Societal Impacts 5 (2025) 100111

Contents lists available at ScienceDirect

Societal Impacts

journal homepage: www.journals.elsevier.com/societal-impacts

Closing the gap: The comprehensive approach to measure societal impact

Sina Sauer [a,*], Federico Bartolomucci [b], Maarten de Groot [c], Volker Then [d], Frank Jacob [d]

[a] Alfred-Weber-Institut für Wirtschaftswissenschaften, Universität Heidelberg, Bergheimer Straße 58, Heidelberg 69115, Germany
[b] Department of Management, Economics and Industrial Engineering, Politecnico di Milano, Via Lambruschini 4, Milano 20156, Italy
[c] School of Business and Economics, VU Amsterdam, De Boelelaan 1105, Amsterdam 1081 HV, Netherlands
[d] Union Asset Management Holding AG, Weißfrauenstraße 7, Frankfurt am Main 60311, Germany

ARTICLE INFO

Keywords:
Impact investing
Impact measurement
Social finance
Sustainable investments
SDGs

ABSTRACT

The growth of the impact investing market and the corresponding regulatory requirements pushes investors to adopt rigorous approaches to measuring the positive and negative impact of their financial investments. However, enhanced impact measurement approaches are still missing. This paper presents the Comprehensive Impact Measurement (CIM) model, an impact measurement framework that enables investors to measure the positive and negative impact of the corporations they invest in rigorously. This approach allows investors to include impact considerations in their financial decision-making, increases transparency, and informs impact management strategies within corporations.

Societal impacts

The impact investing market has grown significantly over the last decades. In 2024, the worldwide market size estimated by the Global Impact Investor Network (GIIN) equals 1.571 billion USD, with 18 % of investors engaging in public equity impact investments [1,2].

Since by definition, impact investments are investments made with the intention to generate measurable positive impacts [1], the continuous measurement and reporting of the social and environmental performance is a requirement for the sector. To answer this need, a plurality of impact measurement methodologies and tools has been developed, creating a fragmented market which furthermore faces fast-evolving regulations, like the EU Sustainable Finance Disclosure Regulation (SFRD). Various studies show that investors perceive this fragmentation and the availability of reliable measurement tools and data as a main obstacle for further growth [2,3].

Considering current impact measurement practices, various shortcomings can be observed, including a lack in transparency and comparability, limited numbers of impact dimensions and KPIs or a missing baseline definition [4]. These exemplary limitations signal the need for further academic grounded debate, both at methodological and empirical level, aiming at the measurement of the effective contribution that investees give to reach the Sustainable Development Goals (SDGs).

This paper presents a new impact measurement approach which aims to circumvent those challenges. In the methodology section we present the process that brought us to conceive the framework, in the result section we present the model and briefly discuss how it overcomes three current challenges of impact measurement. Finally, we comment on its relevance for stakeholders and discuss further development challenges.

Methodology

Over the last four years a team of experts with academic affiliations at Heidelberg University, Politecnico di Milano and VU Amsterdam, joined by a leading European institutional investor, has developed the Comprehensive Impact Measurement (CIM) model. The model aims at enabling investors to measure the impact of their holdings by adopting a comprehensive view on the positive and negative outcomes generated by the corporations they invest in.

The model development process followed the four steps illustrated in Fig. 1, entailing continuous exchange within the partners and external peer-reviews.

First, a normative basis was established, in order to define the societal goals to which the investor wants to contribute. The normative basis serves as a reference point to assess the activities the investee companies develop and whether they are contributing or harming the desired goals. Since impact data may represent societal outcomes that are inherently value-free, the normative basis allows to define the observed changes as positive or negative [6].

* Corresponding author.
E-mail address: sina.sauer@csi.uni-heidelberg.de (S. Sauer).

https://doi.org/10.1016/j.socimp.2025.100111
Received 22 December 2024; Received in revised form 18 February 2025; Accepted 4 March 2025
Available online 6 March 2025

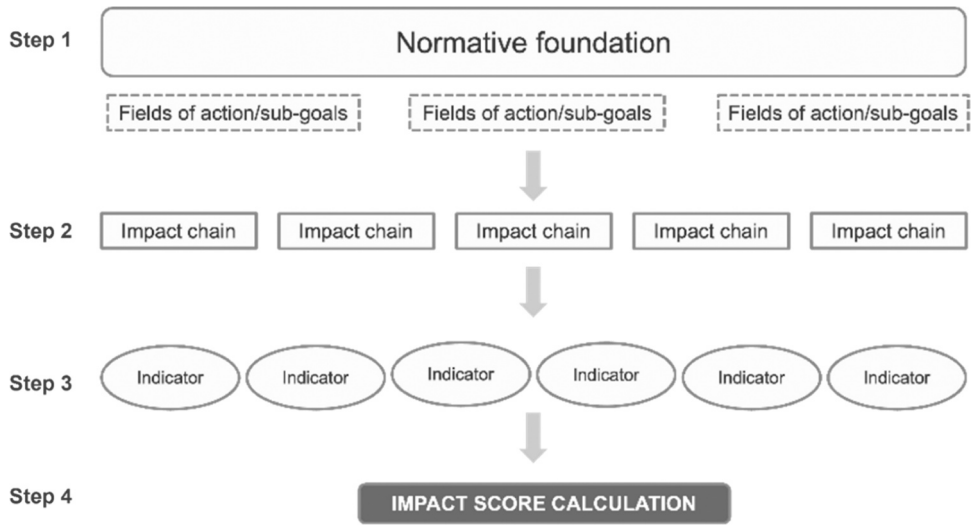

Fig. 1. Basic impact modelling steps (based on [5]).

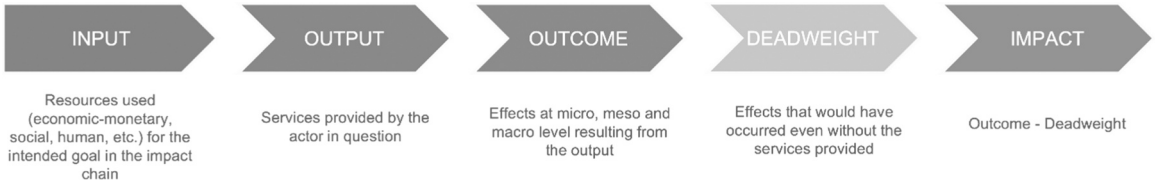

Fig. 2. Impact chain structure according to the IOOI model (based on [8]).

As a second step, research was conducted to identify causal relationships outlining how companies can contribute to achieving the normative goals, illustrated by so-called impact chains. More specifically, the Input-Output-Outcome-Impact (IOOI) model shown in Fig. 2 has been used to visualize the causal relationships among the resources and activities need to generate a desired effect. The input describes the necessary resources used to perform the specified activity (output), which can be economic, such as capital, or social, such as time or labour. The output describes the actions or services that are implemented or delivered and causes outcomes for the stakeholders of the organisations. The final impact is calculated by subtracting an estimated deadweight to account for changes that would have occurred even in the absence of inputs and outputs generated by the organization, revealing the incremental value added by the intervention [7,8].

Third, to be able to empirically measure impact, corresponding data need to be identified. The available data sources depend on the considered corporations and vary between asset classes. In the context of Public Equity investment, reported data can be sourced from commercial data providers. However, although the extent of available data is huge and continuously growing, investors often face low data quality and validity [3]. Therefore, data are selected in a two-step process: First, based on research and best practice models, “Ideal Indicators” are formulated to describe how the impact should be best measured, assessing whether and how a particular impact has been achieved. Secondly, a natural language processing algorithm is used to identify the data points with the highest degree of semantic similarity to these indicators and finally, based on data availability and coverage on the investment universe, the best matching indicator is selected. This way, the impact model can be continuously and efficiently adapted to the set of available data points, which is extensive and rapidly changing.

This procedure is applicable to Public Equity investments. If investments in small and medium-sized enterprises (SMEs) or non-listed companies are considered, a different approach is required. Indeed, in these contexts, input/output data is usually scarce and often of low quality, and therefore primary data collection and the subsequent adaptation of the model is required [9]. Since reporting implies significant effort and costs for SMEs, the number of impact chains per SDG should be limited, to reduce complexity and adjust the effort of implementation to company size.

Once the datapoints are selected, in the fourth and final step, the impact score is calculated. For listed companies, the model calculates the impact score as the distance between the company’s performance and the normative or science-based ideal value for each indicator. Thus, the score shows how far away companies are from reaching normative goals like zero emissions. For applications different from Public Equity, other calculation mechanisms can be applied, e.g. the Synthetic Control Method can be used to construct control groups determining the deadweight in the IOOI model [10].

Based on the data points matched to the model and the above-mentioned calculation mechanism, the resulting CIM score has been calculated for a set of 5000 companies, an example follows below. First empirical tests have been conducted to test the reliability and consistency of the model; however, further research in this regard is required.

Results and implications

As shown in Fig. 3, the resulting model, as of September 2024 includes 20 normative goals derived from the seventeen SDGs plus the three normative goals derived from Quality-of-Life research. The normative goals are then translated into 86 impact chains, and 122 Ideal Indicators.

The process has been conceived as a reiterative model, that needs to be updated cyclically both at the normative level, adapting it to changing priorities in terms of impacts, and at the data level. Therefore, the number of normative goals, impact chains and indicators may change over time.

The model holds its strengths and innovativeness in the capacity to overcome three major challenges posed by previous models:

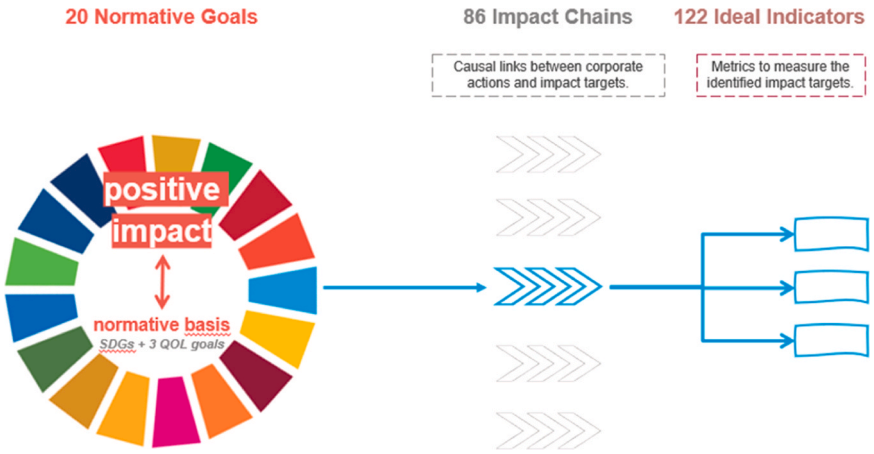

Fig. 3. Comprehensive impact measurement framework.

- **(Non) Sector specificity:** Many impact indicators vary significantly between sectors, e.g. commonly, Co2 emissions are higher in producing sectors compared to insurance or financial service companies. However, using sector specific indicators creates a best-in-class approach, rewarding e.g. an oil company performing better than its peers. From a normative point of view, the sector doesn't influence the outcomes a company have on the planet and society. Therefore, the model indicators are chosen independently of the sector, while of course comparisons between sectors can be made on the level of the resulting score.
- **(Non) Comprehensiveness:** The CIM score of each organisation does always consider all dimensions, independently of the industry or relevance of an indicator for the specific company. It cannot be assumed that a company scores well across all dimensions, but the comprehensive approach ensures that dimensions cannot be outweighed by others.

- **(Non) Transformational power:** By its design, the CIM model incorporates a dynamic nature. The algorithm-based data selection allows to update the model based on changing societal and environmental challenges. Since the score is determined by the distance from a science-based ideal value which is external to the market and not influenced by the performance of peer companies, the CIM model exceeds the limitations of most impact measurement tools and models, particularly those that are ESG-based. These models have been unsuccessful in encouraging corporations to implement the concepts of intentionality and additionality [11], which would have inevitably resulted in changes (i.e., transformation) to their business model.

Fig. 4 shows the resulting scoring for two exemplary portfolios. While with respect to some normative goals the scores are quite similar, for others the two portfolios differ significantly. This information allows to observe the impact currently reached by the portfolio companies and identify areas of improvement, e.g. through portfolio management or engagement.

We argue that the societal impact of applying this method is relevant on three stakeholder levels: investors, corporations (investees), and society.

Investor level

For investors, the trade-offs between impact dimensions become visible. For example, increasing the recycling rate of production waste decreases the amount of waste generated, but at the same time might increase the amount of water used if the recycling process is water

Normative Goal	Portfolio A	Portfolio B	Normative Goal	Portfolio A	Portfolio B
SDG 1	0.38	1.1	SDG 11	8.52	1.4
SDG 2	6.5	0.22	SDG 12	6.42	3.71
SDG 3	6.69	0.75	SDG 13	0.28	5.91
SDG 4	8.31	3.97	SDG 14	0.02	6.59
SDG 5	2.78	7.61	SDG 15	5.17	4.5
SDG 6	4.8	3.04	SDG 16	8.95	4.17
SDG 7	8.19	4.01	SDG 17	0	2.89
SDG 8	5.42	8.11	QoL +1	9.38	3.18
SDG 9	7.78	3.68	QoL +2	7	2.89
SDG 10	3.19	3.24	QoL +3	8.33	4.68

Total aggregated Impact Score (average across all dimensions):			
Portfolio A:	5,4	Portfolio B:	3,78

Fig. 4. Exemplary results for two portfolios.

intensive. Being aware of such trade-offs allows investors to make better informed investment decisions and mitigate the impact risk. Secondly, investors can use the CIM to inform their engagement processes with their investees, aiming to improve impact performance and transparency through reporting. Effective investor-investee engagement processes require an investor to be aware of which impact dimensions need to be improved. Finally, investors are enabled to align investments with their normative values and beliefs, by selecting companies that positively contribute to impact dimensions relevant to them.

Investee level

For companies, having a comprehensive view of the generated impacts helps optimizing their impact management. The CIM approach incentivizes them to not only maximize certain impact dimensions but consider sustainability holistically along the value chain. Additionally, it rewards organizations adopting a strategic approach to impact and sustainability rather than superficial actions, creating a sense of justice and reward among those embracing it as a core value of their activity.

Society level

By combining multiple data sources and merging them into an overarching framework that allows stakeholders to address the impact of a certain organization easily and robustly, the CIM represents a tool against greenwashing and whitewashing, as well as a tool to advocate towards sustainability. The comprehensiveness of the approach assures that no stakeholders are excluded in the evaluation.

The CIM model can be utilized to evaluate an investment portfolio as well as a single company. In the company case, the model can be applied by defining impact chains specific to the activities of the target company and, thus, facilitate an in-depth impact measurement. While the model currently focuses on Public Equity investments, it can be adjusted to different asset classes and used in different economic and geographic contexts.

Further research is required to empirically test the model in its different applications and the corresponding results. Due to methodological differences, the scoring results will deviate from other measurement models, representing an improvement compared to any ESG approaches. Further analysis is needed to determine the correlation and highlight the differences.

Following from its comprehensive nature, the model is more extensive than other approaches built on a limited set of KPIs. Thus, the model might be perceived as more complex and therefore faces certain reservations from practitioners. To overcome this obstacle, the model will be complemented by a user interface that will allow users to adopt it with little training requirements. Implementing the model in a user-friendly manner will equip investment and corporate managers with reliable evidence supporting their strategic decision making.

While data availability is a significant challenge for impact measurement, due to its similarity scoring to match data indicators, the CIM model is well prepared to address low data quality and availability. Pushing towards the integration of new technologies such as data crawling and natural language processing (NLP) techniques may generally present a viable strategy to overcome current data lacks und reduce the reporting burden on investors and investees.

Thus, while further research is needed, we hope that this model will contribute to the debate pushing society towards a more sustainable future.

Ethics statement

The Authors have read and follow the ethical requirements for publication in Societal Impacts and confirm that the current work does not involve human subjects, animal experiments, or any data collected from social media platforms.

CRediT authorship contribution statement

Jacob Frank: Validation, Funding acquisition. **Sauer Sina:** Writing – original draft, Project administration, Methodology, Conceptualization. **Bartolomucci Federico:** Writing – original draft, Methodology, Conceptualization. **de Groot Maarten:** Writing – review & editing, Conceptualization. **Then Volker:** Writing – review & editing, Supervision.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Sina Sauer, Federico Bartolomucci, Volker Then report financial support was provided by Union Investment Union Asset Management Holding AG. Frank Jacob reports a relationship with Union Investment Union Asset Management Holding AG that includes: employment. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

This research was funded by Union Asset Management Holding AG.

References

[1] D. Hand, M. Ulanow, H. Pan, K. Xiao, Sizing the Impact Investing Market 2024, The Global Impact Investing Network (GIIN), New York, 2024.
[2] D. Hand, S. Sunderji, M. Ulanow, R. Remsberg, K. Xiao, State of the Market 2024: Trends, Performance and Allocations, Global Impact Investing Network (GIIN), New York, 2024.
[3] Bundesanstalt für Finanzdienstleistungsaufsicht, Durchführung einer Marktstudie zur Erhebung von und Umgang mit ESG-Daten und ESG-Ratingverfahren durch Kapitalverwaltungsgesellschaften, Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin), Frankfurt, 2024.
[4] I. Bengo, L. Boni, A. Sancino, EU financial regulations and social impact measurement practices: a comprehensive framework on finance for sustainable development, Corp. Soc. Responsib. Environ. Manag. 29 (4) (2022) 809–819, https://doi.org/10.1002/csr.2235.
[5] S. Bartalucci, A. Muhr, S. Sauer, V. Then, Measuring meaningful change: AI-enhanced impact measurement in philanthropy, in: G. Ugazio, M. Maricic (Eds.), The Routledge Handbook of Artificial Intelligence and Philanthropy, 1st ed., Routledge, 2024.
[6] C. Grünhaus, O. Rauscher, Impact und Wirkungsanalyse in Nonprofit Organisationen, Unternehmen und Organisationen mit gesellschaftlichem Mehrwert: vom Wirkungsmodell über die Messung, Bewertung bis zur Steuerung, Darstellung und Kommunikation. Kompetenzzentrum für Nonprofit-Organisationen und Social Entrepreneurship, 2021.
[7] O. Rauscher, G. Mildenberger, G. Krlev, Wie werden Wirkungen identifiziert? Das Wirkungsmodell. Praxishandbuch Social Return on Investment, Schäffer-Poeschel, 2015, pp. 41–58.
[8] V. Then, C. Schober, O. Rauscher, K. Kehl, Social Return on Investment Analysis, Springer International Publishing, 2017.
[9] G. Gionfriddo, A. Piccaluga, Startups' contribution to SDGs: a tailored framework for assessing social impact, J. Manag. Organ. 2024 (2024) 545–573, https://doi.org/10.1017/jmo.2024.3.
[10] S. Sauer, R. Becker, V. Then, How to scale impact measurement? Evaluating the application of the synthetic control method in impact measurement, in: M. La Torre, S. Leo (Eds.), Contemporary Issues in Sustainable Finance, Palgrave Macmillan Cham, 2023.
[11] A. Picón Martínez, G. Gaggiotti, A. Gianoncelli, How to Do Impact Measurement and Management, Impact Europe, 2024.