literature on impact investing is discussed in Chapter 3 and will give a concise overview. In Chapter 4 we will talk about nonfinancial measurement and its underlying characteristics. Chapter 5 lays the foundation for the development of the impact framework. In these two chapters the preferences, restrictions, and wishes of IVM are processed in the construction of the measurement framework. Chapter 6 will discuss the framework in much more detail itself. When we are able to measure impact we are also able to construct impact portfolios. Chapter 7 will show multiple diversified impact portfolios and their performance against a

benchmark over a certain period of time. In Chapter 8 the main research question is answered, along with given recommendations for further research.

2 Socially responsible investing

In this chapter a short overview of socially responsible investing (SRI) is given. We will begin with a short timeline of events to get an idea of the rapid developments within the world of socially responsible investing. Followed by a definition of socially responsible investing, we have the tools to start tackling the world of impact investing.

2.1 History of SRI

Ceres, founded in 1989 by a group of investors as an advocate for sustainability after the Exxon Valdez oil spill in that same year, announced the Ceres Principles (Ceres, 1989). This was a "ten-point code of corporate environmental conduct to be publicly endorsed by companies as an environmental mission statement or ethic". Two principles were to protect the biosphere, and to conserve energy.

PGGM, a Dutch Pension Fund, also considers social responsibility, taking into account a number of general criteria. First, PGGM avoids investments in countries where fundamental human rights are being violated. Second, companies whose main activities involve the production of weapons are also out of the scope of investments (EUROSIF, 2003).

In 2006, the United Nations (UN) launched its six Principles for Responsible Investment (PRI) at the New York Stock Exchange (NYSE). The principles should be used to incorporate ESG into investment strategies (United Nations, 2006). As of today, the principles have nearly 1,500 signatories from more than 50 countries, representing $60 trillion in assets.

In 2008, the Carbon Principles Banks – Bank of America, Citigroup, Credit Suisse, JPMorgan Chase, Morgan Stanley, and Wells Fargo – adopted principles surprisingly called the Carbon Principles (Morgan Stanley, 2008). These principles should help financial institutions and their power generation clients to "evaluate and address carbon risks in the financing of electric power projects".

Also in 2008, the Climate Group adopted the Climate Principles (the Climate Group, 2008). One of these principles meant to commit to minimize operational carbon footprint.

2.2 Definition of SRI

Milton Friedman once said that "the business of business is business". He argued that companies have minimal ethical obligations beyond maximizing profits and obeying the law (Friedman, 1962). Nowadays, this position has few followers anymore, as more people believe organizations also have a social responsibility. Corporate social responsibility (CSR) is defined as a company's understanding of responsibility towards the community and environment in which it operates. Besides being in business to make a living, CSR stands for waste and pollution reduction, by contributing educational and social programs, and by earning sufficient returns on the employed resources (Hill, Ainscough, Shank, & Manullang, 2007). In simple language, CSR could be defined as being good to shareholders as wells as other stakeholders. A CSR policy can be a differentiating factor to distinguish the company from competitors in your industry (Hill, Ainscough, Shank, & Manullang, 2007).

The concept can also be applied to investing, leading to socially responsible investing. Social investing goes back a long way. Early examples include provisions in the 18th and 19th century that prevented banks from offering financing to slave holders (UBS AG, 2011). SRI is different from traditional investments in a way that we encounter the ESG term: Environmental, Social, and Governance. These

three factors are used to determine the sustainability of investments. Investors use ESG to measure a company's operations in terms of sustainability and ethical impact. For example, in firms associated with tobacco, gambling, weapons, and alcohol should not be invested (UBS AG, 2011). Critics counter the weapons argument by stating that they still like to armed instead of unarmed police officers. What an investor should include in his portfolio, are companies that positively deal with minorities, women, and communities. In this research, the ESG term is used interchangeably for sustainability.

The ESG concept was proposed by the UN to focus on investors. The 17 Sustainable Development Goals from 2015 – part of a wider 2030 Agenda for Sustainable Development – build on the Millennium Development Goals. These eight goals, set by the UN back in 2000 to eradicate poverty, hunger, illiteracy, and disease, are soon to be expired (United Nations, 2015). The 17 Sustainable Development Goals can be found in Appendix B and will be used later in this research.

Nowadays, investors and analysts consider ESG performance in their fundamental analysis of companies. The World Wildlife Fund (WWF) believe that companies which proactively manage ESG issues better than their competitors generate long-term positive results (WWF, 2014). Issues cover:

- ***Environmental:*** Greenhouse gas (GHG) emissions, biodiversity loss, pollution and contamination, carbon regulation exposure, renewable energy.
- ***Social:*** Labor practices, community displacement, human rights, health and safety, financial inclusion.
- ***Governance:*** Corruption and bribery, fraud, reputation, management effectiveness.

According to the WWF, the banking sector needs to significantly change its attitudes and actions to promote more responsible and sustainable business practices, to ensure global long-term financial stability and economic development. Environmental and social issues need to be factored into investment decisions and corporate decision making processes, alongside traditional financial metrics. But first take a closer look at the three factors individually.

First, environmental aspects take into account a company's management of the natural environment. How does the company, for example, use its energy efficiently? Besides, if a company produces items, how does it deal with production waste, air or water pollution, or conservation of natural resources? When these affairs are mapped, the next thing to do is to evaluate these environmental risks and how the company manages these risks (Investopedia, 2013). As an example we can use the case of British Petroleum (BP) plc which suffered from the accidental oil disaster in April 2010 where millions of barrels of oil were spilled in the Gulf of Mexico and where unfortunately people died (Wikipedia, 2011).

Secondly, social aspects are about the company's relationships with its employees, suppliers, customers, and other stakeholders. Does the company work with companies with the same beliefs? Do you have high standards with relation to working conditions? There are companies which stimulate employees to share their ideas, offer higher salary or work more flexible. These factors are known to improve employee motivation with positive consequences (Herzberg, Mausner, & Snyderman, 1959).

At last, governance aspects deal with leadership, executive pay, audits and internal controls, and shareholder rights. As an investor, you don't want to invest in a company which uses fraudulent accounting methods or engages in illegal behavior (Investopedia, 2013).

Securities that are ESG approved will be available for investors to buy through mutual funds and exchange-traded funds. However, creating a list of ESG criteria is a personal matter. The list will be subjective and can be interpreted differently by other parties. So an investor has to perform his own analysis to find investment opportunities that suit his own standards. SRI is currently a mature market with over €7.5 trillion assets globally under management (EUROSIF, 2016).

2.3 Profitability of SRI

Socially responsible investing is by nature a good initiative, but to actually have a future in the financial world, it should also have profit possibilities. In the next two subsections, three different studies indicate there is also room for profits besides corporate social responsibility.

2.3.1 Research based on CSR policies

The researchers developed a study to investigate whether SRI investments outperformed traditional investments (Hill, Ainscough, Shank, & Manullang, 2007). They chose companies from the U.S., Europe, and Asia that traded in their home countries and were also listed on a major U.S. exchange such as the NYSE or NASDAQ. These companies were known to have a CSR policy making them suitable as the subject of the research. They created portfolios, using data from 1995 - 2005 for each of the three big continents. Returns were calculated using the following formula:

$$R_t = [V_{t+1} - V_t + D_t]/V_t$$

Where R_t is the return at time t, V_{t+1} is the value at the end of the holding period, and D_t represents dividends payouts during the period t. Additionally, portfolio returns were adjusted for risk using the Jensen's Portfolio Technique. Risk-adjusted *excess* returns were calculated as follows:

$$E(R_i - R_f) = \alpha_i + \beta_i[E(R_m - R_f)] + \varepsilon_i$$

Where R_m is the period return of a market proxy and R_f is the period risk-free rate. Different market proxies were utilized to simulate return averages for each portfolio. The S&P 500 was employed as a benchmark for firms in North America, the Nikkei 225 was used for the Asian Market, and the FTSE 300 for the European Market. Comparative risk-free rates for each portfolio, using the same order as above, the 3-month U.S. Treasury Yield, the Bank of Japan's 3-month Short Term rate, and the Bank of England's 3-month Treasury Sterling yields.

The researchers wanted to know the significance of the excess return, alpha, compared to the stock market. If the value of alpha is positive and significant, the portfolio's financial performance is superior the overall stock market for that region on a risk-adjusted basis. If the value of alpha is negative and significant, the portfolio underperformed the overall stock market for that region on a risk-adjusted basis. If the value of alpha is not significant, the portfolio's financial performance is similarly to the overall stock market for that region on a risk-adjusted basis.

For the most recent 3-year period (2002-2005), the 3-year excess returns of the European portfolio are positive and significant at the 95% confidence level. The Asian portfolio was positive but not significant. The U.S. portfolio was negative but not significant.

For the most recent 5-year period (2000-2005), the 5-year excess returns were all positive for the three portfolios, but not all significant at the 95% confidence level. It is possible investors were less likely to reward socially conscious firms during the global disruption of 2000-2002.

But for the long-term 10-year period (1995-2005), the 10-year excess returns were all positive and significant for all three portfolios at the 95% confidence level. Good news for SRI investing and one of the reasons the financial world wanted to improve the world by investing and not by charity. Some people still argue that it is still not ethical as long as the financial argument is present, while others believe charity is not efficient and both aspects should be pursued.

2.3.2 Research based on SRI ratings

Kempf & Osthoff investigate the impact of various socially responsible criteria on stock portfolios. They use negative, positive, and best-in-class screens. Using a negative screen, all companies which are involved in controversial business areas, such as tobacco, alcohol, or firearms, are excluded as investment opportunities. When a positive screen is used, these business areas are not excluded in advance, but all companies are rated on a set of criteria, which gives every company equal opportunities. Companies with the highest scores are then chosen. The best-in-class screening has the same principles as the positive screening, but in addition you make sure that the resulting portfolio is balanced across business areas (Kempf & Osthoff, 2007).

In this research the authors use SRI ratings of KLD Research & Analytics. They wanted to know if a trading strategy in stocks, based on these ratings, leads to an abnormal performance. They built two portfolios in their investigation. One consisted of stocks with high SRI ratings and the other consisted of stocks with low SRI ratings.

In order to measure performance, the Carhart four-factor model is used. It controls for the impact of market risk, the size factor, the book-to-market factor, and the momentum factor on returns.

$$R_{it} - R_{ft} = \alpha_i + \beta_{1i}(R_{mt} - R_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}MOM_t + \varepsilon_{it}$$

The dependent variable is the monthly return of portfolio i in month t in excess of the risk-free rate. The independent variables are the returns of four zero-investment factor portfolios. Zero-investment portfolios are groups of investments which, when combined, create a zero net value. It can be achieved by simultaneously purchasing securities and selling equivalent securities. This will achieve lower risks/gains compared to only purchasing or selling the same securities. The first factor $R_{mt} - R_{ft}$ denotes the excess return of the market portfolio over the risk-free rate. The market portfolio is the CRSP value-weighted index. The second factor SMB_t denotes the return difference between a small and a large capitalization portfolio in month t. The third factor HML_t denotes the return difference between a high and a low book-to-market portfolio in month t. Low book-to-market stocks are growth stocks, high book-to-market stocks are value stocks. The fourth factor MOM_t denotes the return difference between portfolios of stock with high and low returns of the past twelve months. Alpha denotes the abnormal return of portfolio i.

The high-rated portfolio performed better than the low-rated portfolio. The strategy the authors used was by taking a long position in high-rated stocks and a short position in low-rated stocks. A strategy commonly referred to as long-short. This strategy yields a four-factor alpha of up to 8.7%

per year. The maximum alpha was obtained using a best-in-class screen. The alpha remains significant even after controlling for transaction costs.

2.3.3 Meta research

In a recent 2015 meta study, a relationship between ESG criteria and corporate financial performance (CFP) was researched. Academics, investors, research teams, and other financial institutions have published more than 2000 empirical studies using real life financial data. There have been many review studies on this relation. Unfortunately, the last major review study from a couple of years ago analyzed just a fraction of existing primary studies, making findings difficult to generalize. The two research studies discussed in Sections 2.3.1 and 2.3.2, which concluded positive results on SRI portfolios, could in this case just be two studies in favor of SRI investing.

This meta study extracts all provided primary and secondary data from previous academic review studies (Friede, Busch, & Bassen, 2015). Because of the great number of individual studies, this profound overview of the academic literature on this topic has the potential to make generalizable statements. Roughly 90% of studies find a nonnegative ESG–CFP relation (Friede, Busch, & Bassen, 2015). More importantly, the large majority of studies reports positive findings. The positive ESG impact on CFP appears stable over time. Promising results were obtained when differentiating for portfolio and non-portfolio studies, regions, and young asset classes for ESG investing such as emerging markets, corporate bonds, and green real estate.

2.4 Conclusion

The first sub question in this research is: what exactly is socially responsible investing and what is it current state? Socially responsible investing can be seen as an answer from the financial world to the call from the rest of the world not to care only about profits anymore. Our world is changing, so if the amount of resources investors put in companies every year could be put in ESG responsible companies, the world would be better off. At least, when we take into account environmental and social issues at the cost of less financial return. We have seen that the business case for SRI and ESG investing is empirically very well founded: based on historical data portfolios are found to be profitable. However, in the investing community, historical performance is no hard evidence for future performance.

3 Impact investing

In this chapter we build on the foundations of chapter 2 and dive in the world of impact investing. First, we need to give a clear definition of impact investing. Secondly, we develop a process that helps to assess impact. At last, the initial steps to build an impact portfolio are discussed. For this chapter, there is mainly drawn from extensive literature published by the global leading financial services firms J. P. Morgan Chase & Co. and UBS AG, two of the first big initiators of impact investing.

3.1 What is impact investing?

We currently live in a world where government resources and donations from charity are no longer sufficient to address the world's social problems. Might impact investing be the next new alternative to use large-scale private capital for social benefit? Until recently, investors faced some kind of binary choice: invest for maximum risk-adjusted returns or donating for social purpose. Impact investing however might just be the new asset class that captures both sides. But what exactly is impact investing? Around 2007, the term "impact investment" emerged. It was labeled as an approach, such as SRI, that deliberately builds intangible assets alongside tangible, financial ones (J. P. Morgan Chase & Co., 2010). The Rockefeller Foundation – a philanthropic organization – defined it as "capital that is placed outside of public equities markets and generates social and environment value in addition to financial return" (UBS AG, 2011), see Figure 1.

There have also been many debates about the motives of impact investing, also mentioned during the rising of socially responsible investing. Profiting from the poor has been a standard criticism of social investment. Capital markets however are more cost-efficient. McKinsey & Company conducted a study indicating the cost of capital in philanthropy is 22-44% as opposed to only 2-4% on capital markets (McKinsey & Company, 2004). Traditional philanthropy works by giving away capital, usually with short-term results. By incorporating financial considerations and increasingly raising money from financial markets, impact investing strives for value-driven allocation of capital, which should produce more sustainable long-term impact (UBS AG, 2011). There is a need to better communicate about impact investing to increase its credibility, since everybody builds on the same essential assumptions (Höchstädter & Scheck, 2015).

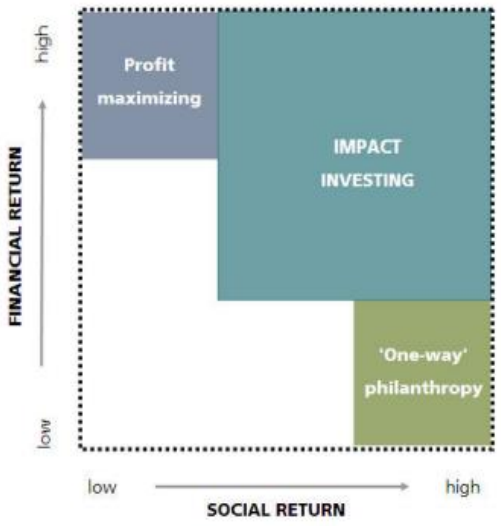


Figure 1: Scope of impact investing (UBS AG).

3.1.1 A global definition

What actually defines and differentiates this new phenomenon? The big American bank J. P. Morgan Chase & Co. did some early research in 2010 to help clarify some uncertainties about impact investing. They defined impact investments as 'investments which create positive impact beyond financial return. They require management of social and environmental performance in addition to financial risk and return' (J. P. Morgan Chase & Co., 2010). It is best to already make a distinction here between SRI and impact investing. The former generally seeks to minimize negative impacts (negative screening) whereas the latter proactively wants to create positive social or environmental benefits (positive screening). While certain types of impact investments can be categorized within

traditional investment classes (such as debt, equity, venture capital), some features might dramatically differentiate impact investments. It is argued that an asset class is no longer defined simply by the nature of its underlying assets, but rather by how investment institutions organize themselves around it (J. P. Morgan Chase & Co., 2010). If an investor is motivated to create social or environmental impact, we speak about impact investing. Gaining a financial return along with unintentionally created social value is not. For example, if an investor wants to invest in new clean energy opportunities because he believes there is a high market profit opportunity, he will not be marked as an impact investor (Balandina Jaquier, 2016). If he invests in the same opportunity because he believes the world is in need of clean energy instead of polluting sources like coal, he is marked as an impact investor. Also, outcomes should be measured in order to evaluate the world of impact investing (World Economic Forum, 2013). Concluding, a definition of impact investing should comprise the following elements:

- Investors should have the intention by doing good instead of looking good.
- Data should be monitored and measured in order to assess impact.
- Aiming for financial return is still an aspect since it is about investing rather than charity.

Figure 2 gives a global overview of the impact investing landscape with flows of capital and relationships.

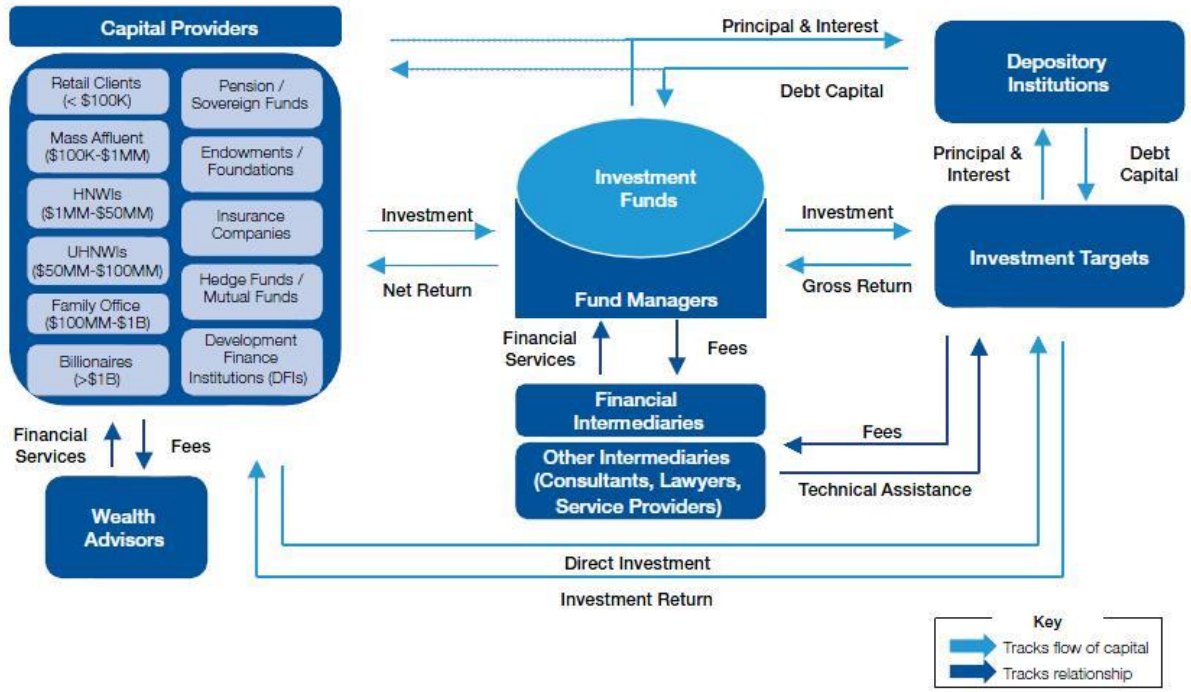


Figure 2: Impact investing landscape (World Economic Forum).

In the survey of J. P. Morgan, leading impact investors were asked how they thought expected returns would be. These expectations varied dramatically: some investors expected to outperform the market, others expected to trade-off financial returns for the desired social impact. In other words, improving our world comes at a cost. At an increasing rate, novices in the world of impact investing believe they do not have to sacrifice financial return in exchange for social impact (J. P. Morgan Chase & Co., 2010). At the time of 2010, it is not possible to measure the impact market. In

an article, J. P. Morgan presents a framework to measure the potential scale. The framework was applied to selected businesses within five classes - housing, rural water delivery, maternal health, primary education, and financial services – for the portion of the global population earning less than $3,000 a year, known as 'the base of the pyramid (BoP)'. Still there is, according to J. P. Morgan, for the next 10 years 'a potential for invested capital of $400 billion - $1 trillion and profit of $183 billion - $667 billion'. Risk management would be done the same way as for venture capital or high yield investments due to more uncertainty (J. P. Morgan Chase & Co., 2010).

Investments have the form of traditional financial structures, such as debt or equity, or more structured products. An example of such a product is the Social Impact Bond issued in the UK, where returns are linked to social metrics. Drug users might need not only treatment programmes, but also support to prevent them from falling back in their old habits (Social Finance, 2015). Return expectations vary dramatically in different markets, as can be seen in Figure 3. Impact investing returns vary widely, as can be seen from the box plots. Besides, in developed markets the benchmark is hard to beat, whereas in emerging markets there is a lot of potential.

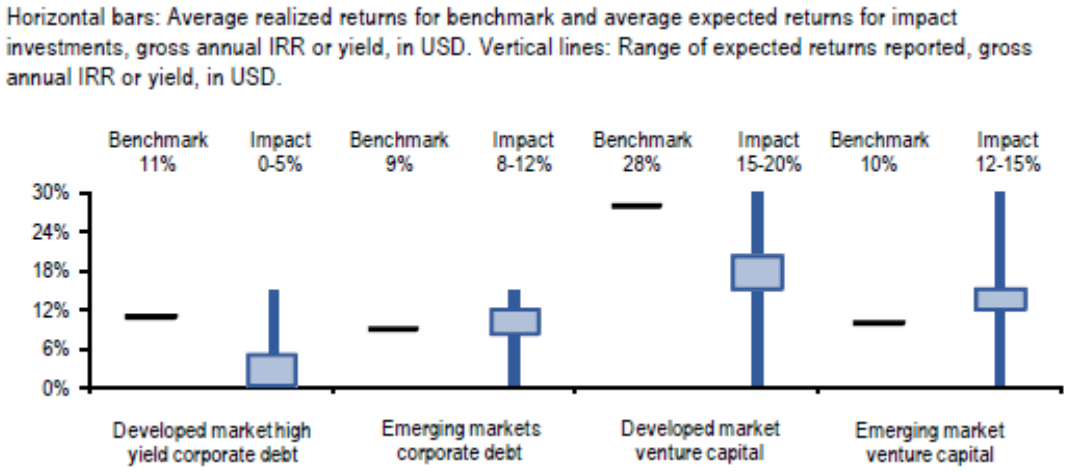


Figure 3: Return expectations in different markets (J. P. Morgan Chase & Co.).

A variety of investor types is starting to participate in the impact investing market: development finance institutions (DFIs), private foundations, large-scale financial institutions, private wealth managers, and still others are joining them. In September 2009, J.P. Morgan, Rockefeller Foundation, and the United States Agency for International Development (USAID) launched the Global Impact Investing Network (GIIN) to establish an effective impact investing industry. They tasked GIIN to develop the critical infrastructure, activities, education, and research that would increase the scale and effectiveness of impact investing (J. P. Morgan Chase & Co., 2010).

A tool called Impact Reporting and Investment Standards (IRIS), was created as a framework for measuring social performance of impact investments. IRIS addresses a major barrier to the growth of the impact investing industry – namely the lack of comparability and credibility regarding how funds define, track, and report on the social performance of their investments. IRIS provides a standardized approach with the aim to lower transaction costs and improve investors' ability to understand the impact of the investment they make (J. P. Morgan Chase & Co., 2010).

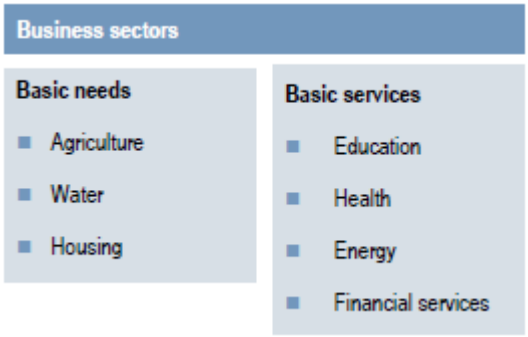


Table 1: Business sectors in impact investing.

Impact investing can be classified according to a two-dimensional sector framework. The first dimension characterizes each business sector of the underlying investment, which are mentioned in the Table 1. The other dimension addresses one or more impact objectives, which are mentioned in Table 2. Business sector and impact objectives are sometimes highly correlated, whereas in other cases their relationships are more complicated. The relationships are not mutually exclusive, which means they can both happen at the same time.

Increase incomes and assets for the poor (from IRIS's social impact objectives)	Improve basic welfare for people in need (from IRIS's social impact objectives)	Mitigate climate change (from IRIS's environmental impact objectives)
Employment generation	Conflict resolution	Biodiversity conservation
Access to energy	Disease-specific prevention and mitigation	Energy and fuel efficiency
Access to financial services	Access to clean water	Natural resources conservation
Access to education	Affordable housing	Pollution prevention and waste management
Income/productivity growth	Food security	Sustainable energy
Agricultural productivity	Generate funds for charitable giving	Sustainable land use
Capacity-building	Health improvement	Water resources management
Community development	Equality and empowerment	

Table 2: Impact objectives (J. P. Morgan Chase & Co.).

For example, providing solar energy in poor countries would provide energy access to people who do not have to access to an electrical system at home. This provision would incorporate climate change mitigation with improving basic welfare for people in need. Impact can be delivered through product or processes from the BoP (J. P. Morgan Chase & Co., 2010).

For now, impact investors focus on either the emerging or the developed markets. Regional differences require local expertise. However, some prefer to help world's poorest and others want to help their local neighbors. The developing world comprises Asia, Africa, and Latin America; the developed markets comprise North America and Europe.

Impact investment is an emerging asset class. But what makes an asset class? The CFA institute uses a definition with some characteristics (CFA Institute, 2011). An asset class will typically:

- Include a relatively homogeneous set of assets.
- Be mutually exclusive.
- Be diversifying.
- As a group, make up a preponderance of worldwide investable wealth.
- Have the capacity to absorb a significant fraction of an investor's portfolio without seriously affecting the portfolio's liquidity.

Besides the definition, there is also a need for education and analysis. For a new phenomenon to become an asset class, it needs investment and risk management skills. There is a need for an

organization structure and education. Lastly, there is a need for standardized metrics, benchmarks and/or ratings, such as the Global Impact Investing Rating System (GIIRS).

Based on the above criteria, J. P. Morgan concluded that impact investments are an emerging asset class (J. P. Morgan Chase & Co., 2010). Organizational structures will form that recognize impact investments as an alternative to traditional investments. For now, impact investing is an investment approach, not an asset class. It is a lens through which investment decisions are made. Some impact instruments may not behave the same way as traditional instruments do. For example, a social impact bond may not behave similarly to a government bond (World Economic Forum, 2013).

At the moment of publishing the article, we talk about small investment sizes, while the costs remain high. The small deal sizes for impact investments present challenges to investors. Their due diligence costs remain more or less fixed compared to their traditional investments. For those investors who are capable of making larger investments, the cost of spending time and resources on a small impact investment deal is higher than for traditional investments, which makes management fees increase a bit more (J. P. Morgan Chase & Co., 2010). So a challenge presents itself here.

For measuring purposes, an overwhelming 85% use their own impact measurement system, and 13% use the investee's system. A shallow remaining 2% employ a third-party system. Anticipated is that this profile will change if systems, such as IRIS, achieve broad adoption.

The potential BoP market opportunity for impact investments is huge and has an enormous potential to grow even further. For now, in 2010, the year of this report, there is only a distinction made between five sectors (J. P. Morgan Chase & Co., 2010). The potential invested capital required per sector to fund BoP businesses for the next ten years, measured in billions of USD, can be found in the second column of Table 3. The third column shows the potential profit opportunity per sector, also measured in billions of USDs.

Sector	Potential invested capital required, USD bn	Potential profit opportunity, USD bn
Housing: Affordable urban housing	$214–$786	$177–$648
Water: Clean water for rural communities	$5.4–$13	$2.9–$7
Health: Maternal health	$0.4–$2	$0.1–$1
Education: Primary education	$4.8–$10	$2.6–$11
Financial Services: Microfinance	$176	Not measured

Table 3: Potential invested capital needed to fund BoP businesses (J. P. Morgan Chase & Co.).

3.1.2 Financial risks

Risks for not listed impact investments can be compared to those for venture capital or high yield debt investments, characterized by the early stage nature of the businesses in which the investment is made. Businesses in this case still operate on a small scale. These investments involve many risks, such as company risk, country risk, and currency risk. Particular to impact investments are legal and reputational risks. In emerging markets there are many barriers to legal ownership caused by bureaucracy, resulting in so called "dead capital" (De Soto Polar, 2000). Some might identify you as profiting from the poor, hence there is a need to deal with reputation.

Company risk deals with the organization one invests in. Impact investments are usually made into private, small companies. To make sure a company is thorough in its operations you have to perform

a due diligence investigation. Normally for larger companies the company risk is hedged with credit default swaps (CDS). However, for impact investments, there is probably no chance you are able to do this with CDSs, because of illiquidity, and shorting bonds or equity is also unlikely to be possible. So the best protection against company risk is a thorough due diligence investigation.

Country risk a collection of risks associated with a specific foreign country: political risk, currency risk, economic risk, sovereign risk, and transfer risk. Some countries have such a high risk that it scares away foreign investors. The same comments made about hedging apply here.

Currency risk is a form of risk that occurs when the price of a certain currency changes with respect to another. Value of assets can drop enormously if not hedged. Hedging is commonly done using forward contracts, depending on the liquidity of the currency.

3.1.3 Social impact risks

As said earlier, it is hard to measure social impact. One can do research and measure a certain *outcome* using a control group. These evaluations require much effort and are expensive though. Many impact investors therefore settle for using *output* without a control group. If one wants to grasp the social impact in this way, it is actually more uncertain. Besides, measuring impact is complicated, expensive, and subjective:

- Data collection can be resource intensive, expensive, and difficult to execute.
- Tension between feasibility, credibility, and cost.
- Impact investments exist within a complex system of impacts.
- Diversified investors need to balance custom metrics and universal frameworks.
- Different people have different opinions about what matters.
- Even if we agree on what matters, different metrics will give different conclusions.

In this way, the investment community is able to develop standards and eventually benchmarks.

3.2 Impact assessment

In Section 3.1 we have narrowed the world of socially responsible investments down to impact investments. At least, in words we have a global definition. There is a need for a process that can assess impact in sequential steps. There are three levels of perspective at which impact assessment can be made and used by an investor: a whole organization, across a portfolio and individual investments. Some consider all three levels, while others focus on one or two specifically (J. P. Morgan Chase & Co., 2015).

In social science, 'impact' has a specific definition: it describes outcomes, actual changes, that can be attributed to a particular intervention (J. P. Morgan Chase & Co., 2015). An academic should research a subject and probably use a control group to understand what the 'impact' really is. The intervention, an impact portfolio, would be compared to the control group, a traditional portfolio. This research is powerful, but onerous and expensive. Therefore, many investors use outputs, such as reported numbers, as indicators for impact.

Figure 4: Assessment process.

The process of developing a framework consists of the steps mentioned in the structural diagram of Figure 4. We start with setting organization goals. Many impact investors state a specific “impact thesis”, a theory of change, they wish to support through their capital (Balandina Jaquier, 2016). The statements form a goal of the portfolio. The outcomes of the portfolio can then be assessed and managed (J. P. Morgan Chase & Co., 2015). The impact thesis serves as the mission of the portfolio. It can be used as a first screen for opportunities or to decide between two models of impact within a certain sector the investor is currently looking into. The process can be iterative and dynamic in such that markets mature and new opportunities arise, which ask for new impact theses.

The next step in the process is to launch a due diligence investigation to screen and assess investment opportunities against their criteria. It is critical to balance the social intend with financial return and align this view with the management of the investee (J. P. Morgan Chase & Co., 2015). One can understand that this is even more important when the impact and financial goals are about to become conflicting.

Then, for example, scorecards are used to evaluate opportunities based of the above factors. From practice and interviews with leading impact managers, we know that scorecards are impact-specific or include a mix of impact and financial criteria. Some investors use due diligence to identify risks that come along with impact investments. There is a risk that the impact one hoped for is not achieved, or that negative impact occurs, in which case the investor has failed to achieve his basic aims.

But how do investors actually set goals, select metrics, set targets, and document terms? It is important to ensure that the impact goals relate back to the business success. Many investors said the assessment should focus on outputs or outcomes in the control of the investee (J. P. Morgan Chase & Co., 2015). They like their investees to monitor direct results of their work – like the number of new houses built.

One of the most important steps is to select existing metrics, or to create new ones. Most investors said they use standard metrics across all impact investments they make. For all sectors however, such as energy or healthcare, they also use higher-level or specific metrics. The number of new healthy babies born is of course not a suitable metric for investments in energy projects. Many metrics used nowadays can be found in the IRIS catalog developed by the GIIN network (Global Impact Investing Network, 2015).

When the list of metrics is created, the next step is to set targets for the portfolio or individual investments. Targets are used as benchmarks for performance. In other words, have the outputs been achieved as planned or not. Some investors do not put everything in legal documentation so the investee has some more flexibility, while others do. Some investors confirm target outcomes in an informal side letter with the investee, other draft formal covenants (J. P. Morgan Chase & Co., 2015).

In the post-investment phase, impact data flows back into the organization and investors want this to align the financial data. This has more to do with investor’s own preferences than a universal method of collecting and monitoring data. The same applies to reporting frequency, whether it be monthly, quarterly, semi-annually, or annually, that is all up to the investors themselves. This is also true for organization-level assessment, the last step in the diagram.

3.3 Constructing the impact portfolio

Normally, in traditional financial analysis, investors use tools that allow them to evaluate risks and returns of their individual investments and portfolios. But we need a tool that allows us to add and analyze a third dimension: social impact. To successfully build an impact portfolio, investors will need to assign an individual or a team to source, commit to and manage these investments. Examples are separate teams, “hub-spoke” partnerships, and whole institutions (J. P. Morgan Chase & Co., 2012).

To start, any impact investor needs to define a set of impact goals for the portfolio. This is easier said than done, given the current market. Impact goals are most coherent when measures are well defined. Articulate the mission of the portfolio in the mission statement of the business (Investing For Good, 2012). Next step is to define social and/or environmental impact objectives. One can have a look at the three categories of IRIS each with its own sub-set of impact objectives. At least one needs to define the target population, target model, and target impact.

We need to define parameters that will drive financial performance. These parameters will influence risk and return rates. Parameters include: geography, sector, instrument type, growth stage of business and scalability, and risk appetite. Revenues, costs, and risks should be considered to assess the risk-adjusted impact return. Now that the impact mission and financial targets are in place, an investor has identified an area of focus (J. P. Morgan Chase & Co., 2012). In the area one can diversify to its own preferences. Using these two together, an impact investor is not very different from a traditional investor in a portfolio construction. Their key difference is the pursuit of an impact objective. This objective makes it not an easy job to find opportunities in the market today.

Ideally, a framework should characterize investments by three dimensions: impact, return, and risk (J. P. Morgan Chase & Co., 2012). The output of a portfolio analysis will be a graph or map on the three dimensions, like the examples in Figures 5 and 6. Each graph is qualified to each investor’s preferences: some like to use low/medium/high and others like to use a scale from 0 – 10.

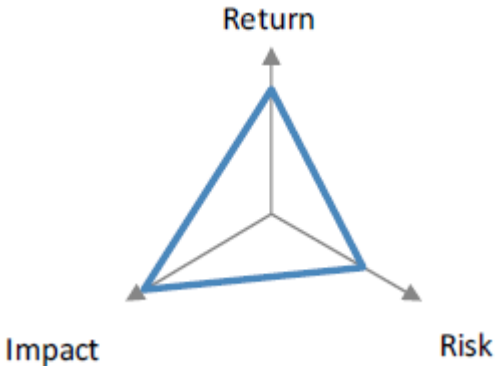


Figure 6: Investment graph - high return, high risk, high impact.

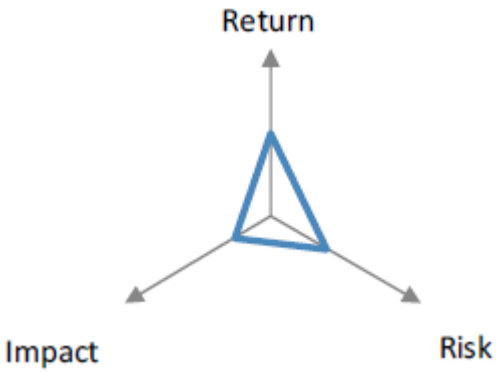
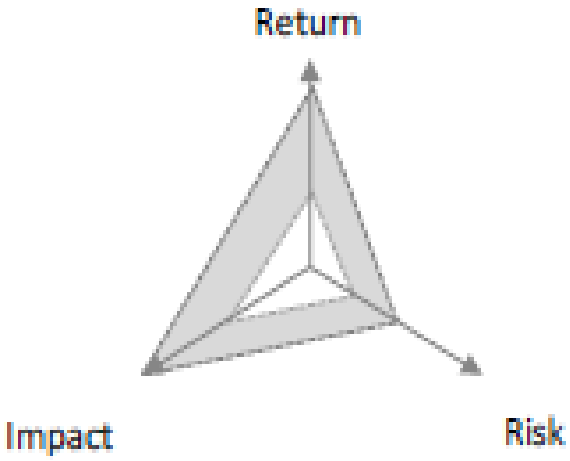


Figure 5: Investment graph - low return, low risk, low impact.



It is important to set targets for the portfolio for each of the three dimensions, as illustrated in Figure 7. For impact a due diligence exercise will an investor to come to a view on the intent and impact of the investment opportunity. For returns the investor can take the view whether he aims for developed or developing markets, financial first or impact first returns. Anyone's risk profile depends on his view on the market, country, currency and other macroeconomic variables (J. P. Morgan Chase & Co., 2012).

Figure 7: Investment graph - target portfolio.

Next step is to assess all individual investments that will make up the total portfolio. For example, the following three investment opportunities arise, illustrated in Figure 8:

- $2,000,000 equity investment with a medium impact, high return, and medium risk profile.
- $25,000,000 short tenor, senior secured debt investment with a high impact, low return, and low risk profile.
- $8,000,000 long tenor, unsecured debt investment with a high impact, high return, and a high risk profile.

The graphs will not change if the notional is lower of higher though. Nevertheless, we mention the random amounts of the notional here because it is used in the construction of the total portfolio.

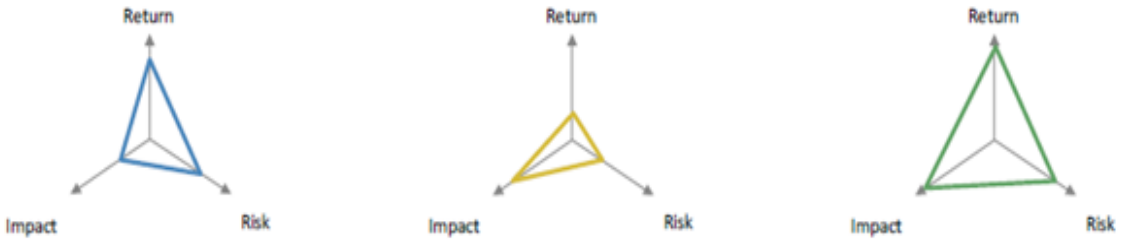


Figure 8: Investment graphs of individual investments (J. P. Morgan Chase & Co.).

Now we are able to consolidate the individual investment graphs into one graph that represents the actual investment portfolio. The risk-return tradeoff can be done in the same way as investors do for their traditional investments. The hard part is the assessment of the impact axis, which is determined in the next chapters and is part of this research. The consolidation method, a method suggested by the big investment bank J. P. Morgan Chase & Co. to construct impact portfolios, is discussed next. There are different ways to construct the portfolio graph, see Figure 9. First, we can simply overlay the three graphs on top of one another. Secondly, we can calculate a simple average. At last, we can calculate an average that weights each investment by its notional amount.

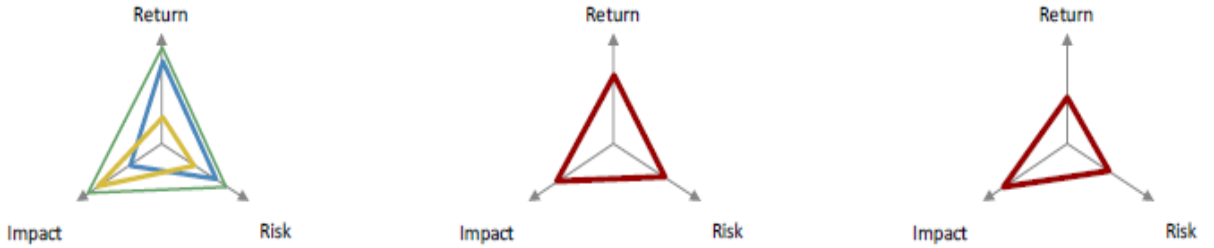


Figure 9: Investment graphs of portfolios constructed in different ways (J. P. Morgan Chase & Co.).

Finally, now we have constructed the portfolio graphs, the investor can compare these to the target portfolio from Figure 7. If one of the graphs falls out of the target portfolio, the investors know he has to either re-balance his current investments or choose something else. For an illustration of the end steps, see Figure 10.

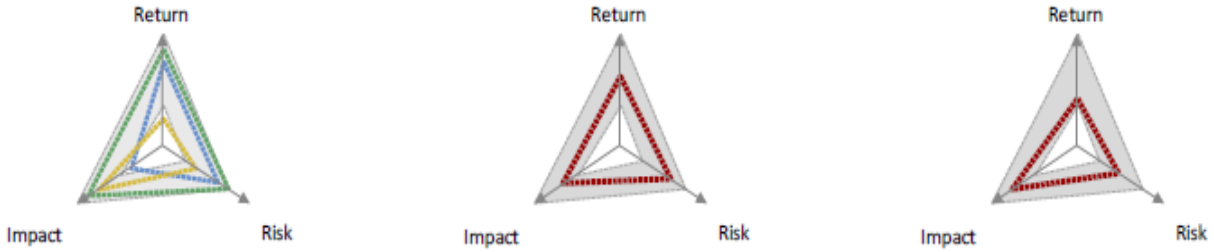


Figure 10: Investment graphs of constructed and target portfolio (J. P. Morgan Chase & Co.).

There will be benefits and biases to each aggregation method. Overlaying all the graphs may be helpful with a portfolio of five investments but is likely to become less valuable when 50 investments are involved. Weighting by investment notional will skew the outcome towards the largest investments, while a simple un-weighted average will give more representation to the smallest deals. Looking at the outcomes of more than one construction method can help to ensure a more complete understanding of the true nature of the portfolio (J. P. Morgan Chase & Co., 2012).

3.3.1 Financial and impact risk management

On an individual basis, the types of risk that arise for impact investments are often the same risks that would arise for traditional investments in the same sector, region or instrument. The impact thesis itself will not necessarily contribute to risk, but it does determine the scope of the investments for the profile, and hence the risk profile. One should be careful, and it is even better to avoid, to extrapolate the risk profile to the whole market. Systemic risks will change over time as the development of the impact investment market continues to grow (J. P. Morgan Chase & Co., 2012).

3.4 Benchmarks for impact investing

Based on the previous subsections of this chapter, we may cautiously conclude that impact investing is an improved version of the intentions of social investing and therefore label it SRI 2.0. However, as applies to SRI as well, impact investing needs to show positive results, otherwise investors will not consider it. Because in the end they also want to see a financial return.

Cambridge Associates, a global investment firm and one of the world's leading developers of financial performance benchmarks, has collaborated with GIIN to evaluate the performance of *market-rate* private investment funds in the world of impact investing. Together they introduced the

first ever financial performance benchmark of private impact investing funds (Cambridge Associates & Global Impact Investing Network, 2015).

Their report includes private investment funds with a social impact objective, not environmental impact. Impact investing funds were found using existing databases from various credible networks worldwide. In this way the research team was able to select funds that have the intention to create positive social impact. If the impact objective was unclear, additional reviews were conducted by the research team to include them in the potential benchmark. A potential consequence of impact investing is that you might lose some financial return in favor of some social return. The authors however dealt with private investment funds, thereby restricting themselves to funds that target risk-adjusted market-rate returns.

Because of its recent development, there is not very much hard data available on impact investing. This has created some sample biases - fund size, vintage year, and geographic focus – which are controlled for in the analysis. In the near future, when more data becomes available, the team will be able to make a better analysis. The Internal Rate of Return (IRR) for the Impact Investing Benchmark is 6.9% versus 8.1% for funds in the comparative universe.

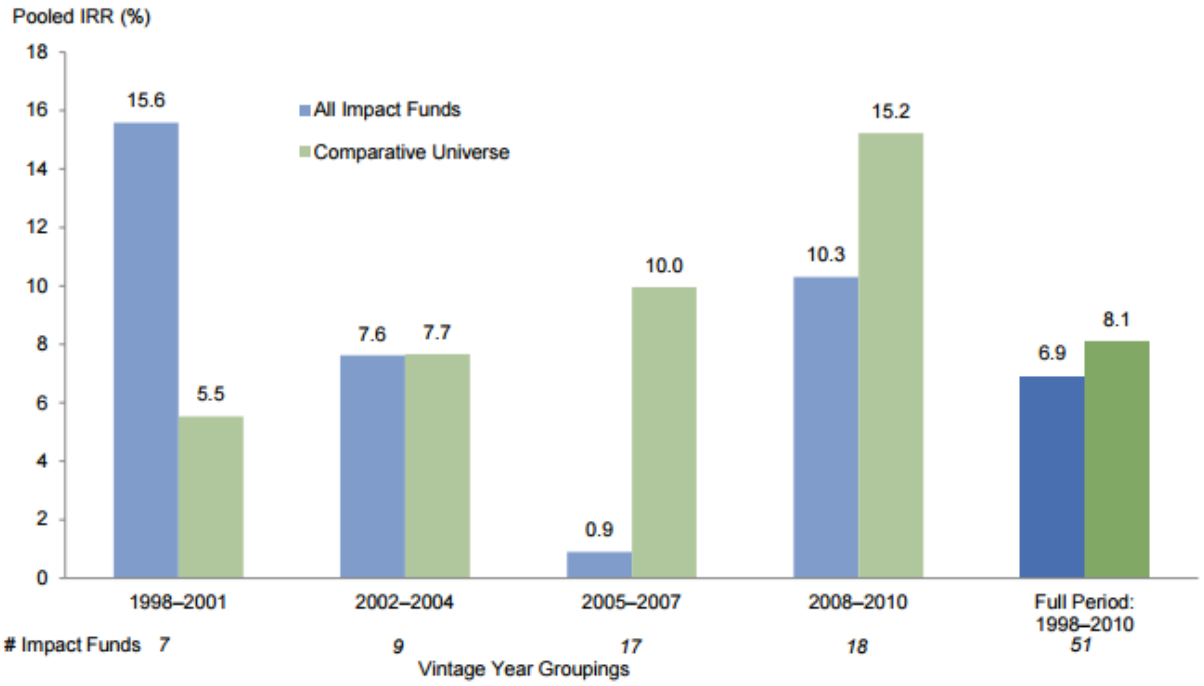


Figure 11: IRR for different vintage years (Cambridge Associates & GIIN).

In Figure 11, the IRRs are set out for vintage years – legal dates of inception. The IRR is a financial metric one can use to determine the profitability of investments one would like invest in. The IRR is a discount rate which makes the net present value (NPV) of all the cash flows generated by an investment equal to zero. An IRR higher than the cost of capital is considered to be profitable and in the investor's interest to undertake.

From the figure it is clear that relative performance differs significantly by vintage year. Impact investing funds which originated from 1998 to 2004 perform in line with, or better than, the market control group. Funds that launched more recently, from 2005-2010, have fallen behind. Nonetheless,

the range of performance of the benchmark funds was smaller than the one of the control group. In other words, the IRR of the average fund in the Impact Investing Benchmark is generally closer to the sample's median IRR than is the case for the market control group (Cambridge Associates & Global Impact Investing Network, 2015).

When IRRs are set out for vintage years *and* geography, other results are obtained. Impact investments can be mapped on three geographic locations: Emerging Markets, Emerging Markets excluding Africa, and Developed Markets. Emerging Markets excluding Markets is also mapped because of the prominent weighting of Africa-focused funds in the benchmark. Performance differences are substantial for all vintage years and Emerging Markets; the Benchmark had an IRR of 9.4% versus an IRR of 10.4% for the market control group, see Appendix C. Performance fell behind for all vintage years and Emerging Markets excluding Africa; the Benchmark had an IRR of 6.1% versus an IRR of 10.4% for the market control group. The reason seems logical, when Africa is excluded, only the riskiest markets with the least developed financial markets remain (Cambridge Associates & Global Impact Investing Network, 2015). Again performance lagged for all years and Developed Markets; the Benchmark had an IRR of 4.8% versus an IRR of 7.6% for the market control group. The cause is the relative youth of impact investing in developed markets, introducing some skew in the analysis (Cambridge Associates & Global Impact Investing Network, 2015).

At last, IRRs are set out for vintage years *and* fund size. Impact investments can be mapped on two ranges of fund size: those with ≤ $100 million in assets and those with ≥ $100 million in assets. Performance differences are substantial for all vintage years and fund size ≤ $100 million in assets; the Benchmark had a staggering IRR of 9.5% versus an IRR of 4.5% for the market control group, indicating small impact funds have high performance potential, see Appendix C. When performance is set out for all vintage years and fund size ≥ $100 million in assets, the Benchmark had an IRR of 6.2% versus an IRR of 8.3% for the market control group. The big impact funds can keep up with the competition (Cambridge Associates & Global Impact Investing Network, 2015).

Like the impact investing industry, the Impact Investing Benchmark dataset is young and dynamic—its performance will evolve from quarter to quarter, as with any benchmark, with the addition of new funds and the maturation of existing ones. The data will become increasingly robust as the sample size grows, and the conclusions derived from this data will become more substantiated when multiple quarters can be analyzed. What not was not included in this research was the actual definition of impact itself. As of yet there is no official impact measurement framework. In other words, the funds used in this research may have never been labeled as impact funds by other parties, which would have made this research uninformative.

3.5 Conclusion

The second sub question in this thesis is: how can we define the niche market of impact investing? As already referred to in the text as SRI 2.0, impact investing can be seen as an improvement over socially responsible investing. It is not about creating an investment portfolio with the objective to minimize negative side effects, but to actually create positive impact. Positive risk-adjusted market return alongside positive social and/or environmental impact is the objective of a part of the investing community. Carefully following the impact assessment process discussed in this chapter gives investors the basics improve the world through a different way of investing. Set goals, make sure the opportunities have been screened, and build metrics and benchmarks. When this process

has been executed, impact investing, rather than government funding or charity, has the power to improve our world at a much faster rate.

Three criteria need to be in place for the term impact investment to apply: intentionality, measurable impact, and positive financial return. Investor intention to address a specific social challenge through investment is a defining characteristic of impact investing. Investors supporting impactful businesses without specifically targeting impact are disqualified from being called impact investors. Investors should be committed to measure, evaluate, and manage the investment's impact performance. Investments that produce positive, but not measurable impact, do not make the cut. An impact investment is a financial instrument, not a grant – investors expect to get at least their initial investment (principal) back. Without considering impact, with the current negative (or very low) interest rates this is already a big challenge.

4 Measuring impact

Monitoring and analyzing financials risks and returns of traditional investments has been standard practice, yet the answer to the question whether social goals and outcomes were achieved is unknown. During the careful introduction of impact investing around 2010, there was no consensus on when, what, and how to measure impact. Or even worse, there was no attempt at all. In this chapter methods are discussed one could use to measure impact. If an investor is not able to measure impact, he has no certainty whether he has achieved his social goals or not. When we have an overview of how to define impact metrics we are able to define our own social and environmental metrics. There is however no universal truth in impact measurement because of some subjectivity. In this grey area however there are some general metrics investors will use, but how many they use for each sector or how specialized each metric is, is subject to expertise and knowledge of each individual, in combination with his wishes and demands. Practically speaking, in the early days, measurement was often too weak and inconsistent, but there are some developments. Luckily, the world of impact investing is growing fast, meaning many organizations have been trying to develop common metrics and benchmarks in order to assess impact.

4.1 Need for a blueprint

Impact metrics are very important since the borders of impact investing are expanding and the first investments made in this field will mature soon. Metrics play a pivotal role in distinguishing good companies from good marketing: for example, BlackRock, the big American global investment management corporation, launched their first impact fund a few years ago. However, this fund included an oil and a weapons manufacturer, clearly not being impact at all – the fund's stock pick has changed nowadays. Metrics enable us to judge performance and help make decisions on the basis of social and environmental grounds in addition to a financial one. For impact investments metrics are essential, as these investments are positively rather than negatively screened.

In 2008, leading institutions and investors met in Bellagio, Italy to develop the blueprint for an industry that could unlock trillions of dollars in pursuit of positive social and environmental impact as well as financial return (Brandenburg, 2012). They identified they were in need of the following:

- Management information systems for fund managers that otherwise rely on a patchwork of Excel spreadsheets to track impact data on their portfolios.
- Impact ratings for asset managers as tools to assess portfolios on nonfinancial performance.
- Standardized definitions of impact performance measures that serve as building blocks for the above as well as enable benchmarking.

This led to three distinct but complementary tools: IRIS, PULSE, and GIIRS. IRIS serves as the taxonomy, or set of terms with standardized definitions, that governs the way companies, investors, and others define their social and environmental performance. IRIS offers to support transparency, credibility, and accountability in impact measurement across the impact investing industry. IRIS is free of charge and helps investors to build their own measurement system. PULSE is a portfolio management tool and is widely available to clients and comes pre-loaded with IRIS metrics. GIIRS is an impact ratings tool and analytics platform that assesses companies and funds on the basis of their social and environmental performance (Brandenburg, 2012). Both PULSE and GIIRS can be accessed through subscription by annual fees. These fees are quite high which makes the research practically

only available to large institutions since for example private investors or family offices are most likely incapable or unwilling to pay thousands of dollars a month for impact research.

4.2 Some existing literature on nonfinancial measurement

Indicators of performance cannot be found in financial data alone. When measuring quality, customer satisfaction, or market share, it is more likely one will capture a company's economic condition and growth prospects better than its reported earnings do. This will require careful preparation, perseverance, and the conviction of the CEO that it must be carried through. When one prominent company can demonstrate the long-term advantage of its superior performance on for example customer satisfaction or market share, it will change the rules for all its rivals forever (Eccles, 1991). In the case of IVM Caring Capital, there is a need to assess impact investments, and these do not only have a financial incentive. If we want to build a framework for impact assessment, we clearly need more than financial metrics alone.

Nonfinancial metrics are important as reliance on short-term financial metrics provides incentives to take potentially unprofitable risks. As such, nonfinancial metrics can help to build shareholder value for the longer term. If stakeholders favor social responsibility and have power to reward it, reporting such metrics increases the level of social performance and profits (Chatterji & Levine, 2006).

A major challenge is to determine which of the hundreds, if not thousands of nonfinancial measures to track. Many investors think that adopting a universal framework like the Balanced Scorecard of Kaplan and Norton is enough. More successful investors have overcome this problem by choosing their performance measures on the basis of causal models, also called value driver maps, which lay out the plausible cause-and-effect relationships that may exist between the chosen drivers of strategic success and outcomes (Ittner & Larcker, 2003).

We should not select too many measures as we will no longer see the wood for the trees. When we have a list of measures, their relative importance is discussed by assigning them weights. When we have built a valid causal model, it is good to know how to measure the elements in the right way. We talk about statistical validity and reliability. Validity is the extent to which a measure is well-founded and corresponds accurately to the real world. Reliability is the overall consistency of a measure, meaning that are no significant errors every time the measure is used (Ittner & Larcker, 2003).

When measuring social or environmental impact one might come across some challenges. The following challenges are mentioned frequently (Purpose Capital, 2013):

- ***Diversity:*** Diverse preferences with regards to intent, sectors, mission, and vision. This leads to the selection of many different indicators to measure impact, which makes it hard to build one measurement system to reflect it all.
- ***Standardization:*** Normally you would like your measures to be comparable and consistent, but in the new field of impact investing standardization might not be so good. The complexity might not be captured in one number.
- ***Capacity and cost:*** To measure anything, data collection comes first. Intensive data collection and analysis, besides even finding this impact data since the market is relatively new, can be time consuming and costly.

- ***Logistics:*** First, it can be difficult to quantify impacts. Secondly, it can be hard to access and interpret data. Thirdly, indirect impact is difficult to track. Finally, it is hard to attribute impacts directly to investments.

4.3 Pitfalls

Nonfinancial performance measurement can usually not be expressed in monetary units. How to assess and interpret such measures can be a difficult task. Caution is needed with respect to subjectivity. Subjectivity opens the door to favoritism, where one acts on personal preferences. It is shown that favoritism leads to placing less weight on appraisals or opinions and too much weight on 'hard' performance measures. In others words, greater weight will be placed on more objective, quantitative measures than on more subjective, qualitative measures (Prendergast & Topel, 1993). Discussing the way we intent to use the framework in order to avoid this bias is advised.

It is also common to evaluate positively (negatively) when the outcome is positive (negative), regardless of whether the undertaken activities to achieve the results were appropriate (Slovic & Fischhoff, 1977). Positive results do not guarantee longer term positive change.

One positive result of a certain investment tends to favor the same kind of other investments too. This is called the halo effect, introduced by psychologist Edward Thorndike (Thorndike, 1920). On the flip side, a negative result in an investment tends to discourage other investments, the horn effect.

Evaluations using some kind framework can be affected by unique measures and common measures. Common measures however still receive greater weight. That is why one finds standardized financial measures throughout many organizations (Lipe & Salterio, 2000). In order to critically review performance of impact investments, there is a need to use unique measures.

4.4 Framework components

When investing in impact investments, an investor would like to know whether impact can be realized or not. He wants to know if he is able to measure impact and critically evaluate results over time or compare them with some sort of control group. We need to build a performance measurement system to do this properly in order to report to the clients. A performance measurement system can be constructed at three levels (Neely, Gregory, & Platts, 1995):

- The individual performance measures themselves.
- The set of performance measures making up a category. These categories then together are the performance measurement system.
- The relationship between the performance measurement system and the environment within which it operates. This includes the gathering, smoothing, measuring, and verifying of the data. Smoothing is a technique to remove noise from the data.

Many investors recognize a natural progression of an impact investment – the impact value chain – with growing levels of insight into an investment's impact. The impact value chain is based on Weiss' logic model (Weiss, 1972). As mentioned in paragraph 3.2, the theory of change describes the intended social of environmental change an investor or institution wants to achieve by an investment. It is a methodology for planning and evaluation to promote social change. The logic model is a common form of outlining a theory of change. A logic model has five building blocks and is depicted in Figure 12.

Figure 12: Logic model.

From the viewpoint of a wealth manager such as IVM, the logic model helps in setting goals and is easy to communicate to both the investee as the clientele. So it clearly outlines the path to the intended impact to the investee and it is helpful to report externally to the clientele (So & Staskevicius, 2015).

There is a certain 'logic' in the model. An investor can discuss which resources (input) he wants to be used for certain activities. These activities are performed to generate outputs. This is followed by tangible, immediate outputs from the activities undertaken in the previous step. As mentioned before, one needs to go one step further to actually determine whether there is actually impact or not. The outputs should generate positive outcomes (PWC, 2013). When these outcomes last for a longer time period, we speak of impact (Social Impact Investment Taskforce, 2014).

For example, by investing in the introduction of a new public transport programme, more people will hopefully go by train or bus. This will lead to less traffic jam on the highways. If this could remain for more years, carbon dioxide emissions will be much lower, meaning we have achieved a kind of environmental impact.

4.5 Measurement tools

As mentioned in Section 4.4, to actually report something about impact, there is a need for metrics. Some metrics belong together, forming a category or a cluster, which we can use for certain areas, for example microfinance. Which metrics are meaningful in this area is a good question. One can think of multiple criteria in this field: for example, the number of loans granted, the total amount of funds borrowed, or the number of households helped. For each of the impact areas there will be a number of metrics we need to select to build the framework.

There are also some restrictions, as explained in Chapter 5, that will apply. First of all, impact investing is a new phenomenon, so much hard data is not readily available as of yet. Secondly, IVM only invests in large capital companies in developed markets due to liquidity issues for trading purposes. Besides, research availability and capability are important since there are only two employees at IVM doing research, whereas for example Sustainalytics has more than 120 fulltime employees for research. This means the data that actually is available comes from these large capital companies. At least there is more than there would have been if IVM invested in private equity opportunities, which means that it buys funds for private equity and emerging markets opportunities. Thirdly, building on the second restriction, there is a need for more generic metrics than specialized ones. It is easier to find and report something about carbon dioxide emissions than about the new number of women employed in a small town in Kenya.

Reeder and Colantonio give a critical overview of concepts and practice in measuring impact and nonfinancial returns in impact investing. In their article they listed the most used assessment techniques and measurement tools (Reeder & Colantonio, 2013). The following techniques are highly applicable for IVM:

- ***Multi-criteria decision analysis:*** structuring the choice of which option to choose. Determines the key criteria, weights, and individual scores. In this way the decision maker is able to take the option with the highest (weighted) score. This method has the nice feature in that it can be easily communicated to stakeholders and adapted if needed. This method is often used to make a best in class universe. Since we are dealing with multiple impact areas this tool is recommendable. In this way you get a list that ranks companies from best to worst per impact area on the basis of multiple criteria. A positive feature of this method is that we keep a bigger list of potential investments than we would have had using another method that might require minimum scores on all criteria. In other words, if a potential investment has a bad score on one criterion, it will still be regarded as an overall good investment opportunity if it scores better on the other remaining criteria. On the other hand, in this way we also keep investments that might perform average on all criteria, but not excellent on one of them.
- ***'Near neighbors' benchmarking:*** comparing results on those judged to be reasonable set of peers in the industry. When we have determined the weighted scores of all companies we are able to compare them in their corresponding impact areas. We obtain a best in class universe which is also useful with respect to portfolio building. We do not want all the best performing companies in our impact portfolio if they all happen to be banks as the portfolio would then not be very well diversified. We want all the best performing companies per sector in our portfolio to have this diversification. We are talking about investments because in the end there is also a factor of financial return, otherwise the clients could better give their funds to charity.
- ***Before and after comparison:*** a very simple statistical tool. It takes a look at outcomes before and after an intervention, or changes over time. It might lack controlling for other factors, meaning that an improved score over time might be because there were other factor contributing to the improvement. For now, as a start, it is nice to see results over time and put these in a graph. Some visibility makes reports to clients also more clear.

4.6 Conclusion

This chapter has set out some literature on nonfinancial measurement. With the three measurement techniques discussed in Section 4.5 we are now able to make a start with the foundation of the impact framework based on the logic model, as depicted in Figure 12. To continue we will use the restrictions of the literature on impact investing and need input from IVM Caring Capital. The objective is now to work step by step our way down from the broad definition of impact investing at the top to individual metrics at the bottom.

5 Methodology

In order to build a measurement framework for impact investments that IVM can use to help it build impact portfolios for its clients, we need to follow a top-down approach. Before actually coming up with individual metrics, it is better to start from the top and work our way down. From the previous chapter we now have a global definition of impact investing. But what industry sectors does IVM rule out for investment purposes? Or which ones are considered not to be important? These questions are important, since the objective is to build a measurement framework for IVM, not for the investment community as a whole, as this would be too big and complex. Besides, everybody has a different opinion on important industry sectors or which ones to exclude.

The potential universe of securities to invest in is a lot smaller when preferences and restrictions of IVM are clear. Now the next step is to set social and environmental goals that IVM wants to achieve with its portfolios, along with a financial return. The 17 Sustainable Development Goals of the UN are the starting point. Clients who bring in more assets can choose their goals they like to see achieved, clients with less can choose from clusters of goals.

To achieve these goals, there are multiple impact areas in which an investor is able to invest. For these impact areas we want to build a measurement framework with some general and some more specific key performance indicators (KPI). Determining to which areas the available listed stocks, funds and fixed income securities of IVM's universe belong, is done by IVM itself, due to its own fundamental investment expertise. By incorporating ESG research and exclusionary screens we need a framework to assess our investments made in impact areas, see Figure 13. All steps will be discussed in more detail in the following sections.

Figure 13: Impact assessment steps (BlackRock).

5.1 Step 1: Repetition of definition

Impact investing lies somewhere in between traditional investing and charity. An investor wants to capture something from both worlds: a financial return and social or environmental impact. Create positive impacts, not only minimize negative side effects. Impact investing is not about outputs, but takes a look at outcomes, at actual long-term change.

An investor who wants to make a profit, and unaware also creates impact in the process, is not regarded as an impact investor. An investor should have the incentive to create impact, which leads us to three key criteria: impact investing is about true intentions, nonfinancial measurement and its reporting, and financial return since it's investing, not charity.

5.2 Step 2: Exclusion of industry sectors and investment restrictions

From the literature it is clear that stocks from companies with sales in adult entertainment, alcohol, gambling, tobacco, or weapons – sin stocks – are excluded. After a discussion on this topic with the

board of IVM this list of exclusions will not change. It might be the case that other people have a different opinion on this subject, but we exclude these companies as they are not good for human beings considering the long-term.

In Appendix D is a list of industry sectors made by Sustainalytics for its own research model in which it puts all listed companies and this list is currently used by IVM. In terms of the sectors used by Sustainalytics, alcohol and tobacco are subcategories of 'Food Products', adult entertainment and gambling are subcategories of 'Consumer Services', and weapons are part of 'Aerospace & Defense'.

In the same discussion we took a closer look at this list to possibly find some more sectors IVM would like to exclude. Fossil fuels, like oil, gas, and coal, will be excluded. These polluting energy sources will have to make place for renewable energy and electricity. Electricity power generation from fossil fuels will probably not disappear in the near future, but if most of the vehicles on our planet drive on electricity instead of for example gasoline, this would be huge improvement in making our environment cleaner. This means the sectors 'Oil & Gas Producers', 'Energy Services' and 'Refiners & Pipelines', referring back to Appendix D, are removed from the investable universe. In this case, Royal Dutch Shell plc and peers in its industry, traditionally good investments, are no longer considered anymore.

Producers of weapons, military aircraft and vehicles, or defense related products, are by definition excluded by the impact community because of their negative influence on the world, which means that the entire list of companies in the 'Aerospace & Defense' sector is removed. For example, Lockheed Martin Corporation, producer of the Joint Strike Fighter, is not a suitable investment opportunity any longer. As noted before, there is some controversy on this point, as the public would rather see armed than unarmed police officers.

The mining industry, in particular mining of gold, silver, or diamonds, is a dirty business in the emerging markets. Labor conditions are not always perfect and environmental issues can for example include erosion or formation of sinkholes. These are the reasons IVM will not consider the sectors 'Diversified Metals' and 'Precious Metals' any longer. One of the exclusions in this field is Goldcorp Inc.

Nuclear energy is very clean in terms of carbon dioxide emissions, but the effects if somethings goes wrong are terrible. The accidents in Chernobyl and Fukushima had many negative consequences. Many people died from the disaster directly, besides there is also a high possibility that many people will die of cancer years from now due to radiation issues, and land will be uninhabitable and unfarmable for centuries. These are the reasons there will be some companies removed from the 'Utilities' sector. The threshold will be at 5% of total energy generated. For example, Electricite de France SA is removed from the list because 77% of its total energy production was from nuclear power (Sustainalytics, 2016).

Utility companies that generate electricity from thermal coal are also excluded from this list. Coal is a nonrenewable energy source which can cause major environmental damage. Again the threshold will be at 5% of total energy generated. For example, A2A SpA is removed from the list because 25% of its total energy production was from thermal coal (Sustainalytics, 2016).

Besides the restrictions related to industry sectors, there are also some restrictions with respect to the investment policy. IVM is a sustainable asset manager. Practically this means that it uses the best in class research of Sustainalytics as the indicator of sustainability. Companies in each sector that don't make the cut are not suitable for investment purposes. It is a possible scenario that companies which are in the best in class universe will not be considered for impact investments as more conditions will apply for impact investing. Due to liquidity issues, and access to and availability of research, only stocks of large capital companies in developed markets are traded.

There are 12,972 companies that make up the total investable universe (Sustainalytics, 2016). Most of them are listed on the stock exchange. Some only issue corporate bonds. There are also companies that issue both. Anyway, both types of instruments are used in a portfolio for risk purposes. IVM only considers the companies that are part of the MSCI World Index, which are 968 in total. More than 12,000 companies are not considered because they are not part of the MSCI World Index due to the fact that they are not marked as large capital companies. This list of 968 companies is divided by half to 479 companies due to the ESG best in class research. When all the restrictions of the literature discussed above are introduced on this total list, the number of companies drops to 400. This final list of companies should be used for impact assessment.

5.3 Step 3: Set goals

Countries adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda: the 17 Sustainable Development Goals of the United Nations, for a reminder see Appendix B. For these goals to be reached, everyone needs to do their part: governments, civil society, and the private sector. The former two have been busy with these topics for a longer period of time, while the latter is able to take it to the next level. Considering the enormous amount of assets and the efficiency in operations, the private sector can accelerate the improvement our world.

One of the goals is labeled 'life below water'. Our rainwater, drinking water, weather, climate, coastlines, much of our food, and even the oxygen in the air we breathe, are all ultimately provided and regulated by the sea. Throughout history, oceans and seas have been vital conduits for trade and transportation. Careful management of this essential global resource is a key feature of a sustainable future (United Nations, 2015).

The idea is that the clients can choose some of these goals they would like to contribute to. IVM then knows, as will be explained in the next step, in which impact areas to invest to help achieving these goals. The intention is to have standardized impact portfolios available based on one of the clusters of goals chosen by the client, which are developed by IVM. A cluster is better suited for smaller clients. The clusters we have developed can be found in Appendix E. These clusters are subjective and be totally different from each other.

For clients with larger sums to invest there will be a possibility to choose goals individually based on their own preferences, which leads to more personal portfolios. For example, choosing just two totally different goals might require a lot of more assets to make sure that the portfolio is diversified enough. Basically it boils down to the normal state of affairs: the clients express their wishes, IVM builds and manages their portfolios.

5.4 Step 4: Connect impact areas

There are a number of impact areas that help in achieving those goals. For example, the first of the 17 goals is to end hunger, but there are multiple impact areas, and thus companies addressing these areas, that can help to achieve this goal. For example, if we want to end hunger, then we could invest in education so people are better trained to get better jobs and earn more money. Indirectly these people are then able to buy (more) food. On the other hand, as a more direct approach, investing in agricultural themes will probably lead to more food available. In Appendix D there is also an overview of the major impact areas (Balandina Jaquier, 2016).

The clusters of goals (or individual goals) are connected to one or more impact areas. For example, there is a relationship between the 'Poverty & Health' cluster with impact areas agriculture and health. This relationship is harder to find between the same cluster and impact areas energy and infrastructure.

Besides connecting impact areas with goals, and possibly a more important step, we can also connect the industry sectors (or individual companies) with one or more impact areas where they are currently represented. For example, it is logical to see the relationship between the 'Real Estate' sector and housing as impact area. Obviously, a relationship between the 'Steel' sector and agriculture as impact area will be hard to find. In this way the companies are also automatically assigned to a cluster, because the two impact area-company and impact area-goal relations indirectly connect companies with goals.

Now we have three relationships. First, the goals we want to achieve. Secondly, the impact areas we can invest in to help achieve those goals. At last, we actually invest in the impact areas by investing in certain industry sectors that operate in the impact areas. See Figure 14.

Figure 14: Sector-area-goal relation.

5.5 Step 5: Select metrics and build framework

The previous steps combined give us an overview of all the clusters and their underlying impact areas. Besides, we know which industry sectors belong to each cluster. This is a good starting point for the framework. We will focus our research now on the impact areas and the industry sectors. Now it is important to select general metrics which can be used for all companies, irrespective of impact areas in which they operate. Besides general metrics, specific metrics for each impact area have to be found and implemented. Metrics that are listed in the IRIS catalog are preferred, but are not obligatory. However, these are official impact metrics and they are better to justify for reporting and due diligence purposes.

The framework will be based on a multi-criteria tool, where one part has a restrictive character and another part is a weighted sum model. The former is used to assess all companies of the remaining universe and the latter is used to screen industry sectors individually.

Each indicator has multiple attributes it can score on. The more an indicator satisfies its underlying attributes, the higher its score will be. It works like a checkbox; more checks indicate a higher score. The scoring-scale ranges from 0 – 100. Every company needs to have a minimum score on each general indicator. Thereafter, when the list of remaining companies has again declined, every company will be assessed on the specific indicators for its impact area.

5.6 Conclusion

In combination with chapter 4 we now have the tools to start with the assessment of companies' impact. The exclusions are logical consequences of a more rigorous definition of sustainability. How well the remaining companies perform on impact indicators will be discussed in the next chapter.

6 Framework

In this chapter the indicators will be discussed in more detail. First, the general indicators are discussed because these apply to every company that is still on the list after the exclusions of the previous chapter. These indicators also have a more exclusive character. Secondly, the specific impact indicators are discussed. At last, some companies will be used as an example of our developed methodology.

6.1 General indicators

Before we discuss the impact a company can realize in a certain area, it is best to take a look again at one of the key features of impact investing: intention. When a company has done well last year, there is probably a rise in its stock price and a high(er) dividend to collect. In other words, a positive financial return. When that certain company wanted to maximize shareholder value, for example by being more efficient in its operations, and also unaware created positive social or environmental impact, by reducing carbon emissions in the process, we don't speak of the intention to actually realize impact.

It does not matter in which industry sector a company operates to speak of more or less intention. Some industry sectors have a more environmental character, while others have a more social one. This does not mean that the less obvious one should be neglected. For example, a bank operates in a more social field, but is still able to choose renewable energy for its operations than nuclear or thermal coal energy, and assist a little in achieving environmental goals.

These general indicators are used for every company, irrespective of industry sector it operates in or impact area it helps to improve. As mentioned, impact created unaware is not classified as impact investing. For example, a good score on the specific indicators, but a bad score on the general ones, lacks our definition of intention. In this way, the general indicators are used as restrictions, i.e. they are non-compensatory. Every company needs a minimum score on each general indicator. In this way, we reduce our list of potential companies to invest in, mentioned in Section 5.2 above.

Referring to IRIS, the catalog of generally accepted impact metrics, we have chosen three metrics that capture intention (Global Impact Investing Network, 2015). There were some official impact indicators of IRIS which we believe do not actually grasp our definition of impact. For example, one general indicator measures the number of female employees, but in our eyes that is more sector specific than general. When a company in the sector 'Chemicals' has less female employees than a company in the sector 'Healthcare', because of the nature of work, that does not mean they have less impact. The most used general indicators we have selected actually demand more of the sustainable (environmental and social) character and intentions of companies (Global Impact Investing Network, 2015). In more detail:

- ***Theory of change:*** a statement of the company which explains in clear language how organizational and financial resources are going to be used to address social and environmental challenges, apart from the daily operations to gain profits. The theory of change can be expressed as an if-then statement and follows the logic model. Usually it can be found on corporate websites. It is part of the mission statement, purpose or strategy of the company. It could also be found in annual reports. For example, 'Being the cheapest in

our market' is clearly not impact related, whereas 'Providing sustainable solutions for the world of tomorrow' is. The quest for theories of change has been done by employees of IVM. This indicator works as a binary option; in or out. If we believe, after a discussion, the company has no theory of change, it is out. When we do, it is in.

- ***Environmental commitment:*** This metric describes whether organizations have a standardized format to categorize their environmental preparedness. It does not capture how well organizations achieve or manage their environmental objectives. Quantitative performance indicators, which say something about the accomplishments of organizations in their respective sector, will be discussed in the section about specific indicators. This indicator checks, with the theory of change as leitmotif, the intention of the organization on the basis of the following factors and points:
  - *Promotion of environmental responsibility* *(20)*
  - *Use of environmentally friendly technology* *(15)*
  - *Use of an environmental management system* *(15)*
  - *Policy on energy efficiency* *(15)*
  - *Policy on waste or emission reduction* *(15)*
  - *Report on environmental issues* *(10)*
  - *Commitment by senior management or board of directors* *(10)*

  The environmental commitment indicator works like a checkbox, where more checks indicate a higher score. The scoring-scale ranges from 0 – 100. The first five factors have a higher number of points because they are about actions, whereas the last two are about reflection. Every company needs a minimum score of 65 on this general indicator. This number is set after a discussion with experts of IVM, because 65 is bit stricter than simply being best in class. A proxy for this indicator is already available in the database of Sustainalytics and will be used for this step. In other words, the data for this indicator has been bought.
- ***Social commitment:*** This metric describes whether organizations have a standardized format to categorize their social preparedness. It does not capture how well organizations achieve or manage their social objectives. Quantitative performance indicators, which say something about the accomplishments of organizations in their respective sector, will be discussed in the section about specific indicators. This indicator checks, with the theory of change as leitmotif, the intention of the organization on the basis of the following factors and points:
  - *Employees have freedom of association* *(15)*
  - *Policy on discrimination / equality* *(15)*
  - *Programmes to promote diversity in workforce* *(15)*
  - *Targeted recruitment and training opportunities* *(15)*
  - *Employee incidents* *(15)*
  - *Customer incidents* *(15)*
  - *Commitment by senior management or board of directors* *(10)*

  The social commitment indicator also works like a checkbox, where more checks indicate a higher score. The scoring-scale ranges from 0 – 100. Every company needs a minimum score of 65 on this general indicator. This number is set after a discussion with experts of IVM, because 65 is bit stricter than simply being best in class. A proxy for this indicator is already available in the database of Sustainalytics and will be used for this step. In other words, the data for this indicator has been bought.

The 400 companies that remained on the list after the restrictions in Section 5.2 were satisfied have all been scored on these three general, restrictive indicators. Table 4 shows some results after these steps. The list reduced to 192 companies because 208 others failed to satisfy all three indicators.

Company	Sector	ToC	E	S
BMW Group	Automobiles	Yes	80	85
ING Groep NV	Banks	Yes	90	90
Marriott International, Inc.	Consumer Services	No	55	65
Zurich Insurance Group AG	Insurance	Yes	60	75
Unibail-Rodamco SE	Real Estate	Yes	85	85

Table 4: Some results after scoring on the general indicators.

6.2 Specific indicators

Some industry sectors are active in only one impact area, while others operate in more than one. The sector 'Banks' clearly has a relation with 'Financial Services', but the 'Automobiles' sector has a relation with 'Cleantech' as well as 'Environment'. The idea is that there are multiple industry sectors to invest in to address an impact area, all which have their unique way of delivering the impact. Connections are based on a discussion with employees of IVM; some connections are based on common sense while others demanded more explanations. All connections can be found in Table 5.

Industry sector	Impact area
Auto Components	Cleantech | Environment
Automobiles	Cleantech | Environment
Banks	Financial Services
Building Products	Cleantech | Environment
Chemicals	Cleantech | Environment
Commercial Services	Environment
Construction & Engineering	Cleantech | Environment
Consumer Durables	Cleantech | Environment
Consumer Services	Agriculture | Environment
Diversified Financials	Financial Services
Electrical Equipment	Cleantech | Energy
Food Products	Agriculture
Food Retailers	Agriculture
Healthcare	Health
Household Products	Environment | Agriculture
Industrial Conglomerates	Cleantech | Environment
Insurance	Financial Services
Machinery	Cleantech | Environment
Media	Education
Paper & Forestry	Environment
Pharmaceuticals	Health
Real Estate	Housing
Retailing	Environment
Semiconductors	Environment
Software & Services	Education
Technology Hardware	Environment | Education
Telecommunication Services	Education
Textiles & Apparel	Environment

Transportation	Infrastructure & Transportation
Transportation Infrastructure	Infrastructure & Transportation
Utilities	Energy | Environment | Water

Table 5: Industry sectors and their impact areas.

Impact investing is about positive change, and not just about minimizing negative side effects. For example, at the moment BMW still builds bigger and more polluting cars than Toyota, but it is too easy to say that driving a Toyota is better for the environment. For now, maybe that's true, but BMW is currently very active in developing electric cars. If we neglect this fact, we also neglect the potential BMW has in the future. For each industry sector two indicators have been selected that give an indication about impact in that certain sector, which in combination with the three general indicators means we have created a framework of five indicators applicable to each industry sector. Indicators (derived) from IRIS and indicators suggested by Sustainalytics are used in this research. In the following subsections all industry sectors and their indicators and are discussed shortly.

A part of the specific indicators has the same structure as the last two general indicators. These indicators are not developed ourselves, but can be found in the IRIS catalog. The procedure followed is straightforward. How to use the indicators is explained in the catalog. These specific indicators work like a checkbox: they consist of sub indicators and if a sub indicator is satisfied points can be scored. When more sub indicators are satisfied the end score will be higher. As applied to the general indicators above, the scoring-scale also ranges from 0 – 100. The point distribution of the sub indicators is determined after a discussion with an internal expert.

Other specific indicators are about 'green' revenues. Percentages of total revenues that come from green products are divided into increasing intervals of points to score. These intervals are different from one industry to another. The point distribution is based on nondimensional scaling (Sullivan, Wicks, & Koelling, 2014). Nondimensional scaling takes into account the worst, best and median outcomes in the data to establish the scoring interval in the framework. For some indicators Sustainalytics gave advice on differences across industries. As applied to the general indicators above, the scoring-scale also ranges from 0 – 100.

Furthermore, there were a few companies that did not disclose information. These companies were rewarded with few or no points at all on that particular indicator. Disclosure of information is important since more availability of data leads to more profound measurement. On the other hand, if a company does not disclose certain information we can assume the numbers were not good, otherwise the company would probably have been eager to disclose them.

Afterwards, the average of the two specific indicators is calculated, where both indicators have equal weight. We will use this scoring method to keep as much potential companies possible. A bad score on one criterion can be compensated by a good score on the other, as long as the average has a minimum value of 50. This number is set by IVM. We must keep in mind that an average score below 50 is not bad, since it is still a positive impact number, but we want to select the best performing companies. To keep this report readable, only some scoring results of the 192 companies are highlighted in tables per industry sector. The companies to highlight were chosen at random. Data for these indicators is available in annual reports, in sustainability reports, and on corporate websites and can also be found in the database of Sustainalytics. In this paragraph the indicators are discussed in more detail and some scores are mentioned.

Auto Components

Green Procurement: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *An item that discusses process improvement requirements* *(30)*
- *An item that discusses product improvement requirements* *(30)*
- *An item about sourcing green office products* *(20)*
- *An item that states to buy from green suppliers* *(20)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. After a discussion with an internal expert we considered the first two items more important than the latter two. By satisfying the first and the third items the score will be 50. For example, Continental AG has a policy where the first two items are explicitly mentioned, but the last two are not implemented or disclosed. Therefore, Continental AG scores 60 on this indicator.

Sustainable Mobility Products: Disclosure on the percentage of total revenues that came from products that improve the sustainability of transport vehicles, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues or no disclosure* *(0)*
- *Sustainable revenues in the range of 0%-4.99%* *(25)*
- *Sustainable revenues in the range of 5%-9.99%* *(50)*
- *Sustainable revenues in the range of 10%-14.99%* *(75)*
- *Sustainable revenues > 15%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 5%-9.99% interval the score will be 50. The interval scaling is based on the sustainable revenues in this sector and its leader Pirelli & C. SpA, which has over 40% of green revenues (Pirelli & C. SpA, 2016). For example, of total revenues of Continental AG 6% came from sustainable products, leading to a score of 50.

Company	Green Procurement Policy	Sustainable Mobility Products
Continental AG	60	50
Robert Bosch GMBH	60	25

Table 6: Some results for 'Auto Components'.

Automobiles

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from sustainable products along with their services, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues* *(0)*
- *Sustainable revenues not disclosed* *(25)*
- *Sustainable revenues in the range of 0%-4.99%* *(50)*
- *Sustainable revenues in the range of 5%-9.99%* *(75)*
- *Sustainable revenues > 10%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 0%-4.99% interval the score will be 50. In this industry green production has only just started. The interval scaling is based on the sustainable revenues in this sector and its leader Tesla Motors, Inc. which solely produces green cars and is an absolute outperformer. For example, of total revenues of Peugeot S.A. only 2.5% came from electric powered cars, leading to a score of 50.

Fleet Emissions: Disclosure on the fleet average CO_2 emissions (g/km), where points to score depend on the interval the average emissions belong to:

- *> 160 g/km* *(0)*
- *155-159.99 g/km* *(10)*
- *150-154.99 g/km* *(20)*
- *145-149.99 g/km* *(30)*
- *140-144.99 g/km* *(40)*
- *135-139.99 g/km* *(50)*
- *130-134.99 g/km* *(60)*
- *125-129.99 g/km* *(70)*
- *120-124.99 g/km* *(80)*
- *115-119.99 g/km* *(90)*
- *< 115 g/km* *(100)*

The scoring-scale ranges from 0 – 100 and high emissions are deemed bad. By satisfying the maximum average CO_2 emissions interval 135-139.99 g/km, the score will be 50. CO_2 emissions have gained more attention since the Volkswagen scandal in 2015, resulting in tighter scoring possibilities on this indicator. Advice on how to use this scaling came from Sustainalytics. For example, Porsche Automobil Holding SE scores 0 because of high average emissions. On the other hand, Peugeot S.A. scores 100 because they have much cleaner cars.

Company	Sustainable Products & Services	Fleet Emissions
Peugeot S.A.	50	100
Porsche Automobil Holding SE	25	0

Table 7: Some results for 'Automobiles'.

Banks

Sustainable Products & Services: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Sustainable products a bank offers, e.g. green bonds* *(25)*
- *Disclosure on sustainable transactions volume in Euros, Dollars or Yen* *(25)*
- *Mentioning of new target levels* *(25)*
- *Explicit deadlines to reach targets* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, ING Groep NV performs excellent in its sector. It offers a range of sustainable investment opportunities, including sustainable equity and fixed income funds for both private and retail banking clients. In 2015, ING Groep NV financed sustainable

transactions worth €23.8 billion. It wants to increase this amount to €35 billion and the explicitly mentioned deadline is 2020. In 2015 it successfully issued five-year €500 million and three-year $800 million green bonds (Sustainalytics, 2016). This disclosure is the reason ING Groep NV scores 100 points.

Financial Inclusion: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to involve poor or low-income people* *(25)*
- *Programmes to educate low-income communities* *(25)*
- *The bank has microfinance funds* *(25)*
- *The bank supports small or startup businesses* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, ABN AMRO N.V. performs not really well in its sector. It only mentions it is in the beginning phase of offering microfinance funds or social impact bonds. This little disclosure is the reason ABN AMRO N.V. scores only 25 points.

Company	Sustainable Products & Services	Financial Inclusion
ABN AMRO Group N.V.	50	25
ING Groep NV	100	100

Table 8: Some results for 'Banks'.

Building Products

Green Procurement: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *An item that discusses process improvement requirements* *(30)*
- *An item that discusses product improvement requirements* *(30)*
- *An item about sourcing green office products* *(20)*
- *An item that states to buy from green suppliers* *(20)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying the first and the third item the score will be 50. For example, Geberit AG has a policy where the first two items are explicitly mentioned, but the last two are not implemented or disclosed. Therefore, Geberit AG scores 60 on this indicator.

Cleantech Revenues: Disclosure on the percentage of total revenues that came from clean technology products, where points to score depend on the interval the revenues belong to:

- *No clean technology* *(0)*
- *Clean technology revenues not disclosed* *(25)*
- *Clean technology revenues in the range of 0%-2.49%* *(50)*
- *Clean technology revenues in the range of 2.5%-4.99%* *(75)*
- *Clean technology revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher clean technology revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. In this industry the emergence of clean technology products has only just started. For example, of total revenues of Geberit AG a staggering 17% came from clean technology products, resulting in a score of 100. Geberit AG is an absolute outperformer in its sector (Geberit AG, 2016).

Company	Green Procurement Policy	Clean Technology Revenues
Geberit AG	60	100
Saint-Gobain	60	25

Table 9: Some results for 'Building Products'.

Chemicals

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from sustainable products along with their services, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues* *(0)*
- *Sustainable revenues not disclosed* *(25)*
- *Sustainable revenues in the range of 0%-2.49%* *(50)*
- *Sustainable revenues in the range of 2.5%-4.99%* *(75)*
- *Sustainable revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. In this industry green products have only just started. The interval scaling is based on the sustainable revenues in this sector and its leader Praxair, Inc., which has over 33% of green revenues (Praxair, Inc., 2016). For example, of total revenues of Linde Aktiengesellschaft 5.5% came from sustainable products, leading to a score of 100.

QMS Certifications: External certification (ISO 9001) of the quality management system for manufacturing sites to make sure processes and products are safe in this industry sector. It is measured in percentage of all sites received certification. External certification (ISO 14001) of an environment system is a plus. The scoring-scale ranges from 0 – 100 and the percentage of certifications is equal to the score. For example, Evonik Industries AG has 100% of its facilities certified and scores 100 points (Evonik Industries AG, 2016).

Company	Sustainable Products & Services	QMS Certifications
Evonik Industries AG	25	100
Linde Aktiengesellschaft	100	60

Table 10: Some results for 'Chemicals'.

Commercial Services

Green Procurement: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *An item that discusses process improvement requirements* *(30)*
- *An item that discusses product improvement requirements* *(30)*
- *An item about sourcing green office products* *(20)*
- *An item that states to buy from green suppliers* *(20)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. After a discussion with an internal expert we considered the first two items more important than the latter two. By satisfying the first and the third item the score will be 50. For example, Adecco S.A. has a policy where the first item is explicitly mentioned, but the last two are not implemented or disclosed. Therefore, Adecco S.A. scores 30 on this indicator.

Supply Chain Monitoring: Have been there been supplier monitoring activities? There should be a policy on the following items, where points available on each sub indicator are between brackets:

- *A formal monitoring system implemented* *(25)*
- *Evaluation of ethical or governance performance* *(25)*
- *Evaluation of social performance* *(25)*
- *Evaluation of environmental performance* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying the first and the third items the score will be 50. For example, Adecco SA has a policy where the last two items are explicitly mentioned, but the first two items are not implemented or disclosed. Therefore, Adecco SA scores 50 on this indicator.

Company	Green Procurement Policy	Supply Chain Monitoring
Adecco S.A.	30	50
Brambles Ltd.	60	50

Table 11: Some results for 'Commercial Services'.

Construction & Engineering

Cleantech Revenues: Disclosure on the percentage of total revenues that came from clean technology products, where points to score depend on the interval the revenues belong to:

- *No clean technology* *(0)*
- *Clean technology revenues not disclosed* *(25)*
- *Clean technology revenues in the range of 0%-4.99%* *(50)*
- *Clean technology revenues in the range of 5%-9.99%* *(75)*
- *Clean technology revenues > 10%* *(100)*

The scoring-scale ranges from 0 – 100 and higher clean technology revenues score more points. By satisfying the 0%-4.99% interval the score will be 50. In this industry clean technology products are beginning to increase in volume. For example, of total revenues of Bouygues SA 4% came from clean

technology products, leading to a score of 50. Bouygues SA is one of the few in its industry that actually discloses clean technology revenues (Sustainalytics, 2016).

Supply Chain Monitoring: Have been there been supplier monitoring activities? There should be a policy on the following items, where points available on each sub indicator are between brackets:

- *A formal monitoring system implemented* *(25)*
- *Evaluation of ethical or governance performance* *(25)*
- *Evaluation of social performance* *(25)*
- *Evaluation of environmental performance* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying the first and the third items the score will be 50. To illustrate, Bouygues SA has a policy where all items are explicitly mentioned so it scores 100 on this indicator.

Company	Clean Technology Revenues	Supply Chain Monitoring
Bouygues SA	25	100

Table 12: Some results for 'Construction & Engineering'.

Consumer Durables

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from sustainable products along with their services, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues* *(0)*
- *Sustainable revenues not disclosed* *(25)*
- *Sustainable revenues in the range of 0%-2.49%* *(50)*
- *Sustainable revenues in the range of 2.5%-4.99%* *(75)*
- *Sustainable revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. In this industry green products have only just started. The interval scaling is based on the sustainable revenues in this sector and one of its leaders Panasonic Corporation, which has over 20% of green revenues (Panasonic Corporation, 2016). Since it is also part of our universe it scores 100 on this indicator.

Supply Chain Monitoring: Have been there been supplier monitoring activities? There should be a policy on the following items, where points available on each sub indicator are between brackets:

- *A formal monitoring system implemented* *(25)*
- *Evaluation of ethical or governance performance* *(25)*
- *Evaluation of social performance* *(25)*
- *Evaluation of environmental performance* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying the first and the

third items the score will be 50. For example, Sony Corporation has a policy where all items are explicitly mentioned and scores 100 on this indicator.

Company	Sustainable Products & Services	Supply Chain Monitoring
Panasonic Corporation	100	50
Sony Corporation	25	100

Table 13: Some results for 'Consumer Durables'.

Consumer Services

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from sustainable products along with their services, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues* *(0)*
- *Sustainable revenues not disclosed* *(25)*
- *Sustainable revenues in the range of 0%-2.49%* *(50)*
- *Sustainable revenues in the range of 2.5%-4.99%* *(75)*
- *Sustainable revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. In this industry green products have only just started. The interval scaling is based on the sustainable revenues in this sector. Starbucks Corporation is a company with an overall sustainable character but it has not disclosed revenues from sustainable products, resulting in a score of 25 on this indicator.

Sustainable Agriculture: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *Promotion of sustainable agriculture techniques* *(25)*
- *Sourcing of green products* *(25)*
- *Promotion of fair trade* *(25)*
- *Screening suppliers* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. For example, Starbucks Corporation has a policy where the second and third items are explicitly mentioned, but the other two are not implemented or disclosed. Therefore, Starbucks Corporation scores 50 on this indicator.

Company	Sustainable Products & Services	Sustainable Agriculture
Sodexo S.A.	25	100
Starbucks Corporation	25	50

Table 14: Some results for 'Consumer Services'.

Diversified Financials

Sustainable Products & Services: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Sustainable services a bank offers, e.g. green bonds* *(25)*
- *Disclosure on sustainable transactions volume in Euros, Dollars or Yen* *(25)*
- *Mentioning of new target levels* *(25)*
- *Explicit deadlines to reach targets* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, European Investment Bank performs excellent in its sector. It offers a range of sustainable investment opportunities, including Climate Awareness Bonds. Revenues are disclosed and sustainable targets are implemented. The explicitly mentioned deadline to achieve this is 2020. This disclosure is the reason European Investment Bank scores 100 points on this indicator.

Financial Inclusion: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to involve poor or low-income people* *(25)*
- *Programmes to educate low-income communities* *(25)*
- *The bank has microfinance funds* *(25)*
- *The bank supports small or startup businesses* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, McGraw Hill Financial performs average in its sector. It offers a microfinance fund to empower women. Besides, it states it offers special programmes for disadvantaged individuals. This disclosure is the reason McGraw Hill Financial scores 50 points.

Company	Sustainable Products & Services	Financial Inclusion
McGraw Hill Financial, Inc.	25	50
European Investment Bank	100	100

Table 15: Some results for 'Diversified Financials'.

Electrical Equipment

Cleantech Revenues: Disclosure on the percentage of total revenues that came from clean technology or climate friendly products, where points to score depend on the interval the revenues belong to:

- *No clean technology* *(0)*
- *Clean technology revenues not disclosed* *(25)*
- *Clean technology revenues in the range of 0%-4.99%* *(50)*
- *Clean technology revenues in the range of 5%-9.99%* *(75)*
- *Clean technology revenues > 10%* *(100)*

The scoring-scale ranges from 0 – 100 and higher clean technology revenues score more points. By satisfying the 0%-4.99% interval the score will be 50. In this industry clean technology products are in a more advanced state compared to other industries. For example, of total revenues of Abb Ltd. 50% came from clean technology products, leading to a score of 100 (Abb Ltd., 2015). On the other hand, Eaton Corporation did not disclose clean technology revenues (Sustainalytics, 2016).

Supplier Environmental Programmes: There should be a policy on environmental performance of suppliers which includes the following items, where points available on each sub indicator are between brackets:

- *Use of environmental standards* *(25)*
- *Monitoring and reporting performance over time* *(25)*
- *External certification of suppliers* *(25)*
- *Targets and deadlines for improvement* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. For example, Abb Ltd. discloses on three items and scores 75 points.

Company	Clean Technology Revenues	Environmental Programmes
Eaton Corporation	25	25
Abb Ltd.	100	75

Table 16: Some results for 'Electrical Equipment'.

Food Products

Organic Products: Disclosure on the percentage of total revenues that came from organic products, where points to score depend on the interval the revenues belong to:

- *No organic products* *(0)*
- *Organic revenues not disclosed* *(25)*
- *Organic revenues in the range of 0%-2.49%* *(50)*
- *Organic revenues in the range of 2.50%-4.99%* *(75)*
- *Organic revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher organic revenues score more points. By satisfying the 0%-2.49% interval, the score will be 50. In this industry so called green products can be found everywhere, but organic products have only just emerged. The interval scaling is based on the small organic revenues in this sector. Unfortunately, its sector leader Koninklijke Wessanen N.V. is not part of our large capital universe. It had 71% of organic revenues (Koninklijke Wessanen N.V., 2015). For example, BRF S.A. does not mention anything about organic products resulting in a score of 0.

Sustainable Agriculture: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *Promotion of sustainable agriculture techniques* *(25)*
- *Sourcing of green products* *(25)*
- *Promotion of fair trade* *(25)*
- *Screening suppliers* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. For example, PepsiCo, Inc. has a strong policy all items are explicitly mentioned, as they are trying to change the image of the company (Sustainalytics, 2016). Therefore, PepsiCo, Inc. scores 100 points on this indicator.

Company	Organic Products	Sustainable Agriculture
BRF S.A.	0	25
PepsiCo, Inc.	50	100

Table 17: Some results for 'Food Products'.

Food Retailers

Organic Products: Disclosure on the percentage of total revenues that came from organic products, where points to score depend on the interval the revenues belong to:

- *No organic products* *(0)*
- *Organic revenues not disclosed* *(25)*
- *Organic revenues in the range of 0%-0.99%* *(50)*
- *Organic revenues in the range of 1%-1.99%* *(75)*
- *Organic revenues > 2%* *(100)*

The scoring-scale ranges from 0 – 100 and higher organic revenues score more points. By satisfying the 0%-0.99% interval the score will be 50. In this industry there are thousands of products available and so called green products can be found everywhere, but organic products are really rare. The interval scaling is based on the small organic revenues in this sector. For example, of total revenues of Tesco PLC not even a tiny 1% came from organic products, leading to a score of 50.

Sustainable Food: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *Sustainable agricultural or aqua cultural products* *(25)*
- *Sourcing of bio products* *(25)*
- *Promotion of fair trade* *(25)*
- *Promotion of local food* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. For example, Tesco PLC has a strong policy all items are explicitly mentioned, as they are trying to change the image of the company (Tesco PLC, 2016). Therefore, Tesco PLC scores 100 points on this indicator.

Company	Organic Products	Sustainable Food Programmes
Aeon Co., Ltd.	50	25
Tesco PLC	50	100

Table 18: Some results for 'Food Retailers'.

Healthcare

Animal Testing Policy: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *Company does not test on animals except where legally required* *(25)*
- *Policy to reduce number of tests* *(25)*
- *Policy to replace animal testing* *(25)*
- *Best practice standards implemented* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. When a company never conducts animal testing the score will be 100. By satisfying two items the score will be 50. For example, Essilor International SA has a policy to never test on animals (Essilor International SA, 2015). Therefore, Essilor International SA scores 100 on this indicator.

Access to Health Care: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *Long-term availability or affordability of products or services* *(25)*
- *Capacity to expand healthcare to low income communities* *(25)*
- *Quantitative or qualitative targets and report progress* *(25)*
- *Board responsibility and commitment* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. By satisfying two items the score will be 50. For example, Essilor International SA satisfies all items listed (Sustainalytics, 2016). Therefore, Essilor International SA scores 100 on this indicator.

Company	Animal Testing Policy	Access to Health Care
Aetna Inc.	50	25
Essilor International SA	100	100

Table 19: Some results for 'Healthcare'.

Household Products

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from sustainable products along with their services, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues* *(0)*
- *Sustainable revenues not disclosed* *(25)*
- *Sustainable revenues in the range of 0%-2.49%* *(50)*
- *Sustainable revenues in the range of 2.5%-4.99%* *(75)*
- *Sustainable revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. The interval scaling is based on the sustainable revenues in this sector. For example, of total revenues of Procter & Gamble Co. over 5% came from sustainable products, leading to a score of 100 (Procter & Gamble Co., 2015).

Supply Chain Monitoring: Have been there been supplier monitoring activities? There should be a policy on the following items, where points available on each sub indicator are between brackets:

- *A formal monitoring system implemented* *(25)*
- *Evaluation of ethical or governance performance* *(25)*
- *Evaluation of social performance* *(25)*
- *Evaluation of environmental performance* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying the first and the third items the score will be 50. For example, Procter & Gamble Co. has a policy where all items are explicitly mentioned and scores 100 on this indicator.

Company	Sustainable Products & Services	Supply Chain Monitoring
Beiersdorf AG	25	100
Procter & Gamble Co.	100	100

Table 20: Some results for 'Household Products'.

Industrial Conglomerates

Cleantech Revenues: Disclosure on the percentage of total revenues that came from clean technology or climate friendly products, where points to score depend on the interval the revenues belong to:

- *No clean technology* *(0)*
- *Clean technology revenues not disclosed* *(25)*
- *Clean technology revenues in the range of 0%-2.49%* *(50)*
- *Clean technology revenues in the range of 2.5%-4.99%* *(75)*
- *Clean technology revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher clean technology revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. In this industry the emergence of clean technology products has only just started. For example, of total revenues of Toshiba Corp. more than 5% came from clean technology products, resulting in a score of 100 (Toshiba Corp., 2015).

Supplier Environmental Programmes: There should be a policy on environmental performance of suppliers which includes the following items, where points available on each sub indicator are between brackets:

- *Use of environmental standards* *(25)*
- *Monitoring and reporting performance over time* *(25)*
- *External certification of suppliers* *(25)*
- *Targets and deadlines for improvement* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. For example, 3M Company discloses on three items but fails to mention targets and deadlines for improvement. This is the reason it scores 75 points on this indicator.

Company	Clean Technology Revenues	Environmental Programmes
3M Company	25	75
Toshiba Corp.	100	100

Table 21: Some results for 'Industrial Conglomerates'.

Insurance

Sustainable Products & Services: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Sustainable services an insurer offers, e.g. insuring renewable energy projects* *(25)*
- *Disclosure on sustainable transactions volume in Euros, Dollars or Yen* *(25)*
- *Mentioning of new target levels* *(25)*
- *Explicit deadlines to reach targets* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, NN Group N.V. performs average in its sector. It offers a range of different SRI funds and discloses sustainable revenues. However, it fails to set new target levels or mention explicit deadlines. This disclosure is the reason NN Group N.V. scores 50 points (NN Group N.V., 2015).

Financial Inclusion: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to involve poor or low-income people* *(25)*
- *Programmes to educate low-income communities* *(25)*
- *The insurer has micro insurance funds* *(25)*
- *The insurer supports small or startup initiatives* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, AXA Group performs really well in its sector. It satisfies all listed items (Sustainalytics, 2016). This disclosure is the reason AXA Group scores 100 points.

Company	Sustainable Products & Services	Financial Inclusion
NN Group N.V.	50	25
AXA Group	100	100

Table 22: Some results for 'Insurance'.

Machinery

Green Procurement: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *An item that discusses process improvement requirements* *(30)*
- *An item that discusses product improvement requirements* *(30)*
- *An item about sourcing green office products* *(20)*
- *An item that states to buy from green suppliers* *(20)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying the first and the third item the score will be 50. For example, Volvo AB has a policy where the first two items are explicitly mentioned, but the last two are not implemented or disclosed. Therefore, Volvo AB scores 60 on this indicator.

Cleantech Revenues: Disclosure on the percentage of total revenues that came from clean technology or climate friendly products, where points to score depend on the interval the revenues belong to:

- *No clean technology* *(0)*
- *Clean technology revenues not disclosed* *(25)*
- *Clean technology revenues in the range of 0%-2.49%* *(50)*
- *Clean technology revenues in the range of 2.5%-4.99%* *(75)*
- *Clean technology revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher clean technology revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. In this industry the emergence of clean technology products has only just started. For example, of total revenues of Kone Oyj more than 5% came from clean technology products, resulting in a score of 100 (Kone Oyj, 2015).

Company	Green Procurement Policy	Clean Technology Revenues
Kone Oyj	60	100
Volvo AB	60	25

Table 23: Some results for 'Machinery'.

Media

Independent Media: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to involve poor or low-income people* *(25)*
- *Programmes to educate low-income communities* *(25)*
- *Programmes to increase education access in developing countries* *(25)*
- *Development of independent media* *(25)*

The scoring-scale ranges from 0 – 100 and more information scores points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, WPP plc discloses not any information, which leads to a score of 0 points.

Data Privacy: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *People should be notified in a timely manner in case of policy changes (25)*
- *Collection of information should be informed and limited (25)*
- *Clear terms involving the use of personal information (25)*
- *Data security safeguards should be implemented (25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. By satisfying two items the score will be 50. To illustrate the scores, Wolters Kluwers NV does not disclose information on the first sub indicator, but has satisfies the other three (Sustainalytics, 2016). This disclosure scores 75 points.

Company	Independent Media Programmes	Data Privacy Policy
Wolters Kluwer NV	100	75
WPP plc	0	25

Table 24: Some results for 'Media'.

Paper & Forestry

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from products that improve the sustainability of transport vehicles, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues or no disclosure (0)*
- *Sustainable revenues in the range of 0%-4.99% (25)*
- *Sustainable revenues in the range of 5%-9.99% (50)*
- *Sustainable revenues in the range of 10%-14.99% (75)*
- *Sustainable revenues > 15% (100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 5%-9.99% interval the score will be 50. The interval scaling is based on the sustainable revenues in this sector. For example, of total revenues of UPM-Kymmene Oyj. over 75% came from sustainable products, leading to a score of 100 on this indicator (UPM-Kymmene Oyj., 2015).

Forest Certifications: Disclosure on the percentage of forest managed by the company which is FSC certified. The scoring-scale ranges from 0 – 100 and the percentage of forest certifications is equal to the score. For example, Stora Enso Oyj mentions on its website that all of its forests are certified (Stora Enso Oyj, 2015). This disclosure leads to a score of 100.

Company	Sustainable Products & Services	Forest Certifications
Stora Enso Oyj	25	100
UPM-Kymmene Oyj.	100	100

Table 25: Some results for 'Paper & Forestry'.

Pharmaceuticals

Access to Medicine Programme: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *Long-term availability or affordability of medicine* *(25)*
- *Capacity to expand healthcare to low income communities* *(25)*
- *Quantitative or qualitative targets and report progress* *(25)*
- *Board responsibility and commitment* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. By satisfying two items the score will be 50. For example, Merck KGaA satisfies all items listed (Merck KGaA, 2015). Therefore, Merck KGaA scores 100 on this indicator.

Neglected Diseases R&D: This indicator checks if there is a policy on the following items, where points available on each sub indicator are between brackets:

- *Research and development on neglected tropical diseases* *(25)*
- *Research and development on high burden diseases* *(25)*
- *Partnerships with other companies to share existing knowledge* *(25)*
- *Partnerships with public organizations to share existing knowledge* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. By satisfying two items the score will be 50. For example, Merck KGaA satisfies all items listed (Merck KGaA, 2015). Therefore, Merck KGaA scores 100 on this indicator.

Company	Access to Medicine Programme	Neglected Diseases R&D
Merck KGaA	100	100
Biogen Idec Inc.	50	0

Table 26: Some results for 'Pharmaceuticals'.

Real Estate

Green Building Investments: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to increase investments in sustainable buildings* *(25)*
- *Programmes to renovate buildings for certifications* *(25)*
- *Mentioning of new target levels* *(25)*
- *Explicit deadlines to reach targets* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, Klepierre SA performs really well in its sector. It satisfies all listed items and scores 100 points.

Share of Green Buildings: Disclosure on the share of green buildings of the total real estate portfolio, where points to score depend on the interval the share belong to:

- *No green buildings* *(0)*
- *Share of green buildings not disclosed* *(25)*
- *Share of green buildings in the range of 0%-2.49%* *(50)*
- *Share of green buildings in the range of 2.5%-4.99%* *(75)*
- *Share of green buildings > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and a higher share of green buildings scores more points. By satisfying the 0%-2.49% interval the score will be 50. In this industry green buildings are now starting to emerge. The interval scaling is based on the share of green buildings in this sector. For example, Prologis, Inc. performs very well. The company has achieved sustainable building certifications for buildings in its portfolio amounting to 43 million square feet, given that their total portfolio is 474 million square feet (Prologis, Inc., 2015). A simple calculation gives 9.07% which is substantially higher than 5%. This is why Prologis, Inc. scores 100 on this indicator.

Company	Green Building Investments	Share of Green Buildings
Klepierre SA	100	50
Prologis, Inc.	100	100

Table 27: Some results for 'Real Estate'.

Retailing

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from sustainable products along with their services, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues* *(0)*
- *Sustainable revenues not disclosed* *(25)*
- *Sustainable revenues in the range of 0%-2.49%* *(50)*
- *Sustainable revenues in the range of 2.5%-4.99%* *(75)*
- *Sustainable revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. The interval scaling is based on the sustainable revenues in this sector. For example, Target Corp. mentions it has sustainable products but does not disclose their revenues. It thus scores 25 points on this indicator.

Supply Chain Management: There should be initiatives to control the supply chain. A policy on the following items is needed, where points available on each sub indicator are between brackets:

- *Internal and external evaluations of suppliers* *(25)*
- *Board and management responsibility for supply chain management* *(25)*
- *Targets and deadlines for improvement* *(25)*
- *Monitoring of supply chain and report on progress using standards* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate, Hennes & Mauritz AB has a policy where all items are explicitly mentioned so it scores 100 on this indicator.

Company	Sustainable Products & Services	Supply Chain Management
Target Corp.	25	75
Hennes & Mauritz AB	25	100

Table 28: Some results for 'Retailing'.

Semiconductors

Eco-Design: Environmental impact should be considered at the design stage of new products. A policy on the following items is needed, where points available on each sub indicator are between brackets:

- *Reducing materials or waste* *(25)*
- *Reducing power consumption* *(25)*
- *Targets and deadlines for improvement* *(25)*
- *Sourcing from green suppliers* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item it scores the available points on that item. By satisfying two items the score will be 50. To illustrate, Applied Materials Inc. has a policy where all items are explicitly mentioned so it scores 100 on this indicator.

Product Stewardship Programmes: This indicator checks if the company has a programme for end-of-life product management. A policy on the following items is needed, where points available on each sub indicator are between brackets:

- *Recycling products* *(25)*
- *Products are WEEE certified* *(25)*
- *Targets and deadlines for improvement* *(25)*
- *Take- or buyback programs* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item it scores the available points on that item. By satisfying two items the score will be 50. To illustrate, Applied Materials Inc. has a policy where two items are explicitly mentioned (Sustainalytics, 2016). This disclosure scores 50 on this indicator.

Company	Eco-Design	Product Stewardship
Applied Materials Inc.	100	0
Tokyo Electron Ltd.	50	50

Table 29: Some results for 'Semiconductors'.

Software & Services

Digital Divide: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to involve poor or low-income people* *(25)*
- *Programmes to educate people with different kinds of backgrounds* *(25)*
- *Programmes to increase access in developing countries* *(25)*
- *Easy to use products or services* *(25)*

The scoring-scale ranges from 0 – 100 and more information scores points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, Oracle Corporation discloses information on all items, which leads to a score of 100 points (Oracle Corporation, 2015).

Data Privacy: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *People should be notified in a timely manner in case of policy changes* *(25)*
- *Collection of information should be informed and limited* *(25)*
- *Clear terms involving the use of personal information* *(25)*
- *Data security safeguards should be implemented* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying three items the score will be 75. To illustrate the scores, Accenture plc only discloses information on two items (Sustainalytics, 2016). This disclosure leads to a score of 50 points.

Company	Digital Divide Programmes	Data Privacy Policy
Accenture plc	0	50
Oracle Corporation	100	75

Table 30: Some results for 'Software & Services'.

Technology Hardware

Product Stewardship: This indicator checks if the company has a programme for end-of-life product management. A policy on the following items is needed, where points available on each sub indicator are between brackets:

- *Recycling products* *(25)*
- *Products are WEEE certified* *(25)*
- *Targets and deadlines for improvement* *(25)*
- *Take- or buyback programs* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item it scores the available points on that item. By satisfying two items the score will be 50. To illustrate, NEC Corp. has a policy where two items are explicitly mentioned (NEC Corp., 2015). This disclosure scores 50 on this indicator.

Digital Divide: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to involve poor or low-income people* *(25)*
- *Programmes to educate people with different kinds of backgrounds* *(25)*
- *Programmes to increase access in developing countries* *(25)*
- *Easy to use products or services* *(25)*

The scoring-scale ranges from 0 – 100 and more information scores points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate the scores, NEC Corp. discloses information on all items, which leads to a score of 100 points (NEC Corp., 2015).

Company	Product Stewardship	Digital Divide Programmes
NEC Corp.	100	100
Nokia Corporation	50	100

Table 31: Some results for 'Technology Hardware'.

Telecommunication Services

Digital Divide: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *Programmes to involve poor or low-income people* *(25)*
- *Programmes to educate people with different kinds of backgrounds* *(25)*
- *Programmes to increase access in developing countries* *(25)*
- *Easy to use products or services* *(25)*

The scoring-scale ranges from 0 – 100 and more information scores points. If a company satisfies an item, it scores the available points on that item. By satisfying three items the score will be 75. To illustrate the scores, BCE Inc. discloses information on all items, which leads to a score of 100 points (BCE, Inc., 2015).

Data Privacy: This indicator checks if there is information on the following items, where points available on each sub indicator are between brackets:

- *People should be notified in a timely manner in case of policy changes* *(25)*
- *Collection of information should be informed and limited* *(25)*
- *Clear terms involving the use of personal information* *(25)*
- *Data security safeguards should be implemented* *(25)*

The scoring-scale ranges from 0 – 100 and more information on the sub indicators scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. For example, BCE Inc. has satisfied all four items. This disclosure scores 100 points.

Company	Digital Divide Programmes	Data Privacy Policy
BCE, Inc.	100	100
Telefonica, S.A.	100	25

Table 32: Some results for 'Telecommunication Services'.

Textiles & Apparel

Supplier Environmental Programmes: There should be a policy on environmental performance of suppliers which includes the following items, where points available on each sub indicator are between brackets:

- *Use of environmental standards* *(25)*
- *Monitoring and reporting performance over time* *(25)*
- *External certification of suppliers* *(25)*
- *Targets and deadlines for improvement* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying only one item the score will be 25. For example, adidas AG implements all in their environmental policy (adidas AG, 2015). It scores 100 points.

Supply Chain Management: There should be initiatives to control the supply chain. A policy on the following items is needed, where points available on each sub indicator are between brackets:

- *Internal and external evaluations of suppliers* *(25)*
- *Board and management responsibility for supply chain management* *(25)*
- *Targets and deadlines for improvement* *(25)*
- *Monitoring of supply chain and report on progress using standards* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate, adidas AG mentions all items in its sustainability report (adidas AG, 2015). It scores 100 points on this indicator.

Company	Environmental Programmes	Supply Chain Management
adidas AG	100	100
V.F. Corporation	75	75

Table 33: Some results for 'Textiles & Apparel'.

Transportation

Green Logistics: The company should have initiatives to improve the environmental performance of its logistic operations. A policy on the following items is needed, where points available on each sub indicator are between brackets:

- *Efficient fleet management* *(25)*
- *Programmes to improve environmental performance of logistics* *(25)*
- *Targets and deadlines for improvement* *(25)*
- *Monitoring and reporting on progress* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate, Deutsche Bahn AG mentions all items in its sustainability report (Deutsche Bahn AG, 2013). It scores 100 points.

Sustainable Products & Services: Disclosure on the percentage of total revenues that came from sustainable products along with their services, where points to score depend on the interval the revenues belong to:

- *No sustainable revenues* *(0)*
- *Sustainable revenues not disclosed* *(25)*
- *Sustainable revenues in the range of 0%-2.49%* *(50)*
- *Sustainable revenues in the range of 2.5%-4.99%* *(75)*
- *Sustainable revenues > 5%* *(100)*

The scoring-scale ranges from 0 – 100 and higher sustainable revenues score more points. By satisfying the 0%-2.49% interval the score will be 50. The interval scaling is based on the sustainable revenues in this sector. For example, PostNL N.V. publishes no information about sustainable products at all. It thus scores 0 points on this indicator.

Company	Green Logistics Programmes	Sustainable Products & Services
Deutsche Bahn AG	100	100
PostNL N.V.	50	0

Table 34: Some results for 'Transportation'.

Transportation Infrastructure

Green Logistics: The company should have initiatives to improve the environmental performance of its logistic operations. A policy on the following items is needed, where points available on each sub indicator are between brackets:

- *Efficient fleet management* *(25)*
- *Programmes to improve environmental performance of logistics* *(25)*
- *Targets and deadlines for improvement* *(25)*
- *Monitoring and reporting on progress* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying two items the score will be 50. To illustrate, Atlantia SpA discloses no information on this subject and scores 0 points on this indicator.

Supply Chain Monitoring: Have been there been supplier monitoring activities? There should be a policy on the following items, where points available on each sub indicator are between brackets:

- *A formal monitoring system implemented* *(25)*
- *Evaluation of ethical or governance performance* *(25)*
- *Evaluation of social performance* *(25)*
- *Evaluation of environmental performance* *(25)*

The scoring-scale ranges from 0 – 100 and more information about the policy scores more points. If a company satisfies an item, it scores the available points on that item. By satisfying the first and the third items the score will be 50. For example, Aeroports de Paris has a policy where all items are mentioned and scores 100 on this indicator.

Company	Green Logistics Programmes	Supply Chain Monitoring
Aeroports de Paris	100	100
Atlantia SpA	0	50

Table 35: Some results for 'Transportation Infrastructure'.

Utilities

Water Intensity: Disclosure on water efficiency. The company should have an efficient water usage programme. Points to score depend on the interval the company's efficiency belongs to:

- *> 25% above industry average* *(0)*
- *10-25% above industry average* *(25)*
- *Between 10% below and 10% above industry average* *(50)*
- *10-25% below industry average* *(75)*
- *> 25% below industry average* *(100)*

The scoring-scale ranges from 0 – 100 and a low efficiency is deemed bad. By satisfying the average industry efficiency, the score will be 50. Advice on how to use this scaling came from Sustainalytics. For example, Veolia Environnement S.A. scores 100 because based on information from its corporate website its water efficiency is better than the industry average.

Carbon Intensity: Disclosure on the CO_2 emissions in metric tons, where 1,000,000 metric tons is equivalent to 1,000 x 1,000 metric tons. Points to score depend on the interval in thousand metric tons the CO_2 emissions belong to:

- *> 2,500* *(0)*
- *2,000-2,500* *(25)*
- *1,500-2,000* *(50)*
- *1,000-1,500* *(75)*
- *< 1,000* *(100)*

The scoring-scale ranges from 0 – 100 and high emissions are deemed bad. By satisfying the average industry CO_2 emissions interval 1,750-2,000 thousand metric tons the score will be 50. Advice on how to use this scaling came from Sustainalytics. For example, Veolia Environnement S.A. scores 75 because based on information from its corporate website it is has slightly more emissions than 1,000 thousand metric tons of CO_2 emissions.

Company	Water Intensity	Carbon Intensity
Veolia Environnement S.A.	100	75
Hera S.p.A.	100	100

Table 36: Some results for 'Utilities'.

6.3 Results

The companies which survived the restrictions of the literature and scored high enough on the general indicators already have more impact than the ones that failed these steps. So one could say that a company that scores low on the specific indicators is still better than the ones that did not even make it this far, which is true, but we have decided also to make use of a best in class approach. Both specific indicators are given equal weight. Since the average of the two also lies in a 0 – 100 interval, a company must have a minimum average of 50 to be part of the final universe. When we apply this approach, our final list of companies drops to 104. There is a substantial difference between this number and 479, the number of companies which were best in class according to ESG criteria that we originally started with in this research.

6.4 Comments

We have developed a framework that consists of five indicators. Three of them are general and thus applicable to each industry sector, resulting in a restrictive character. The three indicators were chosen because they were clearest in terms of how to use them. Besides ease of use, we were able to score all the companies on these indicators because the data was available, which is of utmost importance.

For each industry sector we have chosen two specific indicators of which is believed they actually grasp impact. The same reasoning applies here; there were other indicators which could have been chosen for the industry sector. However, there were also some official impact indicators of IRIS which we believe do not actually say something about impact. For example, for the sector 'Healthcare' the number of healthcare facilities is an official IRIS indicator, but it says little or nothing about impact. A health organization can have hundreds of facilities, but if they all perform bad there clearly is no impact. On the contrary, there is most probably negative impact created.

The list of 104 remaining companies can now be used to build and back test actual impact portfolios. Now the research on impact is completed, the next step is to shift the focus to the financial aspects of investing. The results of this aspect will be discussed in the next chapter.

7 Impact portfolios

In this chapter we will create different kinds of portfolios based on our universe of companies. To start, some theory on portfolio diversification will be discussed. Finally, the actual portfolios will be shown and compared to a benchmark along with some other financial indicators.

7.1 Portfolio diversification

Investors build their own portfolios to attract positive year end results in the form of profits. Instead of buying an index tracker, such as the AEX or S&P500, which keeps track of all its underlying companies, an investor chooses only a handful of company shares of which he believes will outperform the market, or at least attract some positive results. A good portfolio will be diversified.

In finance, diversification is a term for allocation of capital in such a way the exposure to any one particular asset is reduced. Normally, an investor invests in a variety of assets to reduce risk or volatility. A diversified portfolio will have less variance than the weighted average variance of the individual stocks. A common proverb to illustrate diversification is: 'do not put all your eggs in one basket'. We will now discuss some aspects of diversification in a little more detail, knowing that portfolio diversification is a research project on its own. Technical details are left out of scope in this research project.

7.1.1 Asset classes

There are different kinds of instruments to use for a portfolio. One can think of public and private equity, fixed-income, cash or real estate, among many different specialized instruments. Within equity, every share has its own expected return and risk. Investors demand a higher return to compensate for higher risk. By investing in riskier equity (a higher expected return demanded), measured by a stock's volatility, an investor can also invest in less volatile stocks (a lower expected return demanded) to balance the risk of the portfolio. In finance, volatility is the degree of variation of a trading price series over time as measured by the standard deviation of returns.

Instead of building a stock only portfolio there are other ways to diversify the portfolio. For example, by investing a part of available funds in fixed-income securities, which are investing types for which real return rates or periodic income is received at regular intervals along with payment of principal at maturity. The most common and well-known type of a fixed-income security is a bond, issued by governments or corporate institutions. Fixed-income securities are usually bought to build in some safety in the portfolio due to low(er) risk, hence the name fixed-income. There are many more asset classes, which are left out in detail here.

7.1.2 Industry sectors

One way to diversify to the portfolio is by investing in multiple instruments as mentioned in the previous section. Another important aspect is to spread funds over more than one industry sector. For example, we own a portfolio of only wine stocks. If grape harvest is poor, the price of wine will rise and share prices of wine stocks will probably drop. The portfolio will experience a noticeable drop in value. Now we add a couple of beer stocks. Our portfolio will in this case be partly affected. In fact, there is a chance that beer stock prices will rise, as consumers turn to beer as alternative to temporarily expensive wine.

But we could diversify even further because there are many risks that affect both wine and beer stocks because both are involved in beverages. There could be an event that could affect both types of stock and the portfolio would still suffer from drops in stock prices. Beer and wine have a strong correlation, which is a statistical relationship involving dependence. Correlation refers to the extent to which two variables, in our case stocks, have a linear relationship with each other. Positive correlation means two variables tend to move in the same way, while negative correlation means two variables mean to move in opposite ways. To make up for the correlation effect, a good portfolio has stocks from different kinds of industry sectors.

7.1.3 International markets

Even if the portfolio has multiple invest instruments and different industry sectors, the investor has one last thing to take into account. It is in the best interest of the investor also to spread his investments across different markets. If he only buys instruments in the United States, then an event in that country could damage the portfolio severely. Therefore, the investor should also consider to buy instruments listed in Europe, Africa, Asia, the Pacific, and the rest of the Americas to take into account certain country risks. Important aspects to be careful with are changes in currencies. For example, the portfolio has international stocks and is valued in Euros. If a certain Japanese stock's price is rising, but the Euro-Yen spot rate is also rising, the portfolio does not earn much as it is listed in Euros.

7.1.4 Diversification example: Value at Risk

A single number summarizing the total risk in a portfolio of financial assets is Value at Risk, now abbreviated as VaR. When using the VaR measure, an investor is interested in making a statement of the following form: I am X percent certain there will not be a loss of more than Y euros in the next Z days (Hull, 2012). The variable Y is the VaR of the portfolio. It takes into account two parameters, namely time Z and confidence level X (%). Assuming returns are normally distributed, the VaR is calculated in the following way:

$$VaR = \sigma N^{-1}(X)$$

Assume we have a position of €5 million in shares of company A and that its daily volatility is 2%. In finance, volatility is the degree of variation of a trading price series over time as measured by the standard deviation of returns. Because the size of our position is €5 million, the standard deviation of daily changes in the value of the position is 2% of €5 million, or €100,000 daily. The 1-day 99% VaR is:

$$N^{-1}(0.99) * €100{,}000 = 2.33 * €100{,}0000 = €233{,}000$$

Now assume we have a position of €10 million in shares of company B and that its daily volatility is 1%. Because the size of our position is €10 million, the standard deviation of daily changes in the value of the position is 1% of €10 million, or €100,000 daily. Again, the 1-day 99% VaR is:

$$N^{-1}(0.99) * €100{,}000 = 2.33 * €100{,}000 = €233{,}000$$

A standard result in statistics states that, if two variables S and T have standard deviations equal to σ_S and σ_T with coefficient of correlation between them equal to ρ, the standard deviation of variable S+T is given by:

$$\sigma_{S+T} = \sqrt{\sigma_S^2 + \sigma_T^2 + 2\rho\sigma_S\sigma_T}$$

Now consider a portfolio of both positions, so €5 million shares in company A and €10 million in shares in company B. If the correlation between our stocks A and B is for example 0.35, then the standard deviation of our portfolio A+B is:

$$\sigma_{A+B} = \sqrt{€100{,}000^2 + €100{,}000^2 + 2 * 0.35 * €100{,}000 * €100{,}000} = €164{,}317$$

The 1-day 99% VaR for the portfolio is:

$$N^{-1}(0.99) * €164{,}317 = 2.33 * €164{,}317 = €382{,}859$$

If we add the 1-day 99% VaR of the two single stock positions together, the total VaR would be €233,000 + €233,000 = €466,000 while the VaR of the portfolio is €382,859 and thus lower. The difference of €466,000 – €382,859 = €83,141 is called the benefit of diversification, showing the importance of a well-diversified portfolio. In other words, some of the risk is 'diversified away'.

7.2 Portfolios

In this section impact portfolios are built and back tested and their results will be compared with a benchmark over a couple of years. By taking into account Section 7.1 an investor can build its portfolio. The only thing left to do is the selection of the individual investment securities that together will make up to the portfolio. Valuation of these securities is the next step for an investor.

Choosing between different shares for example is done on basis of multiple financial indicators. But we are going to back test the portfolios, which means that valuation of securities is out of scope in this research. If we would research stocks back testing makes no sense as we would pick stocks that performed well the last year. Results would be biased as we would only show positive results for impact and jump to conclusions. So, the portfolios are solely based on impact. We are curious whether companies, based on our impact framework, would outperform the benchmark or not. In the next sub sections different impact portfolios are discussed and shown in a graph. The MSCI World Index is chosen as benchmark.

7.2.1 Diversified portfolio

The risk of a stock portfolio depends on the proportions of the individual stocks, their variances, and their correlations. A change in any of these variables will change the risk of the portfolio. Statman observed that the risk reduction effect diminishes rapidly as the number of stocks increases. He concluded that the economic benefits of diversification are virtually exhausted when a portfolio contains thirty or so stocks (Statman, 1987).

To take into account the diversification effect we have built a 30-stock impact portfolio with exposure in multiple industry sectors and international markets similar to their respective weights in the MSCI World Index itself (MSCI, 2016). In Figure 15 the weights of the industry sectors in the index can be found, whereas Figure 16 shows the weights in the international markets. The companies selected for each industry sector in the portfolio had the best impact scores in their respective industry sector. For example, in our impact portfolio the sector 'Consumer Discretionary' has a weight of 12%, whereas it has 12.5% in the MSCI Index. As an example for the international markets, our exposure in Japan is about the same as in the MSCI Index, or about 8%.

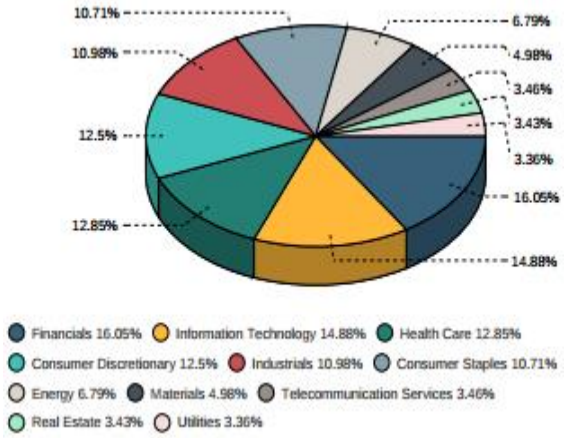


Figure 15: Industry sector weights (MSCI).

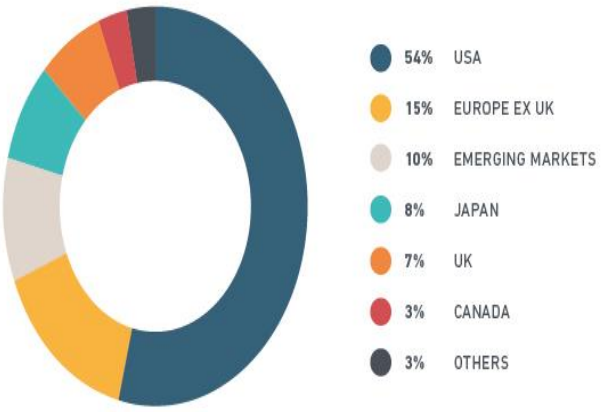


Figure 16: Market weights (MSCI).

The starting amount of €10 million is arbitrarily chosen and all stocks have an equal share of this amount. For example, each company has a share of about 3% as the portfolio contains 30 shares. This means we have picked the four best impact performers for the sector 'Consumer Discretionary, as this sector has 12.5% share in the MSCI Index. The beginning number of stocks for each company, set at day 1, stays the same. In other words, the number of stocks is a constant in the analysis. We have analyzed daily closing prices of the stocks from January 1st 2013 till August 31st 2016. As the portfolio is listed in Euros, we have also accounted for exchange rates by using daily spot rates. Daily closing prices and spot rates have been downloaded from the database of Thomson Reuters Corporation to Microsoft Excel in order to build and analyze the portfolio. To compare results, the MSCI World Index has been chosen as the benchmark. The MSCI Index is originally listed in US Dollar, but is also calculated in Euros.

The financial indicator return has been computed in the following way. The daily return $u_{i,t}$ is calculated as the return of the stock price $S_{i,t}$ during day t of company i. For the purposes of monitoring daily volatility, this formula gives the percentage change (daily in- or decrease in the closing price S_i) in the stock price between the end of day t-1 and day t, so that:

$$u_{i,t} = \frac{S_{i,t} - S_{i,t-1}}{S_{i,t-1}}$$

For the entire time period we were able to calculate daily returns for each stock according to this formula. As an estimation for the returns for the coming days, the average daily return can be used. This allows us to calculate the average daily return:

$$u_{i,avg} = \frac{1}{n}\sum_{t=1}^{n} u_{i,t}$$

The total portfolio return is calculated as the weighted return of the individual stock returns, where the weight is measured as company i stock's share of the portfolio:

$$u_{avg} = w_i * u_{i,avg}$$

Finally, the annualized return of the portfolio can be calculated. Instead of 365 days a year, practitioners tend to the ignore days when the exchange is closed when estimating returns from

historical data. The number of trading days in a year is usually assumed to be 252 for stocks (Hull, 2012). In equation:

$$r = trading\ days * u_{avg} = 252 * u_{avg}$$

For the financial indicator risk the proxy volatility is used. It has been computed in the following way. The variance is the expectation of the squared deviation of the market variable from its average and it informally measures how far the set of closing prices are spread out from their average closing price. The daily variance of stock S_i is calculated in the following way:

$$\sigma_{i,daily}^2 = \frac{1}{n}\sum_{t=1}^{n}(u_{i,t} - u_{i,avg})^2$$

In similar fashion of the last formula of Section 7.1.4 the variance of the total portfolio is calculated, where the total variance is less than the sum of the individual variances due to the correlation effect.

The standard deviation σ, commonly known as volatility, is the square root of the variance. To compute annual volatility, we also take into account that the trading year exists of 252 days. The following formula is used:

$$\sigma_{annual} = \sqrt{trading\ days} * \sigma_{daily} = \sqrt{252} * \sigma_{daily}$$

Results of the portfolio and benchmark can be found in Table 37 and Figure 15. In monetary terms the portfolio has outperformed the MSCI index. The annual return of the portfolio is much higher than the annual return of the MSCI index. In terms of volatility, as a proxy for risk, both are almost equal. The equations above are also applicable for the coming sections.

Instrument	Starting value	Final value	Annual return	Annual volatility	One-year 99% VaR
Portfolio	€10,000,000	€21,504,386	21.60%	16.38%	€3,811,519
MSCI	€10,000,000	€16,159,930	13.71%	14.23%	€3,309,517

Table 37: Diversified portfolio results.

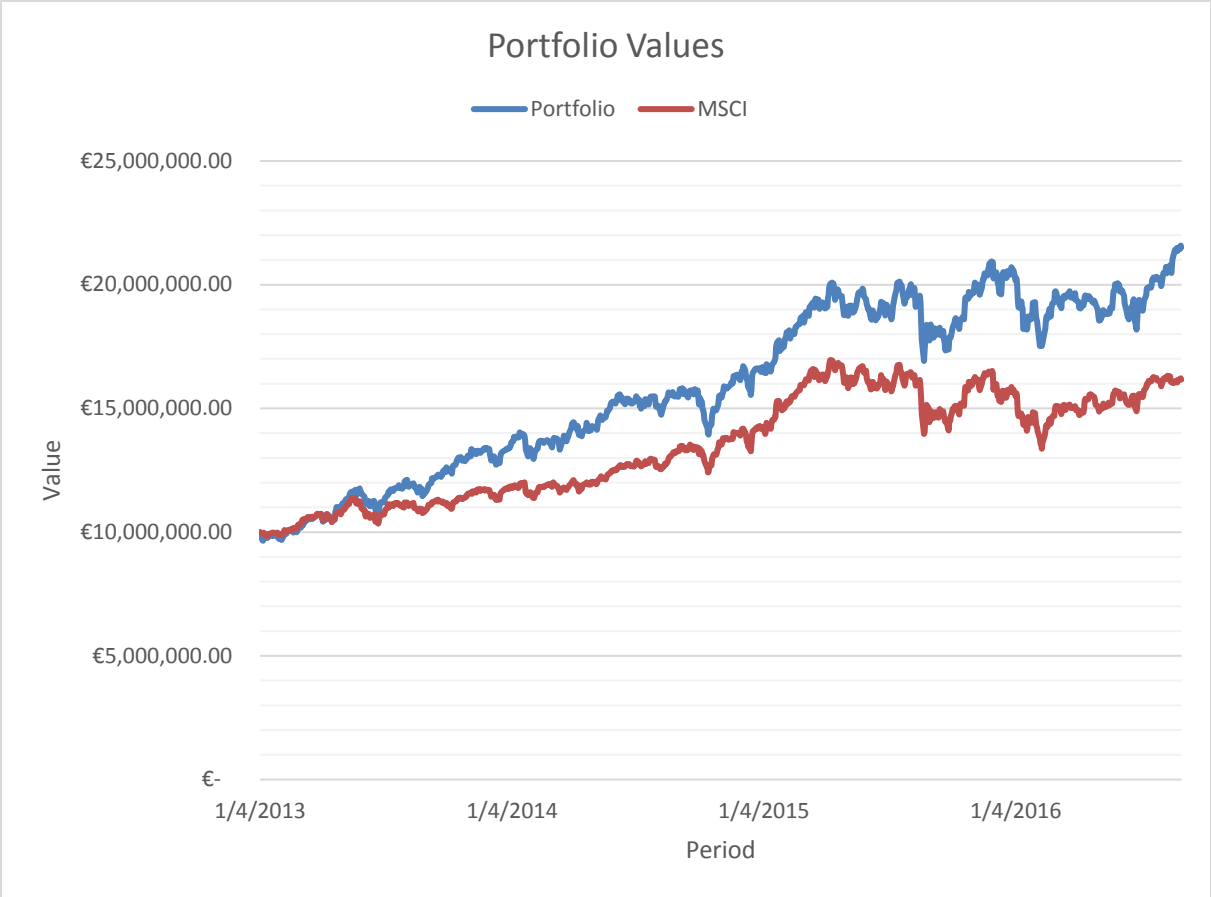


Figure 17: Diversified portfolio value.

7.2.2 Financial portfolio

We have built a 14-stock portfolio with exposure in the international financial sector only, e.g. banks or insurance companies. The 14 companies are all the available financial companies of the impact universe. The starting amount of €10 million is arbitrarily chosen and all stocks have an equal share of this amount. The beginning number of stocks for each company, set at day 1, stays the same. In other words, the number of stocks is a constant in the analysis. We have analyzed daily closing prices of the stocks from January 1st 2013 till August 31st 2016. As the portfolio is listed in Euros, we have also accounted for exchange rates by using daily spot rates. Daily closing prices and spot rates have been downloaded from the database of Thomson Reuters Corporation to Microsoft Excel in order to build and analyze the portfolio. To compare results, the MSCI World Index has been chosen ass the benchmark. The MSCI Index is originally listed in US Dollar, but is also calculated in Euros.

Results of the portfolio and benchmark can be found in Table 38 and Figure 16. In monetary terms the MSCI Index has outperformed the portfolio. The annual return of the MSCI Index is much higher than the annual return of the portfolio. In terms of volatility, as a proxy for risk, the portfolio was much riskier than the MSCI Index. Based on our financial portfolio, it seems the financial sector was not a suitable investment opportunity if we consider these numbers. Another composition of the portfolio will most likely give other results.

Instrument	Starting value	Final value	Annual return	Annual volatility	One-year 99% VaR
Portfolio	€10,000,000	€11,023,215	4.52%	19.71%	€4,584,988
MSCI	€10,000,000	€16,159,930	13.71%	14.23%	€3,309,517

Table 38: Financial portfolio results.

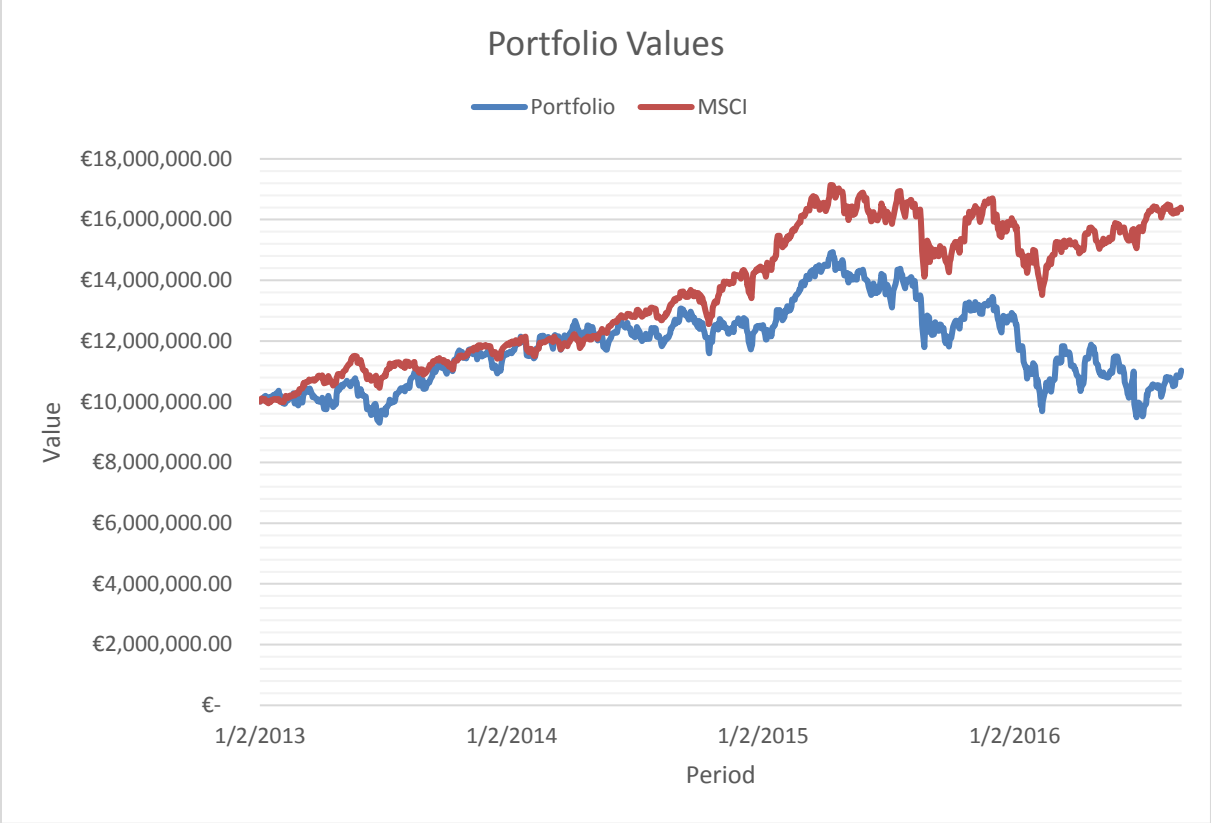


Figure 18: Financial portfolio value.

7.2.3 Healthcare portfolio

We have built a 15-stock portfolio with exposure in the international healthcare sector only, e.g. health companies and pharmaceuticals. The 15 companies are all the available healthcare companies of the impact universe. The starting amount of €10 million is arbitrarily chosen and all stocks have an equal share of this amount. The beginning number of stocks for each company, set at day 1, stays the same. In other words, the number of stocks is a constant in the analysis. We have analyzed daily closing prices of the stocks from January 1st 2013 till August 31st 2016. As the portfolio is listed in Euros, we have also accounted for exchange rates by using daily spot rates. Daily closing prices and spot rates have been downloaded from the database of Thomson Reuters Corporation to Microsoft Excel in order to build and analyze the portfolio. To compare results, the MSCI World Index has been chosen as the benchmark. The MSCI Index is originally listed in US Dollar, but is also calculated in Euros.

Results of the portfolio and benchmark can be found in Table 39 and Figure 17. In monetary terms the MSCI Index has slightly outperformed the portfolio. Both return and risk are almost exactly the same. In other words, considering the numbers, instead of specifically investing in the healthcare sector an investor could also have invested in the MSCI Index itself. Based on our portfolio, it seems

the healthcare sector was quite a suitable investment opportunity if we consider these numbers. Another composition of the portfolio will most likely give other results.

Instrument	Starting value	Final value	Annual return	Annual volatility	One-year 99% VaR
Portfolio	€10,000,000	€15,916,481	13.40%	14.85%	€3,453,968
MSCI	€10,000,000	€16,159,930	13.71%	14.23%	€3,309,517

Table 39: Healthcare portfolio results.

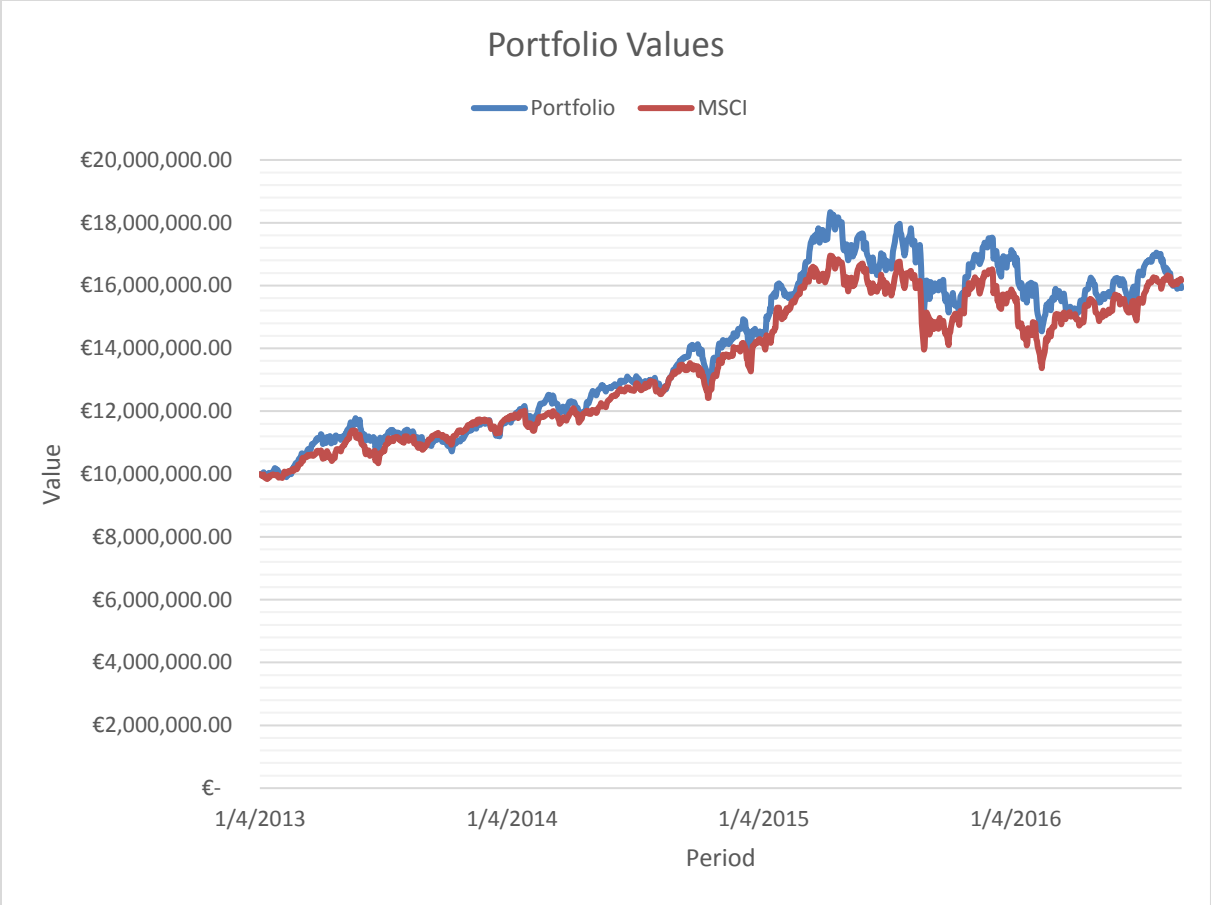


Figure 19: Healthcare portfolio value.

7.2.4 Cleantech portfolio

We have built a 20-stock portfolio with exposure in the international sectors that are related to clean technology. The 20 companies are all the available cleantech companies of the impact universe. The starting amount of €10 million is arbitrarily chosen and all stocks have an equal share of this amount. The beginning number of stocks for each company, set at day 1, stays the same. In other words, the number of stocks is a constant in the analysis. We have analyzed daily closing prices of the stocks from January 1st 2013 till August 31st 2016. As the portfolio is listed in Euros, we have also accounted for exchange rates by using daily spot rates. Daily closing prices and spot rates have been downloaded from the database of Thomson Reuters Corporation to Microsoft Excel in order to build and analyze the portfolio. To compare results, the MSCI World Index has been chosen as the benchmark. The MSCI Index is originally listed in US Dollar, but is also calculated in Euros.

Results of the portfolio and benchmark can be found in Table 40 and Figure 18. In monetary terms the portfolio has outperformed the MSCI Index. The annual return of the portfolio is much higher than the annual return of the MSCI Index. In terms of volatility, as a proxy for risk, the portfolio is also riskier than the MSCI Index. Based on our portfolio, investing in the clean technology sector seemed to be good for the investor's financial position.

Instrument	Starting value	Final value	Annual return	Annual volatility	One-year 99% VaR
Portfolio	€10,000,000	€22,568,537	23.34%	18.98%	€4,416,518
MSCI	€10,000,000	€16,159,930	13.71%	14.23%	€3,309,517

Table 40: Cleantech portfolio results.

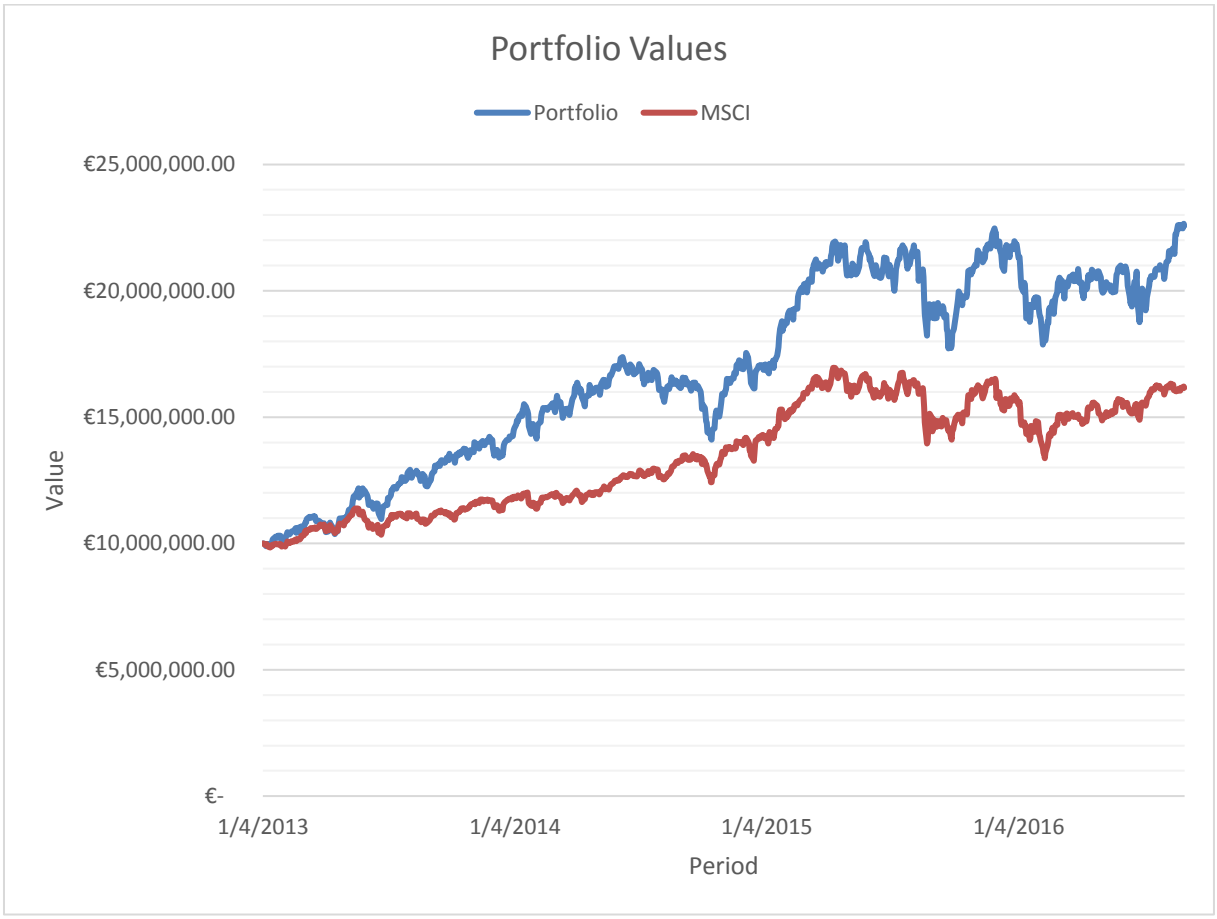


Figure 20: Cleantech portfolio value.

7.3 Conclusion

First thing to note is that the benchmark we have chosen, the MSCI World Index, performed really well from January 1st 2013 till August 31st 2016. If an investor had bought index funds he would have earned nice returns.

Secondly, our diversified impact portfolio performed really well. It outperformed the benchmark significantly. The same applies to our cleantech portfolio, whereas investments in the healthcare sector would have given about the same results as the index. On the other hand, even though our financial portfolio was profitable, investing in the financial sector was risky. Returns were low and the volatility was very high.

Thirdly, as a side note, these positive results do not give any guarantee for the future. When this research was done for a different time period the results were most likely different. When the market was predictable it would not have existed in its current form.

Furthermore, building on the last argument, these portfolios do not give any guarantee for the future in their respective sectors. When these portfolios contained different underlying companies the results were most likely different.

At last, the portfolio consisted of companies that *survived* our impact measurement framework. For the coming years, when more research becomes available, this framework will change and so will the list of companies that is suitable for impact investing.

8 Conclusions and recommendations

The current state of socially responsible investing led to new developments. These developments are now known as impact investing. This emerging asset class has gained a lot of attention among investors the last couple of years. We studied this concept and reviewed multiple sources to answer the main research question: *"Can a measurement framework be implemented in order to construct an impact portfolio?"* We answer this question in Section 8.1 by recapitulating our study's approach and its outcomes. Finally, in Section 8.2 some recommendations for further research are discussed.

8.1 Conclusions

First, we started this research by investigating the world of socially responsible investing. Socially responsible investing can be seen as an answer from the financial world to the call from the rest of the world not to care only about profits anymore. As our world changes, the amount of resources investors put in companies every year should be put in ESG responsible companies. At least, when environmental and social issues at the cost of less financial return are taken into account. Based on historical data, we have seen that the business case for SRI and ESG investing is empirically very well founded. However, it is important to keep in mind that historical financial results are no hard evidence for future profitability.

Secondly, impact investing can be seen as an improvement over socially responsible investing. It's not about creating an investment portfolio with the objective to minimize negative side effects, but to actually create positive impact. Positive risk-adjusted market return alongside positive social and/or environmental impact is the objective of the new generation of investors. Set goals, make sure investment opportunities are screened, and build metrics and benchmarks. When this process is executed, impact investing has the power to improve our world at a much faster rate.

Thirdly, three criteria need to be in place for the term impact investment to apply: intentionality, measurable impact, and positive financial return. Investor intention to address a specific social challenge through investment is a defining characteristic of impact investing. Investments or investors supporting impactful businesses without specifically targeting impact are disqualified from being called impact investors/investments. An impact investment is a financial instrument, not a grant – investors expect to get at least their initial investment back.

Afterwards, we have developed a framework that consists of five indicators. Three of them are general and thus applicable to each industry sector, resulting in a restrictive character. For each industry sector we have chosen two specific indicators of which we believe they actually grasp impact. The same reasoning applies here; there were other indicators which could have been chosen for the industry sector. The remaining companies can be used to build impact portfolios.

Furthermore, given our universe of companies, we have built four different portfolios to illustrate potential profitability. Given that the stock market itself was profitable the last couple of years, we have seen that all the portfolios we have created were profitable as well and two even outperformed the benchmark.

Finally, taking the above into account, impact investing has potential to be the next phase of socially responsible investing. It is an emerging asset class that has the potential to be more efficient than charity. Besides having the properties of being good to the planet it could also be a very profitable

niche market. We have been able to develop a straightforward measurement framework that allowed us to assess impact of different industry sectors with respect to their respective impact areas. When the list of sustainable companies currently used by IVM Caring Capital is screened by this framework, a smaller impact universe of companies remains. The constructed impact portfolios show that, based on the chosen time period, impact investing was a profitable niche market. However, as mentioned earlier, these results give no clear indication of future profitability. The way investors construct the portfolios will not change, as long as they know which companies are suitable for impact investing. So if we want impact investing to succeed, we explicitly have to measure, report and improve, before the whole investment community is convinced.

8.2 Recommendations for further research

Literature on impact investing is growing and the first impact investments are maturing. At least, according to the current standards they are labeled as impact investments. Nonetheless, new data and results will emerge. To differentiate itself from socially responsible investing, impact investing needs to be defined even more strict than the current ESG framework used for SRI.

First, our current impact measurement makes use of only five indicators. The three general indicators are a good approach to narrow down the ESG framework. The two specific indicators are a good start to assess impact in the industry sectors. But for the long-term the impact community might require more indicators to assess the large capital companies of the industry sectors. An opportunity presents itself here: look for easier-to-use and expressive indicators, qualitative as well as quantitative.

Secondly, as impact measurement develops, there is also an opportunity to implement weights for the indicators. In our framework the two specific indicators have equal weight. In the future it is likely that these are not all equally important. There are multiple methods to implement weights and each one has its own influence on the results, which is a research subject of its own.

Thirdly, outcomes should be reported over years to judge inter- and intra-industry performance. For example, this makes it possible to shift funds from a matured to a growth impact market. The development of industry benchmarks could be a supportive factor in this process.

Furthermore, in the portfolio section the standard deviation is used to determine the volatility of a stock as the degree of variation of returns over a period of time. Another topic of impact research could be the use of beta, which determines the volatility of the stock in comparison to that of its index or benchmark.

At last, IVM Caring Capital would like to research private equity or emerging market opportunities for impact investing, but is restricted in both time and employees to do this. However, this could be a future research opportunity.

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Appendix A – Interview with Arthur van der Kruijf of Sustainalytics

Is the methodology based on literature or fully self-developed?

- I have had a meeting on Friday, 3 June 2016, at Sustainalytics in Amsterdam, the Netherlands. After a brief introduction of the company and its origins, we went on to talk about their research methodology Sustainalytics has developed. It became clear that Sustainalytics has developed its assessment framework for sustainability, based on ESG, all by itself, without building on existing models like for example the Balanced Scorecard of Kaplan and Norton.

Why did they choose for the current key performance indicators?

- There is a long list of indicators you can choose in order to build an ESG assessment framework the way they have done. When you want to implement all of them you can't see the wood for the trees anymore and it will be very difficult to measure everything. Besides that, Sustainalytics analyzes different industries which means that it doesn't use for every listed company or fixed-income instrument the same set of indicators; some are more universal, others are more industry specific. They chose their indicator set they thought suited their methodology best. They use a best in class approach, meaning they also compare scores with benchmarks in the industries, based on average scores in the industry or industry leader. Due to a best in class approach, the end score of 74 for Royal Dutch Shell in the 'Oil & Gas Producers' sector is incomparable with the end score of 67 of Unilever in the 'Household Products', but maybe Unilever is a much more sustainable organization than Royal Dutch Shell generally speaking. For investment purposes, the best in class approach is actually useful as you want to diversify your portfolio to spread risk, which means IVM can choose the most sustainable organizations of all sectors it wants to invest in.

Why do all indicators have different weights?

- This is somewhat subjective, meaning it is influenced by personal feelings, tastes, or opinions. The weighted end results consist for 50% out of ESG scores and for 50% out of controversies. They give different weights to the indicators in that sector because in their opinion some are more important than others. For example, 'Carbon Intensity' is more important than 'Renewable Energy Use'. This is not just made up. There is a whole process behind it. The analysts along with the directors have come into consensus on this issue. This business model works for them. They have many clients all over the world, from small businesses to large institutions, so they probably do something in a reliable and proper manner. Indicators not only have different weights in the sector itself, but sometimes the same indicator is deemed different in sectors. For example, 'Carbon Intensity' is more important in the 'Oil & Gas Producers' sector than in the 'Banks' sector.

How does the indicator scoring-scale work?

- Points are given on a 0-100 scale. Each indicator has sub-indicators. If one takes a look at a company report one can see that there is a check mark possibility for every sub-indicator. When you have many checkmarks, the company scores more points on that particular

indicator. If one multiplies the score times its weight one obtains the total score, which is then compared to industry peers. IVM only considers the 50%-100% per sector to make it to their portfolio. Fundamental analysis is conducted by IVM itself. Sometimes there is no information available to assess the company on that indicator, because the company is too small or it chose not to disclose information, which leads to zero points. This could influence the end result a little bit. A company could disclose more information and obtain a score on a certain indicator. This might indeed cause a little jump from the worst 0%-50% class to the 50%-100% class. Based on the weighted end results, an organization falls in one of 5 categories:

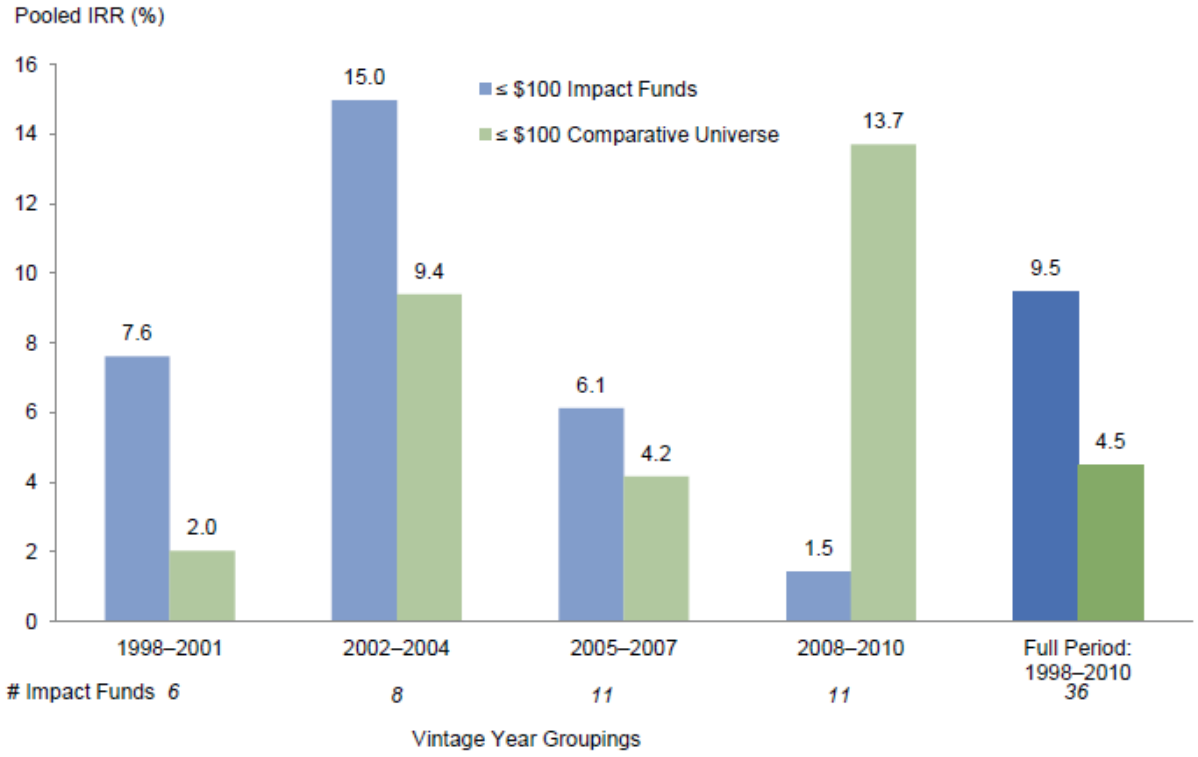
1. Leader 80-100
2. Outperformer 60-80
3. Average Performer 40-60
4. Underperformer 20-40
5. Laggard 0-20

In this case, Royal Dutch Shell, with an overall ESG score of 74, is considered an outperformer in its sector.

Appendix B – 17 Sustainable Development Goals of the United Nations

Appendix C – Impact investing benchmarks

IRRs for different vintage years and emerging markets. Source: Cambridge Associates & Global Impact Investing Network.



IRRs for different vintage years and fund size. Source: Cambridge Associates & Global Impact Investing Network.

Appendix D – Industry sectors and impact areas

Aerospace & Defense	Electrical Equipment	Precious Metals
Auto Components	Energy Services	Real Estate
Automobiles	Food Products	Refiners & Pipelines
Banks	Food Retailers	Retailing
Building Products	Healthcare	Semiconductors
Chemicals	Homebuilders	Software & Services
Commercial Services	Household Products	Steel
Construction & Engineering	Industrial Conglomerates	Technology Hardware
Construction Materials	Insurance	Telecommunication Services
Consumer Durables	Machinery	Textiles & Apparel
Consumer Services	Media	Traders & Distributors
Containers & Packaging	Oil & Gas Producers	Transportation
Diversified Financials	Paper & Forestry	Transportation Infrastructure
Diversified Metals	Pharmaceuticals	Utilities

Industry sectors (Sustainalytics, 2016)

Agriculture	Environment	Infrastructure & Transportation
Cleantech	Financial Services	Water & Sanitation
Education	Health	
Energy	Housing	

Impact areas (Balandina Jaquier, 2016)

Appendix E – Clusters of goals examples

Poverty & Health

No Poverty - End poverty in all its forms everywhere.

Zero Hunger - End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Good Health and Well-being - Ensure healthy lives and promote well-being for all at all ages.

Clean Water and Sanitation - Ensure availability and sustainable management of water and sanitation for all.

Equality & Development

Quality Education - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Gender Equality - Achieve gender equality and empower all women and girls.

Reduced Inequalities - Reduce inequality within and among countries.

Climate & Environment

Climate Action - Take urgent action to combat climate change and its impacts.

Life Below Water - Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Life on Land - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Sustainable Society

Affordable and Clean Energy - Ensure access to affordable, reliable, sustainable and clean energy for all.

Decent Work and Economic Growth - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Industry, Innovation and Infrastructure - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Sustainable Cities and Communities - Make cities and human settlements inclusive, safe, resilient and sustainable.

Responsible Consumption and Production - Ensure sustainable consumption and production patterns.

Peace, Justice and Strong Institutions - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

Partnerships for the Goals - Strengthen the means of implementation and revitalize the global partnership for sustainable development.