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Master Thesis

The Path Towards ESG-Compliant Real Estate in Switzerland

Outlook for a Comprehensive ESG Rating for Real Estate

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Management Summary

The Paris Agreement and the United Nation's Sustainable Development Goals (SDGs) has led to raised awareness and increased sensitivity towards greenhouse gas emissions reductions and development in areas involving environmental, social and governance (ESG) aspects. Switzerland has set a commitment to reduce carbon emissions by 50 per cent of the 1990 levels by 2030 with an indicative target to reduce net carbon emissions to zero by 2050.

A large percentage of Switzerland's CO_2 emissions is a result of high emissions stemming from the real estate sector. Approximately one quarter of the 32 metric tons of total greenhouse gas emissions produced on an annual basis in Switzerland is contributed by buildings. The real estate sector in Switzerland will need to play a major role in the coming years in reducing emissions through replacement of fossil fuel heating systems and retrofitting measures to improve the energetic efficiency of buildings. However, various issues are being faced in the real estate sector in Switzerland which challenge the feasibility of achieving the targets of these frameworks.

The research for this thesis will contribute to a project collaboration between ZHAW and the Swiss company 'Conser' in the development of an ESG-rating for real estate in Switzerland. The aim of this paper is to outline the most critical issues being faced in sustainable real estate in Switzerland, to provide initial research into ESG indicators that could be incorporated into an ESG real estate rating, and to determine relevant information that could be abstracted from annual reports for use in the development of an ESG rating for real estate funds.

Qualitative research of the real estate market consisting of desk research and interviews with industry experts was conducted to identify the most urgent issues facing the real estate sector in Switzerland in their efforts towards sustainability. Apart from the high carbon emissions output in the real estate sector, major issues include insufficient and scarce resources available to reach the emissions reduction targets of the Paris Agreement, a lack of knowledge within the real estate industry and on a governmental level in understanding the urgency to reduce CO_2 emissions, the shortage of industry experts to measure and monitor emissions and to plan for circular economy, and the lack of consideration for biodiversity, circular economy and grey energy.

Additionally, transparency issues were identified due to the large offerings of real estate ratings, frameworks, and certifications on the real estate market. Various

methodologies and calculation methods utilized makes comparability for real estate investors difficult, and many of the tools are static in nature, lack visibility, transparency, and forward-looking strategies with concrete emissions reductions measures, and can be time-consuming and costly.

Moving forward, the mobilization of public and political authorities will be required to address current problematics such as tax laws, the need for additional subsidy funding to increase investment in fossil-free heating sources, clear specifications regarding calculation methods and the level of assumption-making allowed in reporting, material passports for buildings to account for circular economy, as well as the lack of conformity with the EU-taxonomy and standards regarding sustainability reporting, and the importance of driving solutions that account for grey energy, biodiversity, and social aspects.

The impact of ESG on the real estate industry goes beyond the reduction of carbon emissions and should be considered in a real estate ESG rating tool apart from typical carbon indicators. The inclusion of social factors in real estate can make a building more attractive, reduce vacancy rates and ultimately increase long-term returns. However, social factors are not common practice and are often neglected by asset owners and fund managers. An assessment to identify ESG indicators that could be integrated into an ESG rating for real estate was carried out and it was determined that various ESG indicators involving social housing, accessibility, mobility, health, crime rates, air quality, and infrastructure using public information sources such as governmental data banks and geospatial data would be useful. Through the provision of data from real estate owners, further indicators related to affordability, diversity, tenant well-being, communication, technology, building air quality, water intensity, and biodiversity could be incorporated.

In a final step, various real estate funds were compared to get an indication of available information that can be utilized to develop an ESG real estate rating for indirect real estate. The results showed that the data published in annual and sustainability reports is to a large degree heterogenous. Although data such as location of the real estate entities, CO_2 emissions and total energy consumption are provided by most funds, many sustainability-related data points are not disclosed by most of the funds, making future analysis difficult. The results of the fund comparison indicate that further data sources will be essential in determining ESG indicator proxies for indirect funds, and that pattern recognition modelling of data sets and the use of geospatial data to determine building characteristics should be explored in detail.

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List of Abbreviations

2DII	2 Degrees Investing Initiative
ADW	Angela DeWolff
AMAS	Asset Management Association Switzerland
ASPB	Association of Swiss Private Banks
AuM	Assets under Management
BJS	Bert-Jan Scheffer
CDP	Carbon Disclosure Project
CFA	Chartered Financial Analyst
CHF	Swiss Francs
CO_2	Carbon Dioxide
CO_2-e	Carbon Dioxide equivalents
DGNB	German Stainable Building Council
ESG	Environmental, Social, Governance
EU	European Union
ESRS	European Sustainability Reporting Standards
FINMA	Financial Market Supervisory Authority
FOEN	Federal Office for the Environment
FY	Francois Yenny
FSB	Financial Stability Board
GEAK	Building Energy Certificate of the Cantons
GHG	Greenhouse Gas
GRESB	Global Real Estate Sustainability Benchmark
IA	Ivo Angehrn
IFRS	International Financial Reporting Standards
IOSCO	International Organization of Securities Commissions
IR	Integrated Reporting
ISS	Institutional Shareholder Services
ISSB	International Sustainability Board
JL	Jean Laville
MSCI	Morgen Stanley Capital International
MV	Martijn Vlasveld

MWh	Megawatt hour
MZ	Marius Zumwald
NDCs	Nationally Determined Contributions
NGO	Non-Governmental Organization
NDM	Nicolas Di Maggio
NNBS	Sustainable Construction Network Switzerland
PACTA	Paris Agreement Capital Transition Assessment
PRI	Principles of Responsible Investment
PV	Photovoltaic
PWC	PriceWaterhouseCoopers
REIT	Real Estate Investment Trust
RR	Robert Radmilovic
SASB	Sustainability Accounting Standards Board
SBA	Small Business Administration
SBT	Science-Based Targets
SDGs	Sustainable Development Goals
SFDR	Sustainable Finance Disclosure Regulation
SFOE	Swiss Federal Office for Energy
SGNI	Swiss Sustainable Building Council
SIA	Swiss Society of Engineers and Architects
SIF	State Secretary for International Finance
SNBS	Swiss Sustainable Building Standard
S&P	Standard & Poor's
SQS	Swiss Association for Quality and Management Systems
SRI	Socially Responsible Investing
SS	Sonja Supra
SSF	Swiss Sustainable Finance
SSREI	Swiss Sustainable Real Estate Index
TCFD	Taskforce on Climate-Related Financial Disclosures
UN	United Nations

1. Introduction

1.1. Motivation

The Paris Agreement and the UN's Sustainable Development Goals (SDGs) has led to raised awareness and increased sensitivity towards greenhouse gas emissions reductions and development in areas involving environmental, social and governance (ESG) aspects.

In 2017, Switzerland ratified the Paris agreement and set a commitment to reduce carbon emissions compared to 1990 levels by 50 per cent by 2030 with an indicative target to reduce net carbon emissions to zero by 2050 (Federal Office for the Environment, 2022b; United Nations, n.d.-c).

A large percentage of Switzerland's CO_2 emissions is a result of high emissions stemming from the real estate sector. 23.9% of the 32 metric tons of total greenhouse gas emissions produced on an annual basis in Switzerland is contributed by buildings and 5.3% by cement production (Andrew & Peters, 2021; Federal Office for the Environment, 2022a). The high emissions in the buildings sector is the result of the 58% of buildings that rely on the use of fossil fuels (oil and gas) for heating purposes and poor insulation (Federal Statistical Office, 2022b).

Fund managers and institutional investors manage a significant number of real estate assets and will need to actively participate in implementing sustainable strategies and contributing to emissions reductions in real estate. In 2020, real estate funds accounted for 40.3 billion Swiss Francs (CHF) in assets in Switzerland (Statista, 2022) and occupational pension plans held 217 billion CHF (20% of their total assets) in direct and indirect real estate (Bundesamt für Statistik, 2022).

The annual investment that will be needed to achieve climate targets as set out by the Swiss Federation has been estimated at 2% of Switzerland's GDP (727 billion francs), of which 2'144 million CHF and 99 million CHF will need to be invested annually in the building and cement industries. This will require not only public funds and subsidies, but a substantial amount of private funds (Swiss Banking & Boston Consulting Group, 2021). The question arises as to how these reduction targets can be achieved on an institutional and regulatory level.

In Switzerland, there are several ESG reporting and disclosure frameworks, ESG rating providers, and certifications for real estate. Each of them, however, is based on individual

methodologies which can lead to confusion for market players due to transparency issues and difficulty in comparing investment options.

Institutional clients require a transparent overview of the sustainability content of their portfolios, as well as guidance towards reporting and disclosure frameworks and developing strategies to reduce CO_2 emissions within their portfolios.

The company Conser, based in Geneva, Switzerland, has recently entered a collaboration with various parties, including ZHAW, to develop an ESG real estate rating tool to aid institutional clients such as pension funds and asset managers in assessing their real estate portfolios of assets and funds on sustainability content and in developing concrete emissions reduction strategies. The focus of Conser's tool is to provide institutional players with a realistic and holistic rating that includes a break-down and visualization of CO_2 emissions within their portfolios of liquid and illiquid assets.

The real estate rating will be based on a dynamic approach that includes past, present and future CO_2 indicators making it possible for investors to see if their real estate assets are in alignment with the Paris agreement. For direct real estate, Conser uses data that is collected directly from each property. However, in the case of indirect real estate (funds), the collection of data from each property is not possible due to data accessibility and a proxy is needed for the estimation of various indicators and for a final ESG-rating, which will require public data and external data sources for determination.

Conser has developed five initial environmental indicators for the real estate module which are strongly based on environment aspects. However, Conser foresees the incorporation of social and governance indicators into the real estate rating, which are generally neglected in current product offerings.

Furthermore, Conser has expressed interest in obtaining information about the state of the ESG-real estate sector including current market players, governmental progressions, and further relevant information.

1.2. Research Questions

The research for this thesis will contribute to a project collaboration between ZHAW and the Swiss company 'Conser' in the development of an ESG-rating for real estate in Switzerland. An overview of the Swiss real estate landscape including emissions, ESG disclosure frameworks and certifications will be provided, current problematics in the real estate sector addressed, and an initial analysis for the construction of a real estate rating will be provided. In doing so, the following research questions will be addressed:

1. *What is the current state of the ESG real estate landscape in Switzerland; what ESG reporting, disclosure frameworks and certifications are currently utilized; and what are the critical issues being faced in sustainable real estate?*

2. *What relevant environmental, social and governance indicators could be introduced to a real estate rating aside from carbon emissions-based indicators and what methods could be utilized to measure them?*

3. *What relevant information abstracted from annual reports of real estate funds could be useful in determining proxies for a real estate rating?*

1.3. Methodology

In answering the first research question, the paper will first define sustainability and ESG, describe the goals of the Paris Agreement and the UN's SDGs, outline real estate-related CO_2 emissions, and discuss the role of institutional real estate investors and asset managers. Thereafter, the most relevant ESG frameworks, ESG reporting and disclosure frameworks, real estate ESG-rating providers, and certifications will be described.

The state of research on critical issues in the sustainable real estate sector will be discussed, and interviews will be conducted with industry experts to determine the most relevant critical issues in sustainable real estate in Switzerland.

In the next step, the second research question will be addressed using a literature review and the findings from interviews. These will determine what ESG indicators could be considered in a real estate ESG rating tool that goes beyond typical carbon emissions-based indicators, and to give a first indication of how they could be measured.

In approaching the third research question, a sample of 12 Swiss real estate funds will be compared to determine which frameworks and certificates real estate fund management

companies utilize, and what information from annual reports can be abstracted that could be useful in constructing an ESG rating for real estate funds.

Finally, the findings will be discussed, conclusions stated, implications of the results outlined, limitations of the study stated, and the thesis will conclude with an outlook for the future.

1.4. Limitations

This thesis will concentrate on the real estate landscape in Switzerland and will not consider real estate frameworks and measurement tools found abroad. Furthermore, due to the large product offering, concentration will be placed on well-established sustainability reporting and disclosure frameworks with a focus on real estate. Global ESG ratings are briefly discussed but individual ratings such as Sustainalytics, MSCI and ISS are not elaborated on.

The determination of environmental, social and governance indicators that could be implemented in a real estate rating is part of an initial analysis. The feasibility of the indicators, strategic placement, and methodology for implementation constitutes further analysis.

Furthermore, the comparative analysis of Swiss real estate funds has the additional function of providing details about information found in the funds as part of an initial analysis. Analysis concerning how the information is to be utilized in creating a real estate rating would be the scope of further analysis.

1.5. Structure of the Work

This paper is structured into nine chapters. The first chapter introduces the topic of real estate in Switzerland, describes the objective of the paper, defines the research questions, and outlines the methodology and structure of the work. Chapter two is a theoretical framework that describes sustainability and ESG, the goals of the Paris Agreement and the UN's SDGs, outlines real estate-related CO_2 emissions and discusses the role of institutional real estate investors and asset managers.

The literature review in the third chapter lists the most relevant ESG frameworks, ESG reporting and disclosure frameworks, real estate ESG-rating providers, and certifications that are utilized in Switzerland. The literature review in chapter four concentrates on critical issues in sustainable real estate in Switzerland.

Chapter five outlines the methodology for the interviews with real estate experts including the approach, structure of the interviews, relevant information about the

interviewees and lists the interview questions. In Chapter six, the results of the interviews are described.

Chapter seven includes both a literature review on ESG-indicators with a focus on social indicators, as well as a compilation of relevant ESG-indicators that could be utilized in a real estate rating in Switzerland that go beyond typical carbon emissions-based indicators, and to give a first indication of how they could be measured.

In chapter eight, 12 real estate funds are compared and the information that the funds disclose is compiled and described. Finally, in chapter nine, the report will conclude with findings and an outlook for the future.

2. Theoretical Framework for Sustainability and the Real Estate Sector

This chapter provides a general description of sustainability and ESG, outlines two Global Sustainability Frameworks, the Paris Agreement and the 2030 Agenda for Sustainable Development on a broad basis and in the context to Switzerland and details their importance to the real estate sector. Further, this section gives an indication of the current state of the real estate sector pertaining to CO_2 emissions, lifecycle emissions and gray energy. Finally, it details the importance of institutional investors and asset managers in sustainable real estate investing in Switzerland.

The terms sustainability and ESG as referenced to the Paris Agreement and the UNs Sustainable Development Goals, and in context to the real estate industry, form the basis of this paper. Therefore, the two common terms sustainability and ESG are described to provide a clear understanding of the context in their use.

2.1. Sustainability

Sustainability is a term which first appeared in 1987 in a published report called ‘Our Common Future’ by the United Nations Brundtland Commission, a world commission on Environment and Development (myclimate, n.d.-b; United Nations, n.d.-b). It describes the interconnectedness of economic, social and ecological processes and the relationship between the environment, society, and economy (also known as planet, people, profit) to public as well as private stakeholders (Mollenkamp, 2022; myclimate, n.d.-b). The report defines sustainability as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (United Nations, 1987). The United

Nations has maintained this definition throughout the years, and it serves as a basis for the UN's 17 SDGs (The Federal Council, n.d.).

Economic sustainability refers to the conservation of natural resources that are required for economic production and includes both renewable and exhaustible inputs. Environmental sustainability focuses on the factors that need to be maintained to preserve human life and to maintain economic production while social sustainability focuses on the effects that economic systems have on humans and concentrates on sustaining human life, eradicating poverty and hunger, and combating inequality (Mollenkamp, 2022).

In a business context, sustainability considers the relationship between a company and the environment and is built on science-based and standardized (Kummer, 2021).

2.2. ESG Investing and ESG Ratings

Environmental, Social, Governance (ESG) investing is synonymous with sustainable investing, responsible investing and socially responsible investing (SRI) (Brock & Courage, n.d.). MSCI defines ESG investing as the consideration of environmental, social and governance factors alongside financial factors in the investment decision-making process (MSCI, n.d.). ESG metrics are used by investors to identify areas of risk and growth, and companies are increasingly disclosing their ESG metrics in annual reports or sustainability reports (CFA Institute, 2022). Table 1 shows the classification of ESG with a non-exhaustive list of examples.

ESG is an evolution of sustainability and is an investment framework based on published methodologies and requirements (Ramsundar, 2022). ESG are standards set by lawmakers and ESG reporting organizations such as the Taskforce on Climate-Related Financial Disclosures (TCFD) and quantify a company's commitment to the three factors on the basis of predetermined metrics to rate the level of commitment (Brightest, 2022; Carbon View, 2021). However, a unified taxonomy to measure ESG does not exist, which has resulted in the usage of over 600 ESG reporting standards on a global level (Kummer, 2021).

'ESG ratings' is a term that includes both ESG scorings and ESG rankings, both with the objective to assess an entity, instrument or an exposure to ESG risks and/or opportunities relative to a peer group or benchmark. The difference between the two is that ESG scores are determined using quantitative analysis whereas ESG ratings utilize both quantitative models and qualitative analysis and are accompanied by analyst reports to explain the ratings, which could lead to elements of judgment (International Organization of Securities Commissions,

2021). KPMG estimates that there are 160 ESG ratings and data products providers worldwide and a study by UBS expects global revenues generated by ESG data and services to more than double between 2020 and 2025 (KPMG, 2020; UBS, 2020). According to the International Organization of Securities Commissions (IOSCO), there is rapid growth in the market for ESG ratings and data products due to increasing legislative and regulatory focus, as well as the increasing demand from investors towards green investments (International Organization of Securities Commissions, 2021).

Table 1: *ESG classification and Examples*

Environmental	**Social**	**Governance**
Conservation of the natural world	*Consideration of people & relationships*	*Standards for running a company*
• Climate change and carbon emissions • Air and water pollution • Biodiversity • Deforestation • Energy efficiency/consumption • Waste management • Water stewardship	• Customer satisfaction • Data protection and privacy • Gender and diversity • Employee inclusion • Employee engagement • Community relations • Protection of human rights • Labor standards • Workplace health and safety • Social and community impact • Public health and income distribution	• Board Composition • Corporate ownership structure • Corporate policies • Risk Management • Audit committee structure • Bribery and corruption • Executive compensation • Lobbying • Political contributions • Whistleblower schemes • Shareholder rights • Managers' remuneration

Note. Source (Billio et al., 2021; CFA Institute, 2022; Kummer, 2021; Ramsundar, 2022)

2.3. Paris Agreement and Switzerland's NDCs

The Paris Agreement and the UN SDGs are the most widespread agreements to combat global warming and climate change, and to improve quality of life.

The Paris Agreement is an international treaty that was developed with the aim to avoid the impacts of global change by achieving climate-neutrality by 2050 and limiting global warming to well below 2 degrees Celsius, and ideally to 1.5 degrees Celsius, compared to pre-

industrial levels (United Nations, n.d.-c; United Nations Climate Change, n.d.). It entered into force on November 4, 2016, and currently includes 196 parties across the globe. The framework set forth works on a five-year cycle where each member country submits their nationally determined contributions (NDCs). These NDCs include the country's climate action plan for reducing greenhouse gas emissions, as well as measures that will be taken to build resilience to the effects of increasing earth temperatures (United Nations, n.d.-c; United Nations Climate Change, n.d.). Furthermore, non-binding long-term strategies are submitted that place focus on the direction for future development and priorities through the NDCs (United Nations Climate Change, n.d.).

Switzerland signed the Paris agreement in 2016 with ratification in November, 2017 (Federal Office for the Environment, 2018). Switzerland's NDCs to the Paris Agreement include reduction of its emissions by 50 per cent by 2030 compared with 1990 levels, as well as an indicative target to reduce net carbon emissions to zero by 2050, both of which include emissions reductions and carbon storage abroad (Federal Office for the Environment, 2022b; Swiss Federal Council, 2019; United Nations, n.d.-c). According to the Federal Council, up to 95% of CO_2 emissions from transport, buildings and industry can be reduced by up to 95% using existing technologies and renewable energy sources by 2050 (Swiss Federal Council, 2019).

2.4. 2030 Agenda for Sustainable Development: UN SDGs

The Agenda for Sustainable Development was adopted in 2015 by the member countries of the UN as an action plan with people, the planet, prosperity, peace and partnership at its core to end poverty, protect the planet, and to ensure the well-being of all people by 2030 (United Nations, n.d.-d; World Health Organisation, n.d.). The agenda includes 17 SDGs which have defined 169 targets (United Nations, n.d.-d). Table 2 lists the 17 goals.

Included in the goals of the 2030 Agenda is the reliance on sustainable financing and the attraction of new sources of funding, as well as developing new ways of working that involve intersectoral action by multiple stakeholders (World Health Organisation, n.d.).

Switzerland supports the 2030 Agenda and the 17 global Sustainable Development Goals and has developed an action plan of strategies and instruments that are being implemented or which are currently being decided on (Schweizerischer Bundesrat, 2021; Swiss Federal Council, 2022).

Table 2: *The UN's 17 Sustainable Development Goals*

Goal Number	Action	Goal Number	Action	Goal Number	Action
1	No poverty	7	Affordable and Clean Energy	13	Climate Action
2	Zero Hunger	8	Decent Work and Economic Growth	14	Life Below Water
3	Good Health and Well-Being	9	Industry, Innovation and Infrastructure	15	Life on Land
4	Quality Education	10	Reduced Inequalities	16	Peace, Justice and Strong Institutions
5	Gender Equality	11	Sustainable Cities and Communities	17	Partnerships for the Goals
6	Clean Water and Sanitation	12	Responsible Consumption and Production		

Note. Source (United Nations, n.d.-a)

According to the Federal Council, all 17 goals are considered equal, but additional effort is being placed in areas where there is the greatest need for action and coordination between the various aspects of Switzerland's domestic and foreign policy. It has set three priorities including sustainable consumption and sustainable production; climate, energy, and biodiversity; equal opportunities and social cohesion. These priorities were determined based on a baseline assessment completed in 2018 (Swiss Federal Council, 2022). A group of representatives from academia, the private sector and civil society accompanies the work at the federal level and is actively involved in Switzerland's implementation of the 2030 Agenda (SAGW, 2018).

In the 2030 Agenda for Sustainable Development, the Federal Council has included real estate on a social and environmental level in the 2021-2023 action plan (Schweizerischer Bundesrat, 2021).

The social level (tenth action measure) involves strengthening social cohesion in neighborhoods and agglomerations with the aim to strengthen quality of life and to ensure that cities can function in the future. The environmental level (21st action measure) relates to sustainable public real estate management and includes the following goals (Schweizerischer Bundesrat, 2021):

- Promotion of circular economy
- Reduction of greenhouse gas emissions and coping strategies for climate-related impacts
- Rapid and significant reduction of all greenhouse gas emissions
- Reduction of energy consumption and the more efficient use of energy
- Expansion of renewable energy
- Conservation, sustainable use and the promotion and restoration of biodiversity

By the end of 2024, concrete actions are also foreseen. These include the following (Schweizerischer Bundesrat, 2021):

- Recommendations for calculating the life cycle costs by KBOB by the end of 2023
- Revision of the Swiss Sustainable Building Standard (SNBS), Version 3.0 by the end of 2023
- Revision of the SNBS by the end of 2024 to include a basis for sustainability assessment of real estate portfolios

The SDGs have a strong tie to construction and the real estate sector. A recent study by Goubran (Goubran, 2019) found that 44% of the 169 targets of the SDGs are related to construction and real estate, which covers 12 of the 17 SDGs with the largest contributions being sustainable cities and communities (SDG 11), Clean Water and Sanitation (SDG 6), Affordable and Clean Energy (SDG 7), and Climate Action (SDG 13).

2.5. Real Estate-Related CO_2 Emissions

The real estate sector will be an important contributor to achieve the goals as set out by the Federal Council regarding the Paris Agreement and the 2030 Agenda for Sustainable Development.

Buildings currently account for 39% of global energy related carbon emissions. 28% is the result of operational emissions that are required from energy needed to heat, cool and power the buildings, and 11% are emissions from materials and the construction process (World Green Building Council, 2022). Furthermore, according to Durdyev et al., the real estate sector accounts for the production of 40% of raw materials, 25% of timber consumption, 40% of solid waste production and 16% of water consumption worldwide (Durdyev et al., 2018).

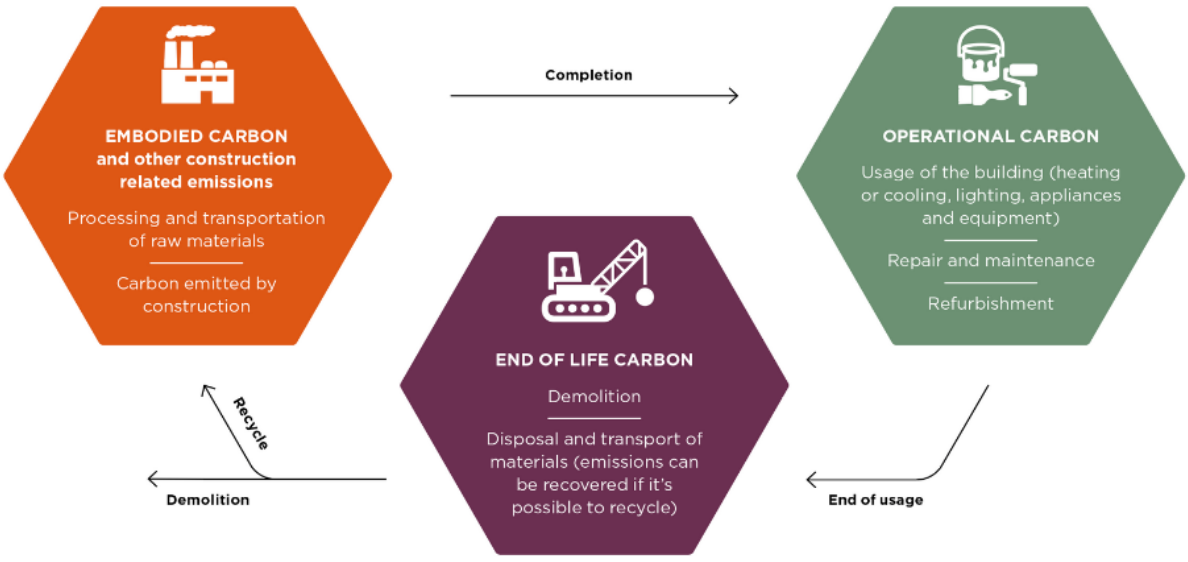
In Switzerland, 23.9% of the 32 metric tons of greenhouse gas emissions produced on an annual basis can be contributed to buildings and 5.3% to cement production (Andrew &

Peters, 2021; Federal Office for the Environment, 2022a). The major contributors of these emissions are a result of fossil fuel consumption for the heating of buildings and water (Bundesamt für Umwelt, 2022b). The high emissions in the buildings sector is due to the high usage of fossil fuels that is used to heat 58% of buildings in Switzerland, with 41% of all buildings in Switzerland relying on oil heating and 18% on gas heating in 2021 (Federal Statistical Office, 2022a, 2022b). In 2020, households and services in the building sector contributed to 16.4% and 7.5% of CO_2 emissions in Switzerland (Federal Statistical Office, 2022a).

Poor insulation and the ensuing energy loss, which is often found in older buildings that have not been refurbished, is also a major contributor to CO_2 emissions. Over half of all residential buildings in Switzerland were constructed before 1970 and only 17% of all buildings have been constructed since 2001 (Bundesamt für Statistik, n.d.).

CO_2 emissions are not only present during the operational phase of real estate. Emissions are present during the entire life cycle of real estate which includes the construction, operational and demolition phases, as shown in the below figure.

Figure 1: *Sources of CO_2 across the Life Cycle of Property*



Note. Source (Williams, 2021)

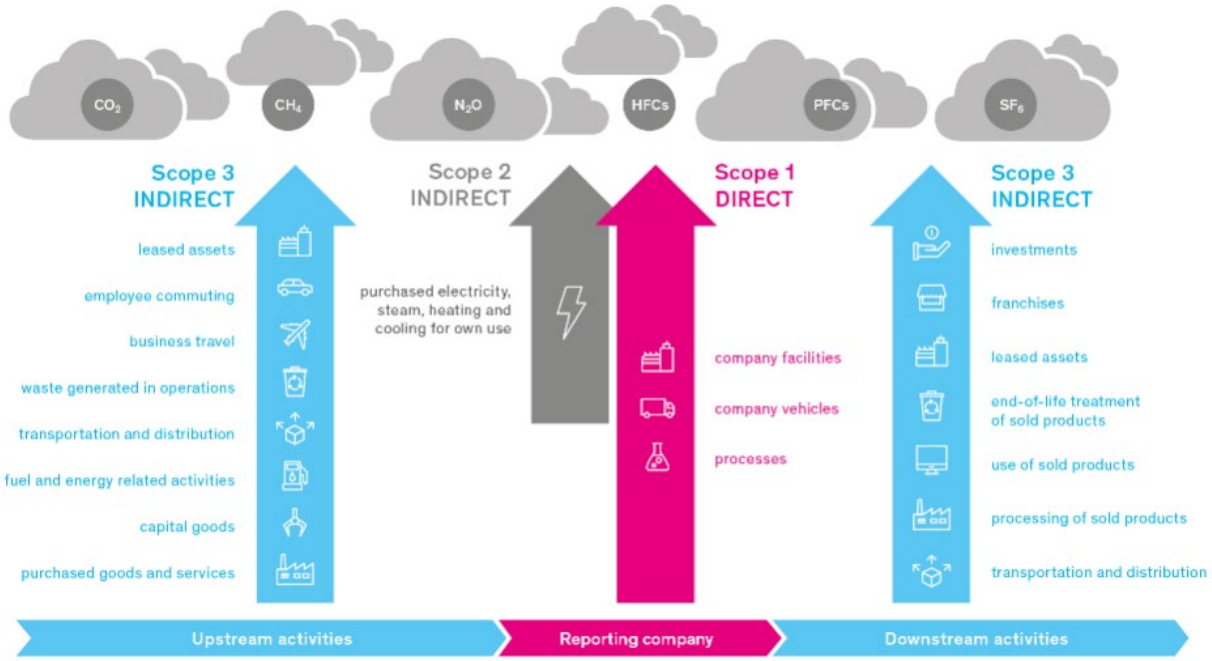
There are three emission types found in real estate that originate at different sources, which are summarized in Table 3 and Figure 2.

Table 3: *Scope 1-3 Carbon Emissions*

Scope	Description
1	• Direct emissions from owned or controlled sources • Scope 1 emissions can be indirect (scope 3) emissions of another company who is in the value chain of the first company • Examples: heating and water heating (burning of fossil fuels)
2	• Indirect upstream emissions from the purchase of electricity, heating, and cooling • Example: electricity consumption
3	• Indirect upstream and downstream emissions that occur in the value chain • Emissions are not produced by the company itself, and not the result of activities from assets owned or controlled by them • includes all sources not within the scope 1 and 2 boundaries.

Note. Source (GRESB et al., 2022; Kepler Cheuvreux, 2015; National Grid Group, n.d.)

Figure 2: *Science-based Targets (SBT)*

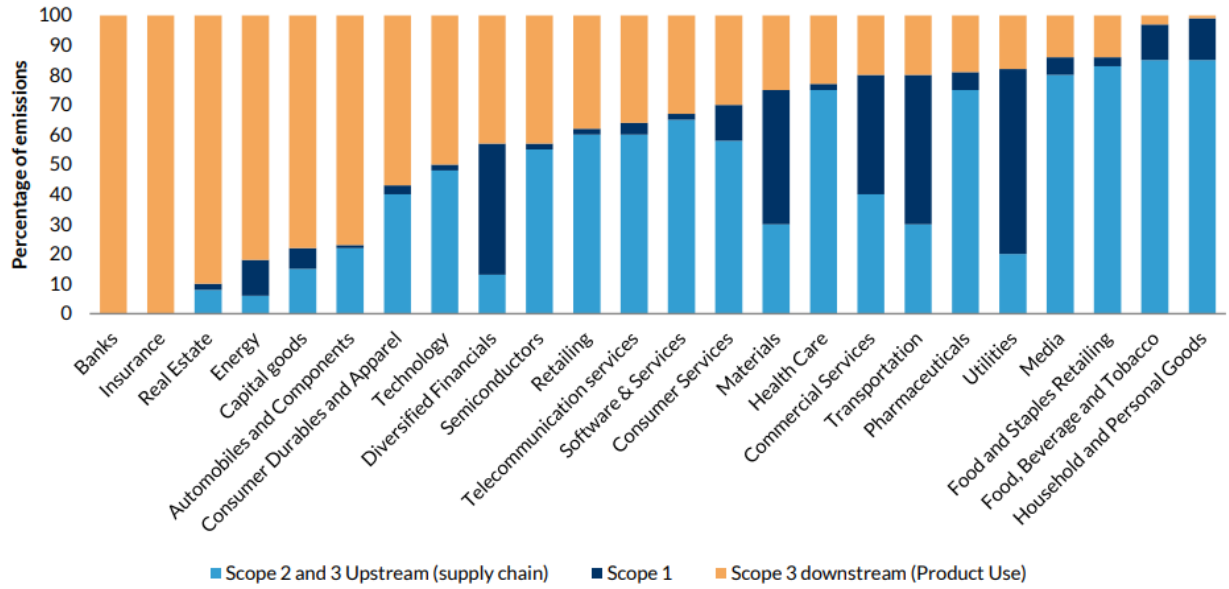


Note. Source (myclimate, n.d.-a)

Encompassed within scope 3 emissions is grey energy. Grey energy is also a contributor of CO_2-emissions in real estate and refers to the indirect energy consumption that is required over the life cycle of building materials, from the manufacturing of the product, to the processing, transport to the building site, installation and disposal of the product (Federal Office for Defence Procurement, n.d.).

An analysis by Inrate shows that Scope 3 downstream emissions make up a significant part of total greenhouse gas intensities in most sectors, including real estate (Figure 3). In real estate, scope 1 emissions make up a small percentage of total emissions over the entire lifecycle (Inrate, 2020).

Figure 3: *Importance of Scope 3 Emissions in Various Sectors*



Note. Source (Inrate, 2020; Kepler Cheuvreux, 2015, p. 20)

2.6. Institutional Real Estate Investors and Asset Managers

Institutional investors and asset managers have a powerful influence in the real estate landscape due to their large holdings and management of real estate. In Switzerland, institutional investors own approximately 20% of residential properties and approximately 10% of commercial properties (Swiss Insurance Association, 2021).

In 2020, real estate funds accounted for 40.3 billion CHF in Assets in Switzerland (Statista, 2022). Real estate funds can include a variety of housing types such as residential, commercial and production facilities.

Institutional investors hold real estate as both direct and indirect objects. According to the Federal Statistical Office, occupational pension plans in Switzerland held investment assets of 1063 billion Swiss Francs in 2020, of which 20.4% were in real estate (over 216 billion Swiss Francs) (Bundesamt für Statistik, 2022).

In 2021, insurance firms in Switzerland held assets of close to 550 billion CHF with real estate, buildings under construction and building land amounting to 9% of their overall assets (over 49 billion CHF) (FINMA, 2022).

According to an evaluation by PACTA on Swiss real estate in 2020, buildings which are directly owned by institutional owners emit less CO_2 per kg/ m^2 than the rest of the building stock on average. Furthermore, the analysis showed that CO_2 emissions of Switzerland's entire building stock average 34.5 kg/ m^2 with median carbon emissions for all directly used buildings at 15.2 kg/ m^2. Taking planned renovation measures over a period of 10 years into account, the CO_2 value drops to 11.5 kg/ m^2 in total CO_2 emissions (-9%/year) (2 Degrees Investing Initiative et al., 2020).

The core of an insurance company's business is managing risk. This puts ESG issues as a central role and responsibility for insurance companies. According to a 2022 PriceWaterhouseCoopers (PWC) survey of major global insurance companies, 93% said they were very likely or likely to consider working with industry groups concerning ESG issues and 80% would consider partnerships with other companies in their ESG pursuits. Furthermore, the study highlights that although 56% of insurance companies are ambitious about developing their environment-related capabilities, only 24% have mature capabilities. Additionally, 57% of insurers wish to develop their social capabilities and 80% to develop their governance capabilities (PwC, 2022). These statistics imply the need for clarity pertaining to their ESG-situation and the need to derive suitable ESG-management strategies.

3. Literature Review on Current Sustainability Measures and Tools

The last chapter outlined the goals of the Paris agreement and the 2030 Agenda for Sustainable Development, and listed Switzerland's pledges and commitments to fulfill its targets. The current state of the real estate sector in terms of emissions was presented along with the importance of institutional players regarding their potential to improve the real estate setting in Switzerland.

This section describes the means that are being undertaken to enforce and promote sustainable real estate in the financial sector in Switzerland including government and government-related standards, scores and disclosures, ESG-ratings and benchmarks, and real estate standards and certifications.

3.1. Binding ESG Reporting and Disclosure Frameworks

3.1.1. Federal Government / Swiss Cantons

As illustrated in the previous chapter, Switzerland is committed to becoming CO_2 neutral by 2050 as part of the Paris Agreement and aims to achieve the goals of the 2030 Agenda for Sustainable Development. However, there is presently no single law in force which provides an extensive measurement and control function that is aimed towards Switzerland's sustainability goals. The NGO 'Climate Analytics', for example, has ranked Switzerland's contribution to the Paris Agreement as "insufficient" and modelled a temperature rise of 3-4°C by the end of the century if the global trajectory followed Switzerland's current path (SRF, 2021).

The Swiss Federal Government supports various measures such as the TCFD, which will become obligatory as of 2023 for large companies, and the Swiss Climate Scores, both of which are described in this chapter. However, a major set-back occurred in 2021 when the referendum to enforce a federal CO_2 law on climate protection (German: CO_2-Gesetz) was voted against (SRF, 2021).

The indirect counterproposal to the public initiative for 'responsible companies – to protect people and the environment' (German: Für verantwortungsvolle Unternehmen – zum Schutz von Mensch und Umwelt) came into force on 1 January 2022 under Articles 964a-c of the Swiss code of obligations. With this new law, Switzerland has internationally coordinated legislation that is primarily based on the regulation currently in force in the European Union (Bundesamt für Justiz, 2022) .

Under this new law, large Swiss companies, as defined in Art. 964a, are obliged to submit an annual report on non-financial matters, in particular CO_2 targets, social matters, employee matters, respect for human rights and the fight against corruption. Under the obligations, the reporting must contain such information as is necessary for an understanding of the development and performance of the business, the position of the company and the impact of its activities on these matters (Swiss Federal Government, n.d.). Furthermore, the report must include a description of the business model, the approaches followed on the non-financial matters, as well as a description of the measures taken with an evaluation of their effectiveness, a description of the material risks and the management of those risks, and performance indicators concerning the non-financial matters (Swiss Federal Government, n.d.).

Further legislation concerning sustainability in Switzerland is found on a Cantonal level. For example, in the Canton of Zurich, an amendment of the cantonal energy law came into force on 1 September 2022, which requires the replacement of oil and gas heating systems with environmentally friendly heating solutions at the end of their service life, and new buildings must self-produce a part of the required electricity, among other measures (Stadt Zürich: Gesundheits- und Umweltdepartement, n.d.).

3.1.2. TCFD (Taskforce on Climate-Related Financial Disclosures)

The TCFD was launched by the Basel-based Financial Stability Board (FSB), a body set up by the G20 (Group of Twenty), in 2015 to promote international financial stability through reporting on the impact an organization has on the global climate (Deloitte, n.d.-b). It is a risk analysis framework that was created 'to develop voluntary, consistent climate-related financial disclosures that is useful to investors, lenders, and insurance underwriters in appropriately assessing and pricing climate related risks' (TCFD, 2021b). In the development of TCFD, the Principles of Responsible Investment's (PRI) climate related indicators were incorporated into the 11 recommended disclosures (TCFD, 2021a, p. 92). As TCFD is a risk analysis framework, it concentrates on the environment's impact on the company in contrast to other reporting measures that focus on the company's impact on the environment (Chashchyna, 2019).

Support for the TCFD has increased sharply around the globe since its implementation. TCFD is currently being used by over 120 regulators and governmental entities in 89 countries, covering $194 trillion in assets and $25 trillion in combined company market capitalization (TCFD, 2021a). The number of financial institutions using TCFD increased sharply between 2018 and 2021 from 287 to 1069 (TCFD, 2021a).

The use of the TCFD as a framework to disclose climate related risks is gaining support from various organizations and regulators such as the International Financial Reporting Standards (IFRS) foundation, the European Commission, G20 Finance Ministers and Central Bank Governors, the Financial Stability Board and IOSCO (TCFD, 2021a).

Since the TCDFs implementation, it has changed from a voluntary set of recommendations to a regulatory framework in numerous jurisdictions. Numerous governments have proposed or finalized laws and regulations to implement TCFD recommendations into policy and regulation by using the TCFD as a foundation for climate-related reporting requirements such as Brazil, the EU, Hong Kong, Japan, New Zealand, Singapore, Switzerland and the United Kingdom (TCFD, 2021a, p. 5).

Switzerland officially became a supporter of the TCFD at the beginning of 2021 and in July 2021, the Swiss Financial Market Supervisory Authority (FINMA) amended its circulars to include the disclosure of climate-related financial risks based on the TCFD recommendations (Deloitte, n.d.; TCFD, 2021a, FINMA, 2021). In March 2022, the Federal Council initiated consultation on the implementation ordinance on climate reporting (Regulation on the reporting of climate change issues), which requires binding implementation of the TCFD's recommendations for large Swiss companies (Swiss Holdings, 2022; The Federal Council, 2022a). The reporting obligation is expected to take effect from 2024 for the 2023 financial year (Swiss Holdings, 2022; The Federal Council, 2022a)

The reporting measures for Switzerland will be based on the TCFD's recommended reporting measures from August 2021 under the four areas of governance, strategy, risk-management and key figures and targets (Schweizerische Eidgenossenschaft, 2022). The strategy reporting is to include a transition plan, which is comparable with Switzerland's climate goals. The key figures and targets should state quantitative CO_2 targets and, if applicable, targets for other greenhouse gases, as well as the specification of all greenhouse gas emissions.

The four thematic areas on which the TCFD framework is built, is shown in Table 4 (TCFD, 2021b). The TCFD believes that Scope 3 emissions is appropriate for inclusion in greenhouse gas (GHG) emissions measurement.

Critical Points of the TCFD

The intention of the Federal Council is to introduce clear and comparable climate disclosures for large companies through the TCFD. The TCFD was designed as a risk-management tool and is meant to supplement further measures.

Expert Suisse has criticized the TCFD reporting measures by the Federal Council based on the following points (Expert Suisse, 2022):

- climate risks and opportunities are addressed, but not other environmental and social issues that are relevant for non-financial reporting pursuant to Art. 964a-c of the Swiss Code of Obligations.
- Additional supplementary regulations would reduce the scope for interpretation and promote comparability of the reports
- Greater comparability of non-financial reporting is needed
- Absence of concrete minimum requirements

- Principle-based approach: lack of specific information regarding key figures to be disclosed, therefore not suitable as a basis for auditing disclosed sustainability information. Concrete qualitative and quantitative minimum requirements regarding transparency on climate issues need to be defined
- Unclear how coordination and potential future alignment with international regulatory developments will be organized.
- Unclear how it matches up with international developments such as climate standards of the European Sustainability Reporting Standards (ESRS) or the International Sustainability Standard Board (ISSB).

Table 4: TCFD *Recommendations Outline*

Governance	Strategy	Risk Management	Metrics and Targets
Disclose the company's governance around climate-related risks and opportunities	Disclose the actual and potential impacts of climate-related risks and opportunities on the company's business, strategy, and financial planning where such information is material	Disclose how the company identifies, assesses, and manages climate-related risks	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material
a) Describe the board's oversight of climate-related risks and opportunities	a) Describe the climate-related risks and opportunities the company has identified over the short, medium, and long term	a) Describe the company's processes for identifying and assessing climate-related risks	a) Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process
b) Describe management's role in assessing and managing climate related risks and opportunities	b) Describe the impact of climate-related risks and opportunities on the company's businesses, strategy, and financial planning	b) Describe the company's processes for managing climate-related risks	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks
	c) Describe the resilience of the company's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the company's overall risk management	c) Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets

Note. Source (TCFD, 2021b)

3.2. Signatory ESG Reporting and Disclosure Frameworks

3.2.1. PRI: Principles of Responsible Investing

The goals set by the UN's 2030 Agenda for Sustainable Development have now become a standard of reference for sustainable investing. The United Nations-backed Principles for Responsible Investment (UNPRI or PRI) was developed in 2005 by institutional investors with the aim to incorporate ESG factors into investment decisions to better manage risk and to generate sustainable, long-term returns (Principles for Responsible Investment & United Nations Global Compact, 2021). The PRI is based on the concept that it is the duty of institutional investors to act in the best long-term interest of their beneficiaries, financial markets, as well as the environment and society (PRI, 2022a).

PRI focuses on six main commitments as listed in the Table 5.

Table 5: *Commitments of PRI Investors*

Goal Number	Action
1	Incorporate ESG issues into investment analysis and decision-making processes
2	Be active owners and incorporate ESG issues into ownership policies and practices
3	Seek appropriate disclosure on ESG issues of invested entities
4	Promote acceptance and implementation of the principles within the investment industry
5	Work together to enhance our effectiveness in implementing the principles
6	Report on activities and progress towards implementing the principles

Note. Source (Principles for Responsible Investment & United Nations Global Compact, 2021)

Membership to the PRI is available to asset owners, investment managers and professional service providers through an annual fee that is based on the organization's assets under management (AuM) (PRI, 2022b). PRI currently counts over 5'000 signatories representing US $121 trillion in Assets under Management (Principles for Responsible Investment, 2022). In Switzerland, there are currently 232 signatories, 71% which are investment managers, 16% service providers and 14% asset owners (PRI, 2022c).

A mandatory reporting framework was developed by PRI in 2020 to enable transparency and the dialogue between investors and their clients, beneficiaries and other

stakeholders concerning signatories' responsible investment activities. PRI signatories report on an annual basis on various indicators that are drawn from the TCFD, which concern their management of risks, as well as opportunities related to climate change (PRI, n.d.-a, n.d.-b). Since 2021, the signatories' responses are scored on a grade between 1 and 5. The reporting which is publicly disclosed includes mandatory indicators, as well as indicators that the signatories have agreed to make public (PRI, n.d.-a, n.d.-b).

3.2.2. CDP: Carbon Disclosure Project Score

CDP is a non-profit charity with headquarters in Germany that offers CDP disclosure for investors, companies, cities, states and regions for environmental impact management in over 90 countries by nearly 20'000 organizations, including Switzerland (CDP, n.d.-b, 2022).

The disclosure process involves four steps. First, customers and investors request companies to disclose through CDP. The company collects and submits data through an online questionnaire on environmental impacts and opportunities by a predefined deadline. The companies can use the data to identify areas for action on climate change, forests, and water scarcity. The data, the findings and insights from CDP are provided to the investors and customers where it is used for decision making purposes, as well as to the market in the form of reports, analysis and company scoring (CDP, n.d.-a). The score reflects a company's degree of commitment to climate change mitigation, adaptation, and transparency (Prall, 2021).

CDP can be utilized by real estate companies and provides a broad view of sustainability performance by analyzing the company not just on the performance of the company's real estate investments such as energy, carbon and water, but also on other variables such as corporate offices, travel and vehicles (Measurabl, 2015).

3.2.3. AMAS and AMAS's Environmental Indicators for Real Estate Funds

The Asset Management Association Switzerland's (AMAS's) aim is to transform Switzerland into a leading hub for sustainable asset management, and believes that eliminating greenwashing and promoting sustainability are vital elements in achieving this (Asset Management Association Switzerland, n.d.-a). AMAS was established in 1992 in Basel. The association is an active member of the European Fund and Asset Management Association (EFAMA), as well as the International Investment Funds Association (IIFA). The association has approximately 200 members (active and passive) and is available to providers of Swiss collective investment schemes, representatives of foreign collective investment schemes, asset

managers active in the management of institutional investor assets, and custodian banks (Asset Management Association Switzerland, n.d.-b, n.d.-a).

AMAS works closely with financial industry associations on various projects and is active on a political level to develop sector-wide standards in the areas of sustainable asset management (Asset Management Association Switzerland, 2022a). AMAS was a part of the development of the Swiss climate scores, which is being implemented by the State Secretary for International Finance (SIF). (Asset Management Association Switzerland, 2022b).

Furthermore, AMAS is currently creating standardized terminology in sustainable asset management (Asset Management Association Switzerland, 2022a, 2022b). Concerning Swiss and international developments, AMAS was one of the founding members of Building Bridges, is a supporter of the Net Zero Asset-Managers-Initiative (NZAMI), and promotes member participation in the PACTA tests (Asset Management Association Switzerland, 2022a).

AMAS developed minimum standards for Swiss real estate funds through environmental indicators, which entered into force on 1 July 2022 with an implementation period of 18 months (Asset Management Association Switzerland, 2022b). They were created for investors with the aim to increase transparency for real estate funds and to promote comparability between real estate funds for investors.

The indicators are part of AMAS's liberal self-regulation on sustainability and AMAS's best-practice standards (Asset Management Association Switzerland, 2022b). However, they are binding for its members and the environmental indicators are to be published in annual and semi-annual reports (where applicable). It is recommended to have the environmental indicators audited by a statutory auditor (Asset Management Association Switzerland, 2022b). Details for AMAS's environmental indicators are found in Table 6.

Table 6: *Main Facts of Environmental Indicators for Real Estate Funds*

Scope	• Indicators apply to all real estate funds under Swiss law • Indicators must be recorded for real estate funds even if they do not explicitly pursue a sustainability strategy • Applies to funds with properties within and outside of Switzerland
Content	• Coverage ratio, energy mix, energy consumption, energy intensity, GHG emissions, intensity of GHG emissions • Indicators can be used as a basis for defining climate targets or assessing climate risks
Implementation	• Implementation in three stages: 1) Data collection for environmental indicators for each property in the portfolio 2) calculation of the indicators for the portfolio 3) Disclosure of the indicators for the portfolio in annual reports

Note. Source (Asset Management Association Switzerland, 2022b)

3.3. Non-binding ESG Reporting and Disclosures

3.3.1. Swiss Climate Scores (Swiss Federal Council)

The Swiss Climate Scores is a new tool for rating financial investments and portfolios that was launched by the Federal Council on 29 June 2022 (Swiss Confederation, Federal Department of Finance, 2022; The Federal Council, 2022b). Companies are rated based on indicators that reflect their current situation in a financial product or portfolio, as well as where these companies are currently positioned in relation to reaching net-zero targets by 2050 (The Federal Council, 2022b). The Swiss Climate Scores was developed with inputs and support from experts from the Swiss Confederation (SIF, FOEN, SFOE), the financial sector (SBA; AMAS; SIA; ASPB; SSF; UBS), methodology providers (Lombard Odier, MSCI-Carbon Delta, 20 Investing Initiative), NGOs (WWF, Greenpeace), and academia (CSP Institute, University of Zurich) (Swiss Confederation, Federal Department of Finance, 2022).

The use of the Swiss Climate Scores is non-binding and is currently recommended for use by financial market players for financial investments and client portfolios. The aim is to allow institutional and private investors in Switzerland with transparent information pertaining to the compatibility with international climate goals so that they may optimally contribute to achieving those goals (The Federal Council, 2022b). The scores are forward looking and require forward looking data, unlike the EU taxonomy which captures current sustainability

of economic activities, and indicate where a company is positioned in terms of reaching net zero emissions by 2050 (Moody's Analytics, 2022; Swiss Confederation, Federal Department of Finance, 2022). They are also comparable to the climate-related disclosures on a corporate level, as set forth by the TCFD and net-zero alliances (Swiss Confederation, Federal Department of Finance, 2022).

The Swiss Climate Scores are based on a framework of six main indicators including greenhouse gas emission, exposure to fossil fuel activities, global warming potential, verified commitments to net zero, credible climate stewardship and management to net-zero (Swiss Banking, 2022). Noteworthy is that the scores are not available for all forms of investments due to a lack of data and the need to develop a guidance mechanism on including them (Swiss Banking, 2022).

Although the Swiss scores are voluntary, no checks are planned. However, in the fall of 2022, the Confederation and industry associations are expected to develop a template for use by various institutions (Swiss Confederation, Federal Department of Finance, 2022). Starting in 2023, the Swiss Climate Scores will be reviewed on an annual basis and adapted to the latest international findings (Moody's Analytics, 2022; The Federal Council, 2022b).

3.3.2. PACTA (Paris Agreement Capital Transition Assessment)

PACTA is an open-source methodology and tool that is free of charge and allows investors and banks to measure the alignment of financial portfolios with international objectives such as the Paris agreement with no obligation to publish the results (2 Degrees Investing Initiative, 2021). PACTA was developed and launched in 2018 by 2 Degrees Investing Initiative (2DII) along with partners such as PRI for use with corporate bonds, loans, and listed equities (2 Degrees Investing Initiative, n.d.-a).

2DII developed two tools. The PACTA for Investors tool can be applied by investors to equity and corporate bond portfolios through an online interactive tool. The online tool can analyze multiple portfolios at once and save and extract the results regarding alignment with climate goals of the Paris Agreement. The second tool, PACTA for banks, was designed for financial institutions and is a stand-alone software package and toolkit that is applied to a bank's loan books. PACTA can also be used to comply with existing and upcoming disclosure rules, such as the TCFD and EU Sustainable Finance Disclosure Regulation (SFDR) (2 Degrees Investing Initiative, n.d.-a).

As of yet, PACTA is used by over 4,500 individuals from more than 3,000 institutions worldwide with application to more than 600 portfolios on a monthly basis (2 Degrees Investing Initiative, n.d.-a).

In June 2022, 2DII announced that PACTA will be transferred to the US company RMI but will remain free of charge and continue to be independent. RMI plans to scale up PACTA for usage in daily investment decisions, and for reporting requirements (2 Degrees Investing Initiative, 2022).

As a tool, PACTA measures a financial participant's exposure to companies in eight various sectors and compares this to the climate transition pathways of those sectors. It is forward-looking by assessing the 5-year production plans of the underlying companies in a portfolio. A stress-testing model also assesses climate scenarios on the price of assets. PACTA utilizes the economic sectors which account for a large portion of global GHG emissions (approximately 75%). They include power, coal mining, oil and gas upstream sectors, auto manufacturing, cement, steel, aviation and shipping (2 Degrees Investing Initiative, n.d.-b, pp. 2–3)

With the use of PACTA, temperature indicators or technology are listed and exposure to various polluting sectors shown. Results can be shown on an entity, as well as a product level. For overall portfolios, there is no direct temperature indicator as 2DII does not believe that a single indicator can properly represent the temperature alignment of a portfolio. However, other companies such as InfluenceMap and Blackrock have created scoring indicators using PACTA (2 Degrees Investing Initiative, n.d.-b, p. 6).

3.4. Global ESG-Rating Providers

ESG-ratings provide investors, asset owners and fund managers with an evaluation of a company, fund, or security on ESG criteria to gauge how their investments are performing on a sustainable level and in combination with an industry benchmark (Miller, 2022; Orecchio, 2022). ESG rating platforms typically assess an organization's performance by a scoring-system, which is based on the sum-product of weighted indicators (Miller, 2022).

ESG ratings allow companies to understand the strengths, weaknesses, risks and opportunities of their assets (Prall, 2021), and to determine the exposure of a company to ESG policies and practices (Makower, 2022).

There are over 600 ESG-rating agencies on the market which can be categorized into three different types: basic, comprehensive and specialized data providers. Basic data

providers use publicly available data derived from corporate reports or websites such as Bloomberg and Refinitiv. Comprehensive data providers utilize both public data (media, corporate reports), questionnaires and data processed by the analysts such a Sustainalytics, MSCI, TruValue Labs, ISS ESG, S&P, and Vigeo Elris. With specialized data providers, in-depth contextual data for one or two ESG areas are offered to investors such as CDP and TruCost (Deloitte, n.d.-a).

According to Makower (2022) and Deloitte (Deloitte, n.d.-a), large investment firms and fund managers currently use ESG ratings in a complementary manner but do not rely solely on ESG ratings to assess companies, funds and portfolios. Due to the lack of a standardized methodology and to the low correlation between the ESG-ratings, many investors use several ESG-ratings for the same entity (Deloitte, n.d.-a).

Furthermore, ratings are used as a base and only used as a part of the several factors used to give advice and to make decisions in addition to corporate sustainability reports, regulatory filings, media reports, in-house research and direct engagement with companies. Moreover, many institutional investors do their own analysis and use ESG ratings as a as a starting point to filter companies under consideration, to understand the business environment of a company and to develop KPIs or scores that underlie their own assessment (Deloitte, n.d.-a; Makower, 2022).

Due to the global nature of these ESG-rating providers and the large number of providers, this paper does not provide in-depth details of generic ESG-ratings and instead details ESG-rating providers with a focus on real estate in the next section.

3.5. ESG-Rating Providers for Real Estate

3.5.1. GRESB: Global Real Estate Sustainability Benchmark

GRESB is a globally oriented, non-profit and investor-led organization that collects, validates, scores and benchmarks ESG data to assess the sustainability performance of commercial real estate portfolios and to provide business intelligence, engagement tools, and regulatory reporting solutions to its clients (GRESB, n.d.-c; Measurabl, 2020). It is currently the most widely-used real estate tool for measuring sustainability performance of property companies and real estate funds on the market (van Tongeren, n.d.).

GRESB has built its framework around the UN's Sustainable Development Goals, the Paris Climate Agreement and other international reporting frameworks such as the Principles for Responsible Investment (PRI), the Sustainability Accounting Standards Board (SASB),

the International IR Framework, the EU Sustainable Finance Disclosure Regulation (SFDR), The Taskforce on Climate-related Financial Disclosures (TCFD) and the Carbon Disclosure Project (CDP) and is consistent in every geographical region (GRESB, n.d.-b; Measurabl, 2020).

GRESB is used by institutional investors such as pension and insurance companies and sovereign wealth funds; other investors including banks, family offices, foundations, endowments; real estate and infrastructure entities including listed property companies, developers, real estate investment trusts (REITs), and privately managed funds; Industry associations and Institutions, among others (GRESB, n.d.-b).

The client base consists of 170 institutional investors and more than 2200 fund managers, companies and asset operators (GRESB, n.d.-c). As indicated in GRESB's 2021 yearly assessment, their benchmark is valued at $5.7 trillion in AuM and covers approximately 117'000 assets across 69 countries including 1'187 non-listed funds, 326 listed property companies and REITs, and seven governmental entities (GRESB, 2021). In Switzerland, customers include institutional firms such as AXA Investment Management, Credit Suisse, DWS, Swiss Life Asset Managers, UBS Asset Management and UBS Real Estate, as well as Zurich Insurance Group (GRESB, n.d.-d).

GRESB combines assessment, measurement, and benchmarking, and uses a scorecard rating to allow investors a comparison to their competition (van Tongeren, n.d.). Their methodology entails the collection of data from companies pertaining to their real estate entities through an annual survey, which evaluates performance of the ESG components 'Management', 'Performance', and 'Development' (GRESB, n.d.-a). Data points include indicators such as greenhouse gas emissions, waste, energy, and water consumption. The surveys are filled out independently by the firms, upon which the inputs are validated, and all results compiled are used to create a benchmark. Each company's entities are given a rating in relation to the benchmark (GRESB, n.d.-c; Measurabl, n.d.).

The validation process includes manual and automatic validation that checks the accuracy, logic, and existence of the data provided by the clients in the survey. Manual validation includes confirming whether the answers provided in the survey are supported by valid documentation. This validation process is completed by an independent third-party called SRI Quality System Registrar (SRI) (GRESB, n.d.-a).

The scoring model has a maximum overall score of 100 points that is given using an automated system. For the GRESB Real Estate Benchmark, the score consists of 30%

management and 70% performance. For the GRESB Development Benchmark, the score is segmented into 30% management and 70% development (GRESB, n.d.-a). The components for the analysis are found in the below table:

Table 7: *GRESB Scoring Model*

Component	Aspect	# Points	% Component	% Overall Score
Management	Leadership	7	23	7
	Policies	4.5	15	5
	Reporting	3.5	12	4
	Risk Management	5	17	5
	Stakeholder Engagement	10	33	10
	Total	**30**	**100**	**30**
Performance	Risk Assessment	9	13	9
	Targets	2	3	2
	Tenants & Community	11	16	11
	Energy	14	20	14
	GHG	7	10	7
	Water	7	9.5	7
	Waste	4	5.5	4
	Data Monitoring & Review	5.5	8	6
	Building Certifications	10.5	15	11
	Total	**70**	**100**	**70**
Development	ESG Requirements	12	17	12
	Materials	6	9	6
	Building Certifications	13	19	13
	Energy	14	20	14
	Water	5	7	5
	Waste	5	7	5
	Stakeholder Engagement	15	21	15
	Total	**70**	**100**	**70**

Note. Source (GRESB, n.d.-a).

According to Fu (2020), GRESB has a static measurement approach and does not focus on impact measurement, which diminishes its effectiveness for use as a strategic decision-making tool.

3.5.2. SSREI: Swiss Sustainable Real Estate Index

The SSREI was developed in Switzerland and launched to assess the sustainability of the Swiss real estate inventory and to contribute to transparency and comparability. There are currently 291 properties certified with SSREI that entail a main usable area of 811’565 m^2

based on the SIA Norm 416. The SSREI maps the sustainability profiles of existing real estate in Switzerland to provide the market with a benchmark through standardized assessments (SSREI, n.d.-b).

The process for inclusion in the Swiss Sustainable Real Estate Index follows a 7-step process including verification by the Swiss Association for Quality and Management Systems (SQS) with an additional annual verification process as shown in Table 8.

Table 8: *Admission Process into the SSREI*

Step 1	Preliminary Discussion	• Verification of all properties in the portfolio by the client • Determination of the sample by SSREI in coordination with the client • Self-evaluation of one property from the sample by the client and verification by SSREI's inspection panel.
Step 2	Preparation	• Self-evaluation of all properties by the client • Verification of the remaining properties from the sample by the SSREI inspection panel
Step 3	Pre-Verification (Optional)	• Preparation of the supporting evidence and self-evaluation of a pilot property by the client and verification by the SSREI review panel.
Step 4	Verification, Level 1	• Verification of all properties in the portfolio by the client • Determination of the sample by SSREI in coordination with the client • Self-evaluation of one property from the sample by the client and verification by SSREI's inspection panel.
Step 5	Verification, Level 2	• Self-evaluation of all properties by the client • Verification of the remaining properties from the sample by the SSREI inspection panel
Step 6	Certification through SQS	• Review of the verification process, random follow-up of the verification and issuance of the certificate by the SQS
Step 7	Inclusion in the SSREI	• Issuance of the SSREI statement and inclusion of the real estate portfolio in the SSREI.
Step 8	Annual verification and certification	• A mandatory requirement for continuation in the index is the annual verification and certification of the portfolio

Note. Source (SSREI, n.d.-a)

The index is based on the SNBS, which is an instrument that was developed to implement the Energy Strategy 2050 and was adjusted to be applied to existing properties. A bottom-up approach is used to assess the condition of properties in the areas of environmental protection, social responsibility, and economic efficiency (EES approach) with property assessments based on 36 sustainability-specific, EES criteria (Immobilien Business, 2022; SSREI, n.d.-a).

Since June, 2022, GRESB officially recognizes SSREI in areas of compatibility such as inventory certification (BC1.2) and portfolio analysis. The technical implementation of the recognition will occur with GRESB's 2022 financial statement (Immobilien Business, 2022; Immo!nvest, 2022). Therefore, GRESB and SSREI are meant to complement each other rather than to be regarded as competition (SSREI, 2022).

In a future phase, SSREI will extend the index family to include SSREI Performance Indices consisting of stocks and funds. The index components will be sorted into various product categories (funds, stocks) and their development mapped out. The weightings will be oriented to SSREI reference values (SSREI, 2022).

3.5.3. SIA-Standards & the SIA-Certificate

The Swiss Society of Engineers and Architects (SIA) is a professional association for construction technology and environment specialists in the areas of engineering and architecture. The SIA includes four groups of professions with a focus on architecture, civil engineering, technology and the environment with the aim to promote sustainable and high-quality design in the construction environment in Switzerland (SIA, n.d.). The SIA develops, updates, and publishes standards, regulations, guidelines, recommendations, and documentation for use in the Swiss construction industry.

The SIA 380:2015 is a standard that is used as a basis for energy calculations of buildings. It regulates the calculation and measurement of the total energy demand or consumption, which is weighted with primary energy factors or greenhouse gas emission coefficients (SIA, 2015). The calculation method SIA 380/1 is often used with standardized calculation parameters to assess the energy efficiency of existing buildings. The calculated heating demand serves as a forecasting tool and to assess retrofitting strategies. However, the calculated heating demand can deviate significantly from the available consumption values and the building consumers less energy than calculated, which leads to incorrect forecasts concerning possible energy savings (Bundesamt für Energie BFE, Energieforschung, 2017).

The SIA 2031, with the last version valid from 01.01.2016, is a certification on building energy. The SIA certificate is based on the annual primary energy use of buildings including heating, hot water, cooling, ventilation, lighting, as well as other secondary factors such as lifts, cooking, production, leisure, among others (Roulet et al., 2007).

The aim of the SIA 2031 is to propose a procedure from which an energy certificate for buildings can be developed in Switzerland. The energy certificate indicates the emission

of greenhouse gases associated with the energy consumption, which is based on actual measurements and not on theoretical values. The SIA 2031 was incorporated into the SIA 380 standard, as well as the building energy certificate of the Cantons (GEAK) (SIA, 2016).

3.5.4. Swiss Real Estate ESG-Rating Providers

Further Real Estate rating systems are establishing themselves on the Swiss market such as IAZI CIFI and Inrate.

IAZI CIFI is a Swiss company based in Zürich and Lausanne that has developed a rating for portfolios of investment properties, operating properties, branch networks of retail companies or bank branches. The procedure and the rating tools can be applied to all real estate portfolios (IAZI CIFI, n.d.). Furthermore, IAZI has a registered trademark called Swiss Property Benchmark. It is a benchmark for Swiss direct real estate investments with over 12'000 properties and a market value of over 190 billion CHF and a time series since 1994. On an annual basis, the index shows where the Swiss real estate market stands, how institutional investors value and manage their properties, and how real estate investments compare to other categories such as equities and bonds. The company is also specialized in real estate appraisals, portfolio optimizations, construction and redevelopment projects (IAZI CIFI, n.d.).

Inrate is based in Zurich and Geneva. They have developed a real estate rating that compares the sustainability of new and existing buildings, real estate portfolios and property funds. Site quality, user quality and resource efficiency are the three focus points of the analysis. Furthermore, Inrate takes a forward-looking approach by taking future refurbishments into consideration (inrate, n.d.).

An example of Inrate's implementation is found at Raifeissen. Raifeissen utilizes Inrate's methodology called 'SPIN-Assessment' (Sustainable Property Investment) for their real estate funds. The assessment includes exclusion criteria such as insufficient energy efficiency, danger from natural hazards, lack of access to public transport, small size and density of the settlement area. The inclusion criteria are based on location quality (40%), living quality (20-25%) and resource efficiency (35-40%) (Raiffeisen, n.d.).

3.6. Real Estate Standards and Certifications

There are numerous standards, certificates and labels that are currently being applied to buildings in Switzerland, which cover a range of sustainability criteria, and which can be

applied to new and/or existing buildings. Table 9 shows the applicable Swiss and International standards and labels, we well as their sustainability reach.

Table 9: *Building Standards and Labels in Switzerland and Areas of Application*

Scope of the Sustainability Themes	Operating Energy	Comfort / Indoor Climate	Materialization / Grey Energy	Cost / Efficiency	Social Aspects	Mobility	Environment	Climate Compatibility (CO_2)
CH Standards and Labels								
DGNB / SGNI Buildings	X	X	X	X	X	X	X	X
Eco-Construction BKP		V	X				X	X
Energy City	X				X	X	V	
GEAK Plus	X			X				
Minergie (-P/-A)	X	V						
Minergie (-P/-A)-ECO	X	X	X				V	X
SIA 2040, SIA Energy Efficiency Path	X		X			X		X
SNBS 2.1 Structural Construction	X	X	X	X	X	X	X	X
International Labels								
BREEAM New Construction	X	X	V	X	X	X	X	X
BREEAM Existing Building	X	X	V	V	X	X	X	X
LEED New Construction, Refurbishments	X	X	X	X	X	X	X	X
LEED Raw Construction	X	X	X	X	X	X	X	X

Note. X = fulfilled, V = partially fulfilled; Source (Netzwerk Nachhaltiges Bauen Schweiz, 2021)

According to Sustainable Construction Network Switzerland (NNBS), standards and labels are important tools in sustainable construction because they help to systematize the tasks (2021). A building is considered sustainable if it meets specific requirements pertaining to society, economy and the environment. In Switzerland, the SIA standard 112/1:2017 forms the basis for sustainability in building construction which in turn acts as the basis for various standards and labels through defined and catalogued criteria. (Netzwerk Nachhaltiges Bauen Schweiz, 2021).

Four labels in Switzerland including GEAK, Minergie, SNBS and 2000 Watt Areale are in alignment with each other, where possible, and follow the Swiss energy and climate policy and sustainable development strategy (GEAK, 2022b). In 2017, GEAK formed a partnership with Minergie (GEAK, 2022a). In March 2022, the member organizations and the Swiss Federal Office of Energy signed a contract that sets out the framework for future cooperation, and which states that only one organization will be responsible for certification,

quality assurance, communication, and further training. The former 2000-Watt-Areal will now become the Minergie-Areal and the SNBS-Areal (Konferenz Kantonaler Energiedirektoren, 2022, p. 22).

3.6.1. SGNI: Swiss Sustainable Building Council, DGNB: German Sustainable Building Council

The SGNI is a non-profit organization that was founded in 2010 in Switzerland to promote sustainable real estate along the entire life cycle including planning, construction, operation and usage (DGNB, n.d.-a).

The SGNI is the partner organization of the German Sustainable Building Council (DGNB) and was built on the framework of the DGNB. The DGNB-System is one of the largest three international ratings systems next to BREEAM (England) and LEED (USA). As of the end of 2021, 8700 development projects had been planned, implemented and certified by DGNB in approximately 35 countries (DGNB, n.d.-b) (Swiss Sustainable Building Council, n.d.). Through DGNB, certificates can be issued for new and existing buildings with the rankings platinum, gold or silver (DGNB, n.d.-a).

DGNB adapts to local countries. In Switzerland, the SGNI is the Swiss version of the DGNB in which the SGNI has adapted DGNB to Swiss standards and framework conditions to make it applicable to the Swiss market. The labeling is unified on a worldwide basis to ensure comparability and transparency for the various involved parties such as investors, building owners and other organizations (DGNB System Schweiz, 2018).

The SGNI has a defined process in place for certification and pre-certification. The client closes a contract with an independently registered SGNI auditor, who does not have a contract with SGNI. This independent certification process ensures transparency in quality control (DGNB, n.d.-a). The auditor compiles the necessary documents for the evaluation of the building and assesses the sustainability of the building based on the Swiss DGNB criteria catalogue. The auditor submits all the necessary documents and evidence to the SGNI certification body for assessment where it undergoes a conformity check. After all documents have been received and all parties agree with the audit result, the SGNI certification committee confirms the audit result. The entire process takes 6-8 weeks (DGNB System Schweiz, 2018).

The SGNI is currently in the process of implementing a statement that will be issued with every DGNB certification that states the degree to which a building has contributed to the UN SDGs (SGNI, n.d.).

3.6.2. GEAK (Building Energy Certificate of the Cantons)

The Swiss-wide standardized building energy certificate of the cantons (German: Gebäudeenergieausweis der Kantone) (GEAK) is mainly issued for existing buildings and assesses the quality of building shells and the overall energy efficiency of the building technology within a building (GEAK, n.d.; Netzwerk Nachhaltiges Bauen Schweiz, 2021). The product GEAK Plus includes a consulting report that lists various solutions for energy-efficient renovations that can be combined with Minergie system renewal, as well as an estimate for the investment costs, future energy savings, and information on how to benefit from subsidies (GEAK, n.d.). The same criteria and assessment values are utilized across all cantons, therefore ensuring consistency by the assessment of building objects throughout Switzerland (Konferenz Kantonaler Energiedirektoren, 2022).

The quality of buildings is rated on the basis of the energy efficiency of the building shell, as well as the building technology from a scale between A (excellent energy-efficiency) and G (deficient energy-efficiency). Certifications and further documentation are issued through the selection of a GEAK representative who analyzes the building on site and records the data in the GEAK tool (GEAK, n.d.).

As of 1.1.2023, CO_2 emissions will also be classified in a separate category, which originate from the production of heating and hot water. GEAK will continue to be utilized as an advisory and information tool and will also be available for use in enforcement such as issuance in the event of a change of ownership (Konferenz Kantonaler Energiedirektoren, 2022).

3.6.3. Minergie

Minergie is a standard that has been used since 1998 to classify new and modernized buildings. Until 2022, approximately 55’000 real estate objects were Minergie certified in Switzerland. Minergie is a protected label that is supported by the industry, the Swiss Cantons, as well as the federal government (Minergie, n.d.). Minergie buildings have a high building standard and are built with heat protection and systematic air renewal, and are designed with low energy requirements and the use of renewable energy (Minergie, n.d.).

Minergie standards focus on comfort, energy efficiency and value retention. To attain comfort, a high-quality building shell, systematic air renewal and summer thermal protection is required. For certification, both new buildings and modernizations are not allowed to have fossil-fuel heating systems except for peak-coverage and combined heat and power with fossil

fuels. Furthermore, A photovoltaic system with a minimum of 10 W/m^2 energy reference area is required, as well as energy monitoring and above-average thermal insulation. Minergie-A corresponds to the basic standard of building shell requirements. However, the total energy demand (space heating, water heating, air renewal, air conditioning, appliances and lighting) must be completely covered by self-produced energy (photovoltaic electricity) in the annual balance (Netzwerk Nachhaltiges Bauen Schweiz, 2021).

Minergie has various standards that include Minergie, Minergie-A, Minergie-P. Minergie-ECO is an additional add-on standard, which was created in cooperation with the association Ecobau that has specific requirements for healthy and ecological construction. Furthermore, two supplementary products were created in 2020 for the existing Minergie P and A standards that can be issued with or without the ECO add-on. The MQS Construction and MQS Operation focus on quality assurance during the construction and operations phase (Netzwerk Nachhaltiges Bauen Schweiz, 2021).

3.6.4. SNBS: Swiss Sustainable Building Standard

The SNBS is predominantly used for new buildings but can also be applied to existing structures. The Swiss Federal Office of Energy financed the development of the SNBS through the SwissEnergy program and it has been further developed by NNBS (Raiffeisen Casa, n.d.).

The actual standard of SNBS is version 2.1 (SNBS, 2022). Certifications are issued with certification levels between silver (overall grade 4 to 4.9), gold (overall grade 5 to 5.4) and platinum (overall grade 5.5 to 6). Objects are only certified if they achieve a minimum grade of 4 in all criteria in order to prevent greenwashing (Netzwerk Nachhaltiges Bauen Schweiz, n.d.; Raiffeisen Casa, n.d.). Services without certification are available free of charge (Raiffeisen Casa, n.d.). There are over 40 indicators that are divided into three main categories including society, economy and the environment (SNBS, 2022).

3.6.5. 2000 Watt Areale

The 2000-Watt-Areal is being cut by the Swiss Federal Office of Energy (Bundesamt für Energie, BFE) as of 2024 due to a lack in demand for the certifications. The labels GEAK, Minergie and the NNBS will work on a closer basis. Instead of the 2000-Watt-Areal, users will choose between Minergie-Areal or SNBS-Areal as of mid-2023 (2000-Watt-Areale, n.d.; Knüsel, 2022).

4. Literature Review on Critical Issues in Sustainable Real Estate

This section describes critical issues that the real estate sector is facing regarding sustainability as found in literature and further media sources. The findings of the literature review are used as a basis in determining interview questions. Focus is placed on literature that is relevant to institutional investors. Furthermore, the list is not exhaustive and aims to give an indication of the most relevant issues in the Swiss real estate sector at the present time.

4.1. Investment Requirements to Reduce CO_2 Emissions

According to a 2021 report by Swiss Banking and Boston Consulting Group on investment and financing needs for Switzerland to reach net zero by 2050, the rate of refurbishments in Switzerland will need to double from the current one percent and will require a 65% reduction of emissions by 2030 to reach net zero (2021).

As outlined in section 2.5, the building industry is a major contributor to CO_2 emissions in Switzerland and needs to be reduced drastically to achieve the NDCs of the Paris Agreement. Major CO_2 emitters on the operational side of buildings are the direct result of oil and gas heating (58%) but are also the result of poor insulation (Federal Statistical Office, 2022b; Swissinfo, 2022). The key measures that will need to be taken include improvements to building shells, electrification and replacement of heating systems with low-carbon technologies (Swiss Banking & Boston Consulting Group, 2021).

Furthermore, annual investment volumes of 2'144 and 99 million CHF in the building and cement industries will be required to reach net zero by 2050, which will require not only public funds and subsidies, but a substantial amount of private funds (Swiss Banking & Boston Consulting Group, 2021).

4.2. Oversupply of Certificates, Standards and Disclosures

The overview of the Swiss real estate landscape in the literature review shows that there are various standards and certificates available for use by investors and fund managers, each with their own rating criteria. ESG-rating methodologies and tools for real estate and real estate funds are found on national and international levels, and institutional fund managers and asset owners have developed proprietary methods to calculate the emissions and other factors on their portfolios. This raises the question of how the lack of conformity affects the sustainable real estate market in Switzerland, and whether comparability and transparency can be ensured to investors through the large ESG market offering.

Jörg Koch, CEO of Pensimo Management AG, believes that ESG issues have arisen due to the numerous ratings and benchmarks on the market and that no benchmark has been able to establish itself, which makes comparison with peers difficult or even impossible. Furthermore, he indicated the need for clear specifications regarding calculation methods and the level of assumption-making allowed, as well as the urgency for clarity and transparency through standardized benchmarking to increase comparability (Pensimo, 2022). Jörg Koch further stated that the Pensimo Group, which manages real estate funds in Switzerland, has been reserved about ESG benchmarking because the transparency and resilience of many benchmarks are not yet sufficient to compare the results with each other. Additionally, he stated that certain ESG-relevant indicators cannot be obtained or can only be obtained with considerable effort, which leads to arbitrary assumptions (Pensimo, 2022).

4.3. Transparency Issues

Due to a lack of standards and disclosure requirements, as well as country-specific standards, there is currently no standardized reporting framework for assets and funds available on a global level. Over time, ESG ratings agencies have developed ESG ratings based on individually created methodologies that draw on various criteria, market feedback, and weightings. Therefore, ESG ratings differ between providers, which has led to inconsistencies and confusion concerning transparency, accuracy, and credibility of ESG rating scores.

The international body IOSCO develops, implements and promotes adherence to internationally recognized standards for securities regulation, and coordinates with the G20 and the Financial Stability Board on the global regulatory reform agenda (International Organisation of Securities Commissions, 2022). In IOSCO's 2021 Final Report on ESG Ratings and Data Products Providers, which was based on a survey and round table with industry players, problematics of ESG-ratings were highlighted. It was discovered that there is a lack of clarity and alignment on definitions of what ratings intend to measure, that conflicts of interest can ensue where ESG-providers offer consultancy services to the companies being rated, and that there is a lack of communication between ESG rating agencies and the corresponding companies (International Organization of Securities Commissions, 2021).

Furthermore, the study found that most of the participating organizations believe there to be a lack of transparency regarding the methodologies used in ratings including the scope of the underlying data, the update of the ratings, the ESG factors used, the weight of each factor, materiality, and industry ranking considerations. This does not allow companies to

understand where changes need to be made, and it does not allow them to verify the accuracy of the final grading and report and to identify incorrect or insufficient information (International Organization of Securities Commissions, 2021).

Respondents to the IOSCO survey stressed the need for improved and standardized corporate disclosures to increase the availability of raw ESG data to be used for ESG ratings and data products, as well as the increase in third-party verification to strengthen transparency (International Organization of Securities Commissions, 2021).

The lack of transparency of ESG-rating methodologies has led many large asset managers to use or develop their own ESG ratings to supplement, or form part of their investment processes although external ESG ratings would be more time efficient. Most asset managers in the survey also stated developing internal ESG rating systems based on self-identified ESG criteria that are tailored to their investment strategies. On the contrary, none of the public users (including pension funds) indicated that they are using, or have plans to develop, proprietary ESG rating methodologies (International Organization of Securities Commissions, 2021) .

Makower states that sustainability professionals struggle with complex rating systems of ESG-ratings pertaining to how the ratings are created, the lack of transparency in the methodologies that are utilized for these ratings, the difficulty for companies to update incorrect or outdated information, as well as a mismatch between the ESG ratings and the actual policy and performance of a company (Makower, 2022).

A Businessweek investigation outlined that ESG rating providers use individual methodologies, algorithms, metrics, definitions, and sources of nonfinancial information, and often rely on self-reporting by the rated companies, which are not verified by regulators or independent third parties, which leads to transparency issues (Simpson et al., 2021).

Due to the individual methodologies between ESG-rating agencies, the ratings given to a company can vary heavily between the providers. As a result, various studies have shown a low correlation between the overall ESG ratings of various providers (Berg et al., 2022; Billio et al., 2021; Chatterji et al., 2016; Gibson Brandon et al., 2021; Prall, 2021). This makes it difficult for financial players, both private, as well as institutional, to make informed decisions concerning their investments and investment strategies regarding sustainability criteria and about the level of emissions that are linked to their investments. Furthermore, it could lead to a decline in ESG performance improvement if firms do not know where to place their focus.

Billio et al. found a lack of common characteristics in a sample of nine prominent ESG-rating agencies in the definition of ESG characteristics, attributes and standards in defining ESG components (2021). Similarly, a study conducted by the CFA institute compared the scoring between six various ESG rating agencies of 400 companies across 24 industries and found contrasting results. The unique scoring convention of each of the ESG ratings was first harmonized before the comparison was completed. The results showed low correlations between the various rating agencies, which ranged between 7.0% and 74.4% (Prall, 2021). According to Prall (2021), a focus should be placed on reconciling rating methodologies in the future.

4.4. Neglect of Social factors in Real Estate

The Indirect Real Estate Sustainability Report 2021, and the resulting research paper from the University of Lausanne and Banque Canonale Vaudoise involved a survey of real estate companies, funds and foundations in Switzerland on institutional property portfolios that covered 65% of total AuM and over 9000 properties (2022). The study found that environmental aspects receive the highest priority level, and that policies become less developed and data more difficult to obtain when energy is not considered. Only a small percentage of participants claimed to report on water usage, waste generation and biodiversity. (Alessandrini et al., 2022; University of Lausanne & Banque Cantonale Vaudoise, 2022). Additionally, the study revealed that governance policies are becoming more common, but the social dimension is given less priority than the E-pillar and the G-pillar.

The authors believe that the real estate industry needs to make improvements regarding uniform methodologies and benchmarks (University of Lausanne & Banque Cantonale Vaudoise, 2022).

4.5. Neglect of Grey Emissions and Circular Economy

Currently, energy consumption and CO_2 emissions generated from operations is reported for real estate. However, grey energy is excluded from reporting. Concrete production produces large amounts of CO_2. Therefore, the inclusion of grey energy in carbon counting is necessary to push the use of alternative building materials such as wood, recycled concrete or other suitable materials in the construction and refurbishment processes (ECE, 2021).

According to Marie Seiler, head of third-party real estate for Switzerland at Swiss Life, material passports on building materials found in buildings will be necessary in the future to account for circular economy. However, the deployment timelines and the roles that the

different players such as investors, owners, developers, contractors and manufacturers play will be an issue. Ms. Seiler referred to a research award on the influence of the circular economy on real estate valuation, in which it was found that despite the increased construction costs of the recyclable sample properties, there is clear added value in the valuation (Buchschacher, 2022).

4.6. Data Collection and Comparability

Various sources state the challenges in data collection and the difficulties in comparing real estate objects.

Wüest Partner considers data collection to be one of the largest challenges in measuring sustainability in real estate as data collection includes various criteria spanning over many different areas making it time consuming and expensive for property owners and investment funds to collect and analyze data (Favre, 2021).

According to Marie Seiler, Head Third Party Real Estate CH at Swiss Life, data availability in Switzerland is a major challenge due to a lack of valuation tools for the declaration of real estate investments, or they are not compatible with European equivalents that are referenced in the SFDR. For example, the European "Energy Efficiency Certificates" EPC are not comparable with the GEAK in Switzerland (Buchschacher, 2022). She further stated that comparability in real estate is difficult and although progress has been made in parts of the real estate industry in assessing and reporting on key sustainability aspects such as energy consumption and CO_2 emissions, there is a lack of uniform standards for calculating corresponding indicators that would ensure comparability of figures (Buchschacher, 2022).

A report from Swiss Life Asset Managers concurs that data coverage is an issue in which fault is given to data privacy laws for consumption data, time-offset billing periods of energy providers, and that accurate data collection for long-standing buildings would require costly renovations (Swiss Life Asset Managers, 2022).

The Indirect Real Estate Sustainability Report 2021 showed that data collection is an issue and many of the companies are not in the position to disclose information on numerous environmental factors of their portfolios. However, the qualitative results showed that the survey participants are increasing resources for data collection (Alessandrini et al., 2022; University of Lausanne & Banque Cantonale Vaudoise, 2022).

In terms of ESG-ratings, Makower (Makower, 2022) brings awareness that more than half of the data used by rating agencies has been imputed. ESG rating agencies ideally collect

company data from the primary source and supplement it with regulatory filings, proprietary databases, media reports and in-house research. However, many companies are either not willing to share their company details or do not share all data that would be necessary to calculate the rating score. As a result, imputation is used to estimate the missing data using various techniques such as statistical regression models. This adds to the transparency issues in the industry, as it requires the agencies to create assumptions, which could prove to be false. Therefore, the reduction of imputation methods would reduce the variance of the scores (Makower, 2022)

5. Methodology for the Interviews

This section describes the methodology used to structure the industry interviews, provides details about the interviewees, and lists the questions posed in the interviews.

5.1. Interview Approach and Structure

Interviews will be conducted to determine what problems and critical issues are being faced in sustainable real estate in Switzerland and what measures they believe can be taken to address these issues, as well as to receive insights on the suitability of current sustainable measurement tools. The interview questions will be based on the findings of the literature review from the two previous chapters.

The grounded theory approach will be utilized for the interview process. The overall aim of grounded theory is to construct a theoretical model that explains the data observations under investigation based on participants' own experiences and viewpoints (Loop, n.d.). Additionally, semi-structured interviews will be conducted. Semi-structured interviews include both prepared questions as found in structured interviews as well as individual dialogues between the interviewer and interviewee as found in unstructured interviews (Kallio et al., 2016). Predefined questions will be addressed to the interview participants with the option to ask unstructured questions as required. The structured and unstructured elements in this type of interview enables an objective comparison of the interview partners while allowing for spontaneous exploration of issues important to that particular interview partner (The Difference Between Structured, Unstructured & Semi-Structured Interviews, n.d.).

The interviews will be conducted via Microsoft teams and recorded with consent of the interview partner. The corresponding transcripts are found in Appendices D to I.

5.2. Interview Partner Details

Interviews will be conducted with industry experts who specialize in sustainability-related fields in the real estate sector with knowledge of the real estate sector in Switzerland. A summary of the experts is provided in Table 10.

Table 10: *Overview of Interview Partners*

Name	Position	Firm Name	Years of working experience	Date of Interview
Interview 1: Ivo Angehrn (IA)	Manager (specialist in sustainability consulting in real estate)	Drees & Sommer	> 25	03.11.2022
Interview 2: Anonymous (I2)	Consultant in Portfolio Management in Real Estate	Large Zurich Consultancy Firm	> 20	08.11.2022
Interview 3: Jean Laville (JL)	Deputy CEO of Swiss Sustainable Finance, Partner at Conser, Lecturer	Conser, SSF, SFG, SEED, Business School Lausanne	28 years in asset management, 20 years in sustainable investment	08.11.2022
Interview 4: Angela deWolff (ADW)	President and Partner of Conser	Conser, SGPB, SIFEM, Equitim Foundation, Race for Water Foundation	> 25 in financial sector, 18 years in sustainable finance	11.11.2022
Interview 5: Dr. Sonja Supra (SS)	Senior Consultant with specialization in sustainable real estate	Sinovis AG	>20	11.11.2022
Interview 6: Robert Radmilovic (RR)	Director, expert for real estate valuation and sustainability	Wüest Partner	12	15.11.2022
Interview 6: Dr. Marius Zumwald (MZ)	Senior Consultant (Climate Change, Innovation & Digitalisation)	Wüest Partner	6	15.11.2022

In the interview selection process, emphasis was placed on finding industry experts with experience in sustainability and real estate, and with knowledge about current regulations, reporting and disclosures in real estate in Switzerland. The interview partners ideally have a consultancy role to market players such as banks, pension funds and large corporations, and who understand the needs of the real estate industry participants.

Ivo Angehrn is manager of the Zurich based company Drees & Sommer, which provides various services in the planning, construction, and operation in real estate and infrastructure. The company specializes in consulting services in sustainability, facility management, development services, construction management and building information modeling. Ivo Angehrn has over 25 years of industry experience, advising private and public clients and investors.

The second interview partner wishes to stay anonymous due to the nature of the insights she provided, which she does not wish to be affiliated with her employer. She originally comes from the construction industry and has worked for the last 17 years for a large consulting corporation in Zurich and works closely in the decision making of pension funds. She provides consulting services to pension funds and further public clients in the planning of real estate portfolios.

Jean Laville has extensive experience in topics related to sustainability with a specialized focus on real estate. He is the deputy CEO of Swiss Sustainable Finance (SSF), partner of the company Conser, is a member of the committee for SEED, is on the executive committee for Sustainable Finance Geneva (SFG) and is a professor at the Business School Lausanne.

Angela deWolff also has extensive experience in sustainable finance and responsible investment. She is partner of Conser and holds further positions as a board member of the Société Générale Private Banking (SGPB), Board member of the Swiss Investment Fund for Emerging Markets (SIFEM), a member of the foundation board of Equitim Foundation and is a board member of the Race for Water Foundation.

Dr. Sonja Supra is a senior consultant at Sinovis AG in Germany (formerly in Basel) with over 20 years of experience in sustainable building. Sonja Supra consults clients on designing their organizations and real estate to be sustainable.

Two interview partners from Wüest Partner were chosen with varying expertise. Robert Radmilovic is director and an expert for real estate valuation (GEAK) and sustainability with over 12 years of industry experience. Dr. Marius Zumwald is senior

sustainability data scientist with knowledge about the various regulations and reportings in Switzerland.

5.3. Interview Questions

Interview questions were chosen to reflect the observations of the qualitative analysis as shown in Table 11. The questions will be addressed to the interviewees along with relevant follow-up questions based on statements made by the interviewees during the interviews. Interview questions that have already been addressed by the interviewees in previous questions will be omitted.

Table 11: *Interview Questions*

Question	**Motivation**
Critical issues in the real estate landscape: What do you believe are critical issues being faced in sustainable real estate at the present time in Switzerland (for example, from a regulatory point of view, transparency issues, lack of resources, neglect of social aspects, circular economy, etc.)?	To get a general overall view of the state of the real estate industry at the present time
Problematics of reporting in sustainable real estate: Current literature states the difficulties in data collection for reporting purposes, in the various calculation approaches that are utilized, and a lack of uniform standards that makes comparability of assets difficult. Do you agree and if so, what do you think needs to change in the real estate industry for this to improve?	To understand what the current problems are concerning reporting in sustainable real estate
TCFD: What is your opinion on the upcoming mandatory reporting of the TCFD? What hurdles do you see in its implementation and how do you foresee large companies preparing for these disclosures? What do you consider to be weaknesses of the TCFD?	To foresee what potential obstacles await institutional investors, and to understand the weaknesses of the new disclosures

Strengths of current offerings: Which ESG reporting and disclosure frameworks, ESG ratings and certificates do you think are the most useful in Switzerland now, and which do you think will be the most useful looking forward?	To get an indication of what frameworks and ESG ratings could be most useful for Conser, either as a potential data source or to collect ideas
Weaknesses of current offerings: What do you consider to be weaknesses in current real estate ratings, reportings and certifications such as GRESB, SSREI, PACTA, the Swiss Climate scores, CDP, SNBS, SGNI, GEAK and Minergie?	To determine gaps in the current offerings and tools
Future Outlook: What needs to change in the real estate sector to reach net-zero by 2050? What needs to be done to make progress in the areas of biodiversity, grey emissions / scope 3 emissions / circular economy? Which E, S and G factors do you consider to be the most useful and relevant in Swiss real estate (with an emphasis on S and G)? Do you perceive ways to quantify them?	To understand the state of the sustainable real estate industry and what needs to change in the future. The feedback can be used as an indication as to what could be included in a real estate rating
Clients' Views on Sustainability in Real Estate: How important are ESG topics and CO_2 emissions reductions in the decision-making of your clients and what approaches do they take? How do you perceive the attitude of institutional players in meeting the goals of the Paris Agreement and the Sustainable Development Goals (SDGs)? Is there an authentic desire to make real changes or is it mainly image-based?	To get a viewpoint of how institutional investors perceive the urgency of emissions reduction and other social and governance topics

6. Interview Results

This section presents the main findings from the expert interviews. In alignment with the semi-structured interview format, the interviewees obtained a list of questions in advance, and additional follow-up questions were addressed. The focus of the interviews was to determine critical issues found in the real estate landscape and what changes are required to alleviate the problems. The questions were formulated to address various aspects of the real estate sector at the present time. The secondary focus of the interviews was to determine to what extent social aspects are considered in the real estate industry and what ESG elements are lacking.

Due to the open nature of the questions addressed to the interviewees and the variety of responses received for each question with overlaps in responses between the questions, the results are structured into topics and not on a question-by-question basis to maintain a structured overview.

6.1. Obligation of Results

Jean Laville (JL) brought attention to the new way of thinking that the Paris Agreement and the UNs SDGs have brought in terms of sustainability and emissions reductions. The two frameworks caused the sustainability industry to shift from an ESG approach that was developed in the 1990s, which was an obligation of means involving impact measurement, to an approach that is an obligation of results. The results in this sense refer to reaching net zero from the Paris agreement by 2050 and the UNs SDGs.

The traditional ESG model as an obligation of means placed focus on the moral obligation to do things but a focus was placed on managing the system. This model did not result in any radical changes, and does not ensure climate compatibility, which is no longer enough. The new objective which is the obligation of results is a new way of thinking that puts a focus on performance. Certifications, emissions tracking, and the planning of retrofitting are all a part of this new objective.

6.2. Feasibility of Retrofitting, Insufficient Resources and Lack of Knowledge

The first interview question concerned the most critical issues being faced in sustainable real estate in Switzerland, in which many interviewees named insufficient resources, a lack of knowledge in understanding the urgency to reduce emissions, as well as the shortage of industry experts needed to monitor emissions.

Ivo Angehrn (IA) stated that buildings are a major contributor to energy and resource consumption and the production of CO_2 emissions, and the largest problems are in addressing the existing building stock. The current retrofitting and renovation rates of 1% are not enough to reduce the emissions necessary to reach net zero by 2050.

JL had the same opinion as IA. He considers the most critical issue at the present time to be the refurbishment of buildings that is required to stay on track to net zero emissions. JL stated that the objective of the Swiss Confederation is to reduce emissions to 15 kg/m^2 of CO_2 by 2030, which would require pension funds and real estate funds to refurbish 80% of their building stock by 2030. JL says this these targets are technically impossible to achieve for two reasons. First, institutional players do not have enough internal resources to manage the refurbishment of more than three buildings per year whereas up to 30 would be required. Secondly, JL referred to a study from the Swiss Banking Association which states that Switzerland does not have the resources, both physically and in terms of human resources, to reach the carbon emissions reduction targets for 2030 and 2050. Robert Radmilovic (RR) also noted that although switching to renewables is profitable, it is not realistic to renew all buildings in a fund at once due to dividend obligations.

JL stated that although progressive discussions are ongoing in the real estate sector with important market players about how to decarbonize real estate, the realization is that the resources are not present to implement it. JL stated that even if real estate funds could be convinced to reach the targets of the Paris agreement, the resources would not allow them to do it. JL believes, therefore, that the only way changes can be reached is by mobilizing public political authorities and addressing these issues on a high level.

Angela deWolff (ADW) believes that the most critical issue concerns the underestimation of the effort needed to reach net zero in Switzerland in terms of resources, people, technology and capacity. She believes that the best way forward is for market players such as pension funds to shift from short-term planning to making long-term, specific, and detailed forward-looking strategies. By doing so, ADW is confident that expertise will emerge, albeit with some delay. Similarly, JL stated that a major concern is that relevant professionals in the field do not realize that they need to train people to become specialists in monitoring relevant indicators such as energy measurement, which is a complex task.

I2 believes that the key to the future is questioning the definition of sustainability and by not emphasizing high-tech construction, but on intelligent construction that keeps things

simple. This means choosing durable, long-lasting materials and abstaining from high-tech and high-maintenance materials.

6.3. Circular Economy and Recycling

AA considers a major issue in the real estate industry to be the lack of consideration for grey energy, scarcity of resources and biodiversity as the major focus has been placed on CO_2 emissions reductions (on an operational level).

IA stated that a critical issue in the real estate sector is that a large part of the CO_2 emissions in the construction sector is the result of the construction of new buildings. This means that part of the remaining CO_2 budget in the next 30 years will be consumed by new buildings. IA believes that there is no way around increasing new construction. However, there is three times more material being used for the building stock than what is coming out of it. Therefore, it is not possible to just reuse materials. From his point of view, it is a societal and political problem. The average living area (m^2) per person increases every year and a rethinking of how much living space people need is necessary.

Marius Zumwald (MZ) stated how grey emissions are often neglected due to a lack of tools that would be required to make correct assumptions about refurbishment measures. Refurbishments can be optimized by comparing the grey energy of refurbishments with direct emissions to determine emissions savings. He believes that grey emissions could be better included if tools were available to assess buildings quickly and affordably.

According to IA, valuable building materials are being recycled in the construction sector. However, they are mainly recycled or downcycled, which does not contribute to a circular economy, because the material is not being used at the same level of value. The result is that façade glass is being used for bottled glass or insulation material. Furthermore, a large portion of construction materials is disposed of in landfills and landmass from excavations are being shifted. These are all problems that need to be addressed. RR also stressed the difficulties of realistically incorporating circular economy and the obstacles that are faced. He described an example of a construction project where the reusage of windows in good condition was rejected by the authorities due to external noise emissions. He also stated that one of the largest problems with circular economy is the difficulty in having a marketplace to reuse building materials as every property is individual.

IA stressed that 80% of carbon emissions of a building is coming out of construction and not out of operations over the lifespan of a building. Therefore, he believes that circular

economy needs to be taken more seriously in the real estate industry and needs to be accounted for. The real estate actors are, in his point of view, not aware that they need to account for circular economy and therefore don't know that they need to incorporate it. He also stressed that even if investors want to reach 2030 targets and drive innovation, they face challenges that industry players such as architects, designers, and planners are not in the position to drive the circular economy. This is an especially precarious situation, because if architects and planners do not incorporate circular economy and other processes that impact the CO_2 footprint of buildings from an early stage, it becomes increasingly difficult to incorporate changes. Therefore, sustainability factors need to be included in the design process.

6.4. Transparency, Authentic Interest in Sustainability

IA believes that transparency in energy resources and CO_2 related aspects is increasing, and more measuring methods are to be expected, albeit they are not standardized. Further, he states that although sustainability and ESG topics have been driven by investors, there is too little demand for more transparency. He suggests that many people do not authentically care whether the building they are in is actually green or sustainable. IO believes that pension funds are interested in securing long term revenues and maintaining low risk and therefore do consider environmental aspects with their real estate assets.

IA stated that what is currently missing is transparency on the pathways with a future looking view as reporting is currently static. There is a lack of visibility on how quickly a company is progressing compared to the current level. However, that itself is problematic and difficult to capture. Companies can state their future plans, but it is not clear whether these commitments are being held and who would follow-up to ensure these commitments are being met. IA concurs that it is the same problem at the global, political, national, as well as on the portfolio level.

I2 highlighted the benefits that the energy crisis has on energy efficiency. From her point of view, energy was too cheap in the past. Property owners were not interested in changing energy systems because it was the tenants that were benefiting and not the owners. Additionally, tenants were interested in paying cheap rent in the past and did not consider energy prices when making real estate decisions. With rising energy prices, she has experienced a sudden trend towards intelligent building methods and energy reduction.

6.5. Standardization, TCFD and Future Actions

IA stated that since reporting measures are not standardized, many portfolio holders try to evaluate their portfolios with their own instruments and methodologies, which creates chaos in terms of comparing portfolios by external market participants. He believes that companies need to address how they want to evaluate their portfolios and align themselves amongst each other to develop or come to a common agreement instead of simply developing an individual solution. He also believes that although there is a need for standardization, the more urgent need is for market players to start acting and not to wait for standardization and regulation measures to be enforced.

The interviewees stated that the TCFD regulations move in a positive direction but that they are not sufficient enough for various reasons.

IA believes that the TCFD regulations are good for large corporations because it focuses on key figures of CO_2 emissions, which are critical in terms of the climate crisis. Where IA finds it problematic is that it will become mandatory for large corporates but does not cover a major part of the building stock. From a governmental perspective, he does not think that Switzerland is acting fast enough to develop a solution that solves the problems of comparability and to find a solution that accommodates all types of investors. With the TCFD regulations, key figures in terms of carbon emissions are present, but it is not good enough in terms of transparency and comparability.

ADW believes that large companies who need to report on TCFD regulations as of 2023 will find solutions to implement them, whether they solve it in-house or look for other solutions. ADW is concerned however, that the asset owners and fund managers will find solutions to report, but that the actual transition will not be the focus, which is not the actual purpose of the regulations. MZ had a similar opinion to ADW. He stated that one of the most critical issues in the real estate industry is that reporting does not guarantee that action will be taken.

JL stated that the TCFD regulations are good for real estate because the legislation provides the solution as far as emissions reductions are concerned. The regulations show companies how their businesses will be positioned in three types of scenarios and forces companies to integrate future scenarios. RR also noted that such frameworks help to digitize real estate objects, which is necessary to reduce emissions.

Moving forward, JL believes that a connection must exist so that companies understand that there will be sanctions if alignments to reduce carbon emissions are not made. He further stated that investors and further market players will not accept receiving lower returns due to investments made while others refrain from implementing measures and receive higher returns. Therefore, the law and regulations are essential in real estate to ensure changes are made. JL stated that the scenario he would advise is one where the Swiss Confederation reaches 5kg/m^2 of CO_2 emissions and starts to impose high sanctions on those who are not adapting and meeting the criteria. In this way, buildings that are very inefficient will be pushed out of the market. JL foresees the imposition of sanctions within the next 10 years.

ADW concurs that sanctions are a realistic scenario that will need to be imposed should the emissions reduction targets not be met. ADW considers emissions reductions to be a process. Reporting is currently being implemented, which will address the issue of transparency. Once this is achieved, a momentum will come into force where companies will compare themselves with each other on their progress. Afterwards, ADW believes the Swiss Federation will assess the situation by 2030 and make decisions based on the progress made to determine what further actions need to be undertaken to reach the 2050 goals. Furthermore, ADW said that there is no backing out of the climate goals and changes will be made in the future. Switzerland has made a commitment; the younger generation is present to back it up and a change in politicians could allow a push for advancements. However, ADW believes that sanctions will be necessary if Switzerland is not on target by 2030.

Dr. Sonja Supra (SS) stated that countries in the European Union (EU) such as Austria and Germany are under greater pressure to implement measures for CO_2 reduction than Switzerland due to the EU taxonomy and Switzerland is taking more time to take action in comparison. She believes, however, that if Switzerland wants to get involved in the European market, they will need to become more involved.

6.6. Subsidies and Taxes

On a planning level, JL stated that decarbonization can be achieved by either changing the primary energy source or by refurbishing a building. Changing the primary energy source from gas to district heating, for example, is possible for most buildings in a relatively short period of time. However, refurbishing a building is much more complex and will be difficult to achieve. One problem that decarbonization in real estate faces is due to the locking-in of investments as it prevents property owners from investing in areas of their building that could significantly reduce emissions. For example, if gas heating is installed in a building, it will be

difficult to convince a property owner to change the heating source before the end of its life cycle. Therefore, JL believes that subsidies are necessary to overcome this problem and to incentivize all owner types (private owners, fund managers, pension funds, etc.) to accelerate CO_2 reduction measures.

Furthermore, JL stated that he does not believe that taxes can contribute positively to change because as soon as the taxes are set to a level that would induce change, the taxes are rejected in the referendums. This was the case with the recent voting on the CO_2 package in 2021. Therefore, JL believes that the only model which will bring change are subsidies where money is transferred directly to the source.

6.7. Profit

I2 works for the interests of a pension fund. She stated that a large problem that pension funds have when it comes to sustainability is that their mandate is to secure sustainable returns. Therefore, it is irresponsible to invest in a fund that only focuses on sustainability and has a lower profit than other options. Therefore, pension funds often take a static view. They can bring forward issues of sustainability with stakeholders and at general meetings, but decisions are made based on profitability. I2 stated that in the selection process at the pension fund, the condition of buildings is considered. However, the classic real estate fund valuation from regulators does not consider ESG topics or their cost and benefits, making it difficult for pension funds to make decisions with sustainability criteria at the forefront.

6.8. Sustainability Ratings and Certificates in Real Estate

IA stated that too many offers on the market is problematic, because it is expensive, results in overlaps, and it is not easy or useful to complete various ratings. He believes the ideal solution would be less standards and more real and widely accepted standards. JL stated that certifications are needed, but more emphasis needs to be put on business models, and in ensuring that processes are sustainable. Furthermore, he suggests that efforts made to rate and improve individual buildings at each aspect of ESG are inefficient and may not be the correct field of action. He believes that many ESG aspects need to be considered on a company, organization or at a city level.

ADW stated that the current market offering is complex, and as a result, it can be expected that experts will enter the market to translate the complexity into a simpler solution through aggregation and intelligence. SS believes that the main objective in emissions reductions is that something is done and therefore whatever certification is utilized is useful.

SS took an external viewpoint as an expert in the German market with years of experience in Switzerland and noted that Switzerland tends towards use of their own products instead of the implementation of global solutions and therefore believes that certification systems such as GEAK and Minergie will remain strong.

IA believes that ratings and certifications are good to give an overview, but they do not ensure that a building will reach the Paris agreement climate targets. In order to get over this hurdle, IA concludes that companies such as pension funds require a clear portfolio strategy regarding their labels to increase comparability and should not decide on a project-by-project basis.

Further, I2 stated that there is an issue in real estate with data gathering and a lack of uniform standards. The labels have different bases and are picked based on what is needed in individual situations, which makes comparability of buildings difficult.

JL says that the current model (with certificates) is aimed at real estate corporates, but the owners do not live in the houses. The model for corporates and pension funds pushes prices up. However, the best model is one where a house is owned collectively, a cooperative and association, where decisions are made collectively. This solution will become highly competitive because it is cheaper, and it is managed safely.

SS believes in the importance of building certification. In the case of new buildings, the cost of certification compared to the construction amount is negligible and there is added value in having a certificate such as good documentation, higher rents and selling prices, and a record of the building for customers. For existing buildings, certificates are, from her point of view, important because it gives an owner an overview of the building and creates transparency.

Unlike SS, I2 stated that one of the biggest issues in real estate at the present time is that sustainability is equated with Minergie which means that buildings become expensive to build, whereas they should be built more intelligently. According to I2, the use of labels does not make sense in every region because the rental increases that result from the labels cannot be paid. From her point of view, it would make more sense to build intelligently and with a long-time horizon in mind. Furthermore, she believes that there is a certificate fatigue, and many companies use labels for marketing purposes. Companies and funds require the labels for marketing purposes but then do not retrofit based on conviction but because a label is needed.

The interviewees provided input about the individual certifications. IA deems GRESB as high level, and connected with high effort, making it useful for large corporate companies but not suitable for smaller investors. As a result, it does not cover a large part of the real estate sector. GRESB is a global scoring system for a small part of the market, but he does not believe that GRESB is intended to be used in a widespread manner or to offer a lighter approach to smaller companies. JL also stated that rating measures such as GRESB have a static concentration and only take a forward-looking view to a small degree. SS had a similar opinion about GRESB. She stated that in principle, GRESB represents the ESG area relatively well, but its weakness clearly lies in its time-consuming implementation and annual recertifications that are required, as well as the additions that are introduced on an annual basis. She perceives GRESB as a good tool for the financial market. However, for direct real estate, other tools could be a better option.

JL stated that AMAS is very static and is not in line with the concept that is currently needed as only the CO_2 impact and heating index needs to be published. Further, AMAS does not include a decarbonization strategy from 2030. JL induced that the Swiss Climate Score is an interesting tool as it is applicable to real estate and includes forward looking measures.

PACTA is based on estimation models and not on measurements of actual consumption. In contrast, SIA norms use actual measurements taken directly from buildings (JL).

IA regards SSREI as a good approach with a lot of potential as it is closely aligned with SNBS and can be applied to portfolios with reasonable effort. However, it has not established itself on the Swiss market and will have difficulty to become widely accepted. IA thinks that SSREI has good coverage, is somewhat restricted, but considers it to be one of the better approaches in covering overall ESG perspectives. SSREI is a general rating model that takes a static picture of emissions. SS had a different view than IA and stated that SSREI, with its focus on existing buildings, does not adequately map the operating parameters and its biggest weakness is that there is no validated testing or evaluation of the results that are submitted due to its sampling methodology. Furthermore, SSREI focuses on the inventory rather than on the operational parameters.

According to IA, the Swiss Climate Scores and certificates, especially Minergie and GEAK put a strong focus on energy with some weight on CO_2. He considers this to be both a strength and a weakness. The weaknesses include not considering social aspects and biodiversity, and the CO_2 evaluations are focused on operational energy and not on embodied

carbon. The positive aspects are that the certificates are in-depth, concrete and tangible, which improves energy efficiency, and transparency.

I2 stated that GEAK is relatively simple and considers energy factors, but BREEAM is more comprehensive and considers factors such as transportation connections and parking and factors which go beyond those of just buildings.

IA considers SNBS and SGNI, the two main Swiss labels that use Swiss standards for measuring, to be equally good. However, SNBS is better adapted to Switzerland whereas SGNI is a German system that has a small level of application to Switzerland.

SS said that SNBS developed relatively late and utilized the strengths of other certifications on the market with the goal to map a lean valuation system for all uses of real estate but due to the applicability to various building usages, became quite large and extensive. She also noted that the evolution and growth potential of SNBS will need to be evaluated as it is a relatively young evaluation system. Furthermore, the indicators from SNBS consider a static view and do not include lifecycle indicators (JL).

Further, SS spoke of the SGNI (building in operation), which is a Swiss version of the DGNB label. She pointed out that the advantage of DGNB is that it is an established international label and develops in an adequate manner and unlike SSREI, chooses criteria that is focused on the operation of the building. SS indicated that the DGNB system is extensive, and unlike the SSREI, undergoes a third-party conformity check which ensures transparency.

6.9. Lack of Social Factors

Social and governance factors are found sparingly in the reporting of real estate funds. IO stated that social and governance aspects are clearly less transparent and less evaluated. JL also noted that the pension funds that he works with are not interested in social aspects at the present time and they have stated that it is not their objective to ensure that the renters are satisfied, because they just provide the service. Climate is given the highest weighting because it has a material effect on the physical and financial impact, which cannot be reflected on a social level.

I2 stated that in the pension fund with which she is connected, governance factors are considered but social factors are not, which she finds worrisome. Social aspects come into play by offering tenants reasonable and affordable rent. This is, from her point of view, not possible when a focus is placed on certificates, because they are expensive and increase the cost of rent.

JL stated that it is very difficult to incorporate social factors, especially on a building level. However, JL believes that social factors would be more easily incorporated on multiple buildings to ensure that tenants are offered neighborship. This means ensuring that owners set aside dedicated funds per square meter of space to ensure that social dimensions are financed like with SEED. JL also stated that such certification is dynamic and is not based on declaration, but on action. If social aspects are not met, the certification is lost.

SS has experienced an increase in demand for health aspects in real estate in Germany, which she believes is a result of the Corona pandemic. It was not considered in the past but is currently taking a new dimension within the investor sector. People want to live in a healthy environment and there is currently a shift from working in offices to working in home offices. SS stated the observation that Switzerland is reserved with social factors whereas in Germany, it is on the rise, with funds also becoming more aware of its importance.

Although it is known that social aspects play a role in peoples' behavior such as a decrease in productivity with poor indoor climate, SS said it is questionable whether it has reached the level of importance that it deserves. Indoor climate is further along than other social well-being indicators that are often neglected such as areas for tenants to lounge and the possibility for tenants to interact with one another. SS mentioned that Denmark has many showcase projects and market players maintain these social aspects in a completely different way concerning housing, and neighborhoods, so that social factors and security occur automatically and as a principle.

SS noted that many of the certification systems she uses in Germany cover social aspects well and include user satisfaction that gets into aspects such as mobility and comfortable room temperatures, which can be used as a checklist.

ADW noted that many market participants are working on the urgency for emissions reductions but have sacrificed the social aspects, which she believes to be an incorrect approach. She believes that thinking in a global and holistic way and getting all humans on board will be key in reaching the transformation. In this sense, incorporating an ecosystem about lifestyle and combining how people live in it is important. It is the combination of having owners include environmental and social aspects to solve societal problems.

7. Literature Review and Results for ESG Indicators for a Real-Estate Rating

This chapter investigates what ESG indicators could be considered in a real estate ESG rating tool, which goes beyond typical carbon emissions-based indicators, and to give a first indication of how they could be measured. First, a literature review describes the current market demand and trends of ESG indicators and lists some key indicators utilized by an ESG real estate provider. Secondly, the key findings of a Building Bridges panel of ESG industry experts on Social Impact Real Estate are detailed. Finally, an initial analysis on ESG indicators that could be explored in further detail for integration in Conser's ESG real estate rating tool is conducted.

The physical environment has been a strong focus of sustainable real estate. Therefore, a focus is placed on social factors with the inclusion of additional environmental and governance indicators that have been neglected in the real estate industry.

7.1. ESG-Indicators Stated in Industry

The impact of ESG on the real estate industry extends beyond environmentally friendly buildings and carbon emissions reduction. The results of a PwC survey on emerging trends in Europe in real estate in 2021 show that 58% of industry leader survey participants believe that social impact or social value contributions in their portfolios will increase in importance and 70% believe that social impact will become integrated in real estate owners' strategies rather than just through impact investing. Furthermore, the report quotes the CEO of a US developer who stated that investors are currently showing the same pressure to allocate capital in strategies that are both socially and environmentally sound (PwC, 2021).

Social Factors for Real Estate

Wüest Partner is developing an ESG-rating for real estate that accounts for the environmental, social and governance factors equally and that is compatible with GRESB. They list social indicators for consideration such as social mix in housing and accessibility for disabled (Favre, 2021).

For Wüest Partner's rating, they utilize databases of economic and geospatial data in Switzerland to collect information on the location characteristics of a building, the brightness of a site, the proximity of shops, schools, commercial and public services, among others. The work is supplemented by technical site visits and discussions with the owners (Favre, 2021).

According to a 2021 report on emerging trends in real estate by Deloitte, further considerations in real estate need to be placed on community and diversity. Deloitte believes in creating opportunities in social impact investing such as multitenant shared space and the transformation of underutilized buildings into useful venues that match community needs (Da Cunha & Belchior Coimbra, n.d.).

Deloitte also references the initiative of smart cities that are applicable to urban areas where technological methods are designed to manage city infrastructure efficiently. The concept spans across the life cycle of a city and includes community services and resources, transportation, improved communication networks, optimization of energy consumption, water supply, crime detection and waste (Da Cunha & Belchior Coimbra, n.d.).

A 2021 PWC report on emerging trends in Real Estate in Europe highlights the increasing interest of the health and well-being of occupiers. In PwC's survey on the future of offices, most institutional professionals agreed that offices that lack good ventilations and air quality will face a rent discount, that headquarter offices will be key to branding company culture and attracting talent, and that locations on the outskirts of cities will be in greater demand for offices. Additionally, elderly care, nursing homes, affordable housing, free market housing, and schools were listed as ways companies have been engaging on a social level in the real estate sector or which can be counted as areas of social real estate requiring investment (PwC, 2021).

PwC's report also includes how industry leader survey participants perceive the real estate industry to make the greatest difference through impact investing in real estate. Next to reducing the environmental impact of buildings, social factors are considered including the wellbeing and mental health of property users, the delivery of social infrastructure such as active mobility and public realm, and the increase in the levels and integration of housing for different income levels. Further details are found in Table 12.

PwC provided examples of how social indicators can be measured. With affordable housing, rental amounts could be compared with average rents in the local area, which attract tenants with lower income. For a health care facility, the number of patients or the distance to see a health care professional could be measured. For a school, the educational outcomes of the students could be a metric (PwC, 2021).

Table 12: *Real Estate Industry Survey on the Perception of How the Real Estate Industry Can Create Impact*

Impact Factor	**Agreeance of Survey Participants (%)**
Reducing the environmental impact of the built environment	69
Design places that take wellbeing and mental health into account	38
Greater focus on delivering social infrastructure ie. active mobility, public realm	34
Increase the levels and integration of housing for different income levels	33
Greater focus on placemaking	27
Design places to promote more social equality/mobility	20
Set, implement, and monitor policies for enhancing diversity as part of (re)development projects or existing assets	14
Measure diversity within the sector and develop targets and strategies to enhance diversity	13
Foster integration through community facilities	12
Design places to be accessible to diverse set of people with disabilities	6
Design strategies and set targets towards including socially marginalized people such as migrants and homeless	4

Note. Listed are the findings of a PwC study; Source (PwC, 2021)

Governance Factors for Real Estate

In real estate frameworks and ratings, a strong focus is placed on environmental factors whereas governance factors are given minimal attention. However, according to PwC, measuring and reporting promotes good management of assets and shows whether additionality has been created and is being steered properly, and allows investors to make future improvements (PwC, 2021).

Wüest Partner includes governance factors in their ESG-rating such as mitigation of corruption, transparency, and communication. In the area of governance, one factor is to determine whether an insurance company with a property fund has tenants that do business in areas that are on an exclusion list such as tobacco, alcohol or coal (Favre, 2021).

The real estate benchmark GRESB includes extensive management indicators in its questionnaire as summarized in Table 13, which requires provision of the necessary information from the property owners or facility managers.

Table 13: *Governance Indicators of GRESB*

Theme	Measurable Indicator	Measurement	Examples (not exhaustive)
Management: Leadership			
ESG Commitments and Objectives	ESG leadership commitments of an entity (public)	Based on a list of ESG leadership standards and principles	Climate Action 100+, PRI signatory, Science Based Targets initiative, and TCFD
ESG Decision Making	Individuals responsible for ESG objectives of an entity	List those responsible for implementing ESG and/or climate-related objectives for the entity and their position	Provide name of employee, external consultants, investment partners
ESG Decision Making	Appointed ESG taskforce/committee	List those who have an ESG taskforce or committee for the entity	Board of directors, fund/portfolio manager, staff
ESG Decision Making	Performance targets included in annual performance of personnel	State whether and to which employees' annual performance targets of personnel include ESG factors and whether they are linked with financial consequences	Board of directors, asset managers, external managers
Management: Policies			
ESG Policies	Policies on environmental issues available for an entity	State which environmental issues are included	Biodiversity and habitat, climate change adaptation, energy consumption, GHG emissions, indoor environmental quality, material sourcing, pollution prevention, renewable energy, resilience to catastrophe/disaster, sustainable procurement, waste management, water consumption
ESG Policies	Policies on social issues available for an entity	State which social issues are included	Community development, employee engagement, employee health & well-being, employee remuneration, health & safety of the community, employees, tenants, inclusion and diversity
ESG Policies	Policies on governance issues available for an entity	State which governance issues are included	Bribery and corruption, cybersecurity, data protection and privacy, executive compensation, fiduciary duty, fraud
Management: Reporting			
ESG Disclosure	Disclosure of ESG actions/performance by the entity	State where disclosures are found and if 3rd-party reviewed	Section in annual report and/or stand-alone sustainability report(s) on an entity, investment manager and/or group level, dedicated section on corporate website, section in entity reporting to investors,
ESG Incident Monitoring	Process in place to monitor ESG-related controversies, misconduct, penalties	State whether process includes external communication of the controversies, misconduct and penalties	Clients/customers, community/public, contractors, employees, investors, regulators, government, special interest groups
ESG Incident Occurrences	Number of ESG-related breaches resulting in fines or penalties	List the number of cases, total value of fines, number of pending investigations	-

Note. Source; (GRESB, n.d.-a)

Environmental Factors for Real Estate

Environmental factors can be expanded to more than heating sources, insulation, and CO_2 emissions generated from a building in an operational state. Wüest Partner mentions the importance of including waste management, recycling of materials, pollution, water consumption and biodiversity. Additionally, it will become increasingly important to take grey energy of buildings into account (Favre, 2021). GRESB also believes that it is relevant to capture the emissions of the entire building, which includes not only the base building, but all tenant spaces such as parking spots (GRESB et al., 2022).

According to Juliet Blum, a scientific officer with the FOEN, FOEN recently completed a first draft for a catalogue of indicators that focuses on the measurement of lifecycle emissions in real estate. The purpose is to impose binding reporting on lifecycle emissions for large companies as a first step moving forward but it will take time before a law is passed and implemented. Furthermore, Ms. Blum stated that under certain circumstances, the catalogue may be shared with companies wishing to implement ESG criteria into their products (J. Blum, personal communication, November 2, 2022).

7.2. Building Bridges Panel on Social Impact Real Estate

At the Building Bridges Conference in Geneva, Switzerland on 6 October 2022, a 90-minute panel was held on the topic of Social Impact Real Estate. The panel discussion provided insights into the area of social investing, gave industry best-practice examples and stated elements which contribute highly to social aspects of real estate (Vlasveld et al., 2022). Aspects from the panel which are relevant to building an ESG-rating that takes social aspects into account are included in this section.

The panelists included Martijn Vlasveld (MV) (Head of ESG at Edmond de Rothschild REIM), Bert-Jan Scheffer (BJS) (Head of Business & Product Development at Edmond de Rothschild REIM), Nicolas Di Maggio (NDM) (Head of Asset Management Indirect at Swiss Finance & Property AG; CEO of Swiss Finance & Property SA), and Francois Yenny (FY) (Head of Research and Consulting for Suisse Romande, CBRE).

The moderator began by stating that most ESG focus has been placed on the environmental aspects in real estate, particularly in energy transition and carbon emissions. However, there is a growing expectation from communities, the population and from investors to consider the social impact of real estate.

MV stated that the PRI identified two main relevant areas for action in real estate including green buildings and affordable housing, which are based on the UNs SDGs. Affordable housing has a social impact in real estate and is becoming more prominent due to the increased rise in prices in cities and rising energy prices, along with an increase in the number of people with lower incomes who cannot afford to live in cities.

MV stated that the major issue with social investment in real estate is its measurability. MV's UK office has worked on building a framework based on the UNs sustainability goals around affordable and social housing and the environment. They focus on the decrease of poverty (goal 1), health and well-being (goal 3), affordable and clean energy (goal 7), sustainable cities and communities (goal 11) so that there are cities with a broad range of citizens and not only for wealthy, responsible consumption, and production (goal 12), and climate action (goal 13).

MV described four measurement characteristics for the measurement of social need and affordable housing including social need, additionality, affordability, and quality of management. This includes investing in low-income areas with higher social needs as opposed to high-income areas and investing in areas where the housing prices are lower so that affordable housing can be offered. For affordability, measurement through additionality can be made through a comparison of the rental prices compared to the market. For social or affordable housing segment, the rents should be lower than the market. Good management is important for affordable housing and not just high-end housing, and the quality can be measured through satisfaction surveys for the renters and for the property managers and determining what services are offered. Investment types could include the general needs of households including social rent, affordable rent and shared ownership. Furthermore, specialist housing types that focus on social needs are extra care, homelessness accommodation and supported living.

MV explained how social housing works in actual fact. For the conversion of an existing building in the UK to accommodate homeless people, a building was leased to an organization that receives government support, which made this a viable investment with a social return.

NDM believes that the idea of social investment has changed over the last decade. In the past, concentration was put on affordable housing and now, social investments have become much broader. For example, biodiversity, communities, connectivity to public transport. This is the change that is occurring on the market. In Switzerland, various funds

were created with ESG, green, responsible, sustainable in their name. FINMA now wants concrete indications for transparency. This allows investors to be aware of where their investments are being put.

NDM gave an example of a building complex in Horgen Oberdorf, Switzerland, which was a conversion of an industrial site into residential buildings with over 400 apartments. On top of the environmental aspects such as CO_2 neutral heating, the complex concentrated on social aspects including the diverse mix of apartments for families and small households, acceptable rents, focused on the idea of community and living together, as well as good connectivity through a railway station built specifically for this complex.

A further example in Zürich (Bombachstrasse) was given by NDM of an eight-building complex that focused on the densification of an existing settlement to offer affordable housing. The building from 1950 was converted from small apartments into a mix of small and large family apartments. This conversion contributed to diversification of the tenant mix (social mix), the offering of affordable housing, and grey energy savings.

NDM pointed out that offering a good social mix is difficult to measure as it is not clear what metrics can be utilized to measure the social impact. NDM believes that social investing is more about securing a cashflow over the long-term more than short-term capital gain. This can be measured in steady cashflows and low vacancy rates. The structure may cost more for a social investment, but the vacancy rates can be expected to be lower.

FY stated that in terms of social real estate and mega trends, the aging population is a key trend, as individualization of people's needs and wants. Also, it is becoming more difficult for families and the low-income population to find affordable housing. These need to be kept in mind when thinking of social real estate.

FY stressed the importance of considering how much space should be allocated to people to be housed in. Spaces need to be built up, heated, maintained and buildings consume energy and land. FY pointed out that there is a misalignment between living area space and the demographics that occupy it in Switzerland. For example, only 58% of apartments with five or more rooms are occupied by families and shared living groups. Also, 44% of houses are occupied by singles, couples, and seniors. This can be considered as either a luxury for those with a lot of space or a misallocation of resources.

When public policy is considered in housing, there is also a discrepancy between the demographics in various apartment types. Some social housing schemes do not put restrictions on the number of people for a certain area. This raises the question of whether a sustainable goal is being attained or not. Additionally, people's living conditions change over time. When children move out of a large family apartment, schemes could be considered where the space is better allocated by giving it to another family and having the empty nesters move into a smaller apartment that suits their needs. This depends on the philosophy of the buildings.

BJS says that the end-user needs to be put at the center of every strategy. If the end-user is satisfied, then the vacancy rate is lower, rents are more sustainable, and a building will probably be more attractive if you want to sell it to another investor. Social impact is micro-level and has a community effect. Landscaping, green roofs, biodiversity, services, and amenities in a building that caters to the building users and to the surroundings benefit individuals and society at large while lowering the level of risk and generating returns. BJS says that they invest on behalf of pension plans that have the end users in mind.

BJS mentioned that it is difficult to put a specific metric on social investments. If the social aspect was not put as the focus for a building, it would have been built differently, but this is hard to prove. You cannot put a figure on what the vacancy rate would have been by using another scenario. BJS believes that social investing is more of a conviction and not something which can be measured.

BJS believes that regulations are less relevant in making a social impact but that the sector plays a role. For example, in the commercial office sector, office users are considered in decision making due to companies wanting to attract talent. In Europe, they are looking for similar products to Switzerland that focus on the well-being of their employees such as amenities, spaces where people can mingle and interact socially. MV agreed with BJS that in the commercial real estate sector, the needs of the employees are important. The building quality needs to be good, but it is important that the services surrounding the building are taken into consideration. If a company wants to make their location very attractive, then a sports gym and amenities such as restaurants nearby are helpful in making the working space social. Offices are very location-dependent and making the building attractive is more important nowadays rather than the price.

FY says it is the diversity of activities that makes a city or an area interesting. In the context of commercial real estate, the ground floor of a building is going to influence how impactful the development will be. If the ground floor is privatized, it is creating a space within a city that can only be used by that particular company. It results in a piece of the city being extracted from the city, especially in a gated or securitized area. Therefore, FY says that socially impactful commercial real estate developments should consider how the ground floor is to be developed or how much can be left public as this will determine how a company can interact with the city. For example, Europaallee in Zürich, a commercial real estate area which houses companies such as Google and UBS, has a scheme where social spaces are being subsidized by other spaces, which have the purpose of bringing a social aspect into the area (restaurants with healthy food, small shops for everyday shopping). The aim was to create an ecosystem of people with social variables.

7.3. Results for Relevant Real Estate ESG-Indicators in Switzerland

The findings from the literature review, the Building Bridges panel on Social Impact Real Estate, as well as the interviews was used as a basis for an initial analysis of environmental, social and governance indicators that could be utilized in an ESG real estate rating tool. The results are found in Appendices A and B.

Appendix A shows the results in a table form and details ESG indicators that could be utilized for an ESG-rating by using public information or data that can be purchased. Appendix B lists potential ESG indicators that require disclosure by the property owner or facility manager. The social and governance indicators listed in the results refer to indicators that are applied to tenants and not to the employees of portfolio management companies.

The results in Appendix A (public information) are categorized into various themes such as housing, accessibility, mobility, landscaping/biodiversity, healthy living, health, infrastructure, convenience (distance to amenities) and crime. Appendix B (information required from the property owner) include the themes of housing, resource usage, technology, communication, well-being, and risk mitigation. The themes are broken down further into ESG categorization, topic, measurable indicator, property type, tracking methodology and includes a description of the indicator and lists potential sources for data collection.

In cases where distances, speed limits and other continuous numbers are measured, groupings or thresholds could be utilized. This could include true and false answers, indication of whether a value is above or below a threshold or grouping of the values (distances: 0-100 m, 101-500 m, 501-1000m, greater than 1 km).

If data is collected directly from the property owners or facility managers, social and governance indicators from current real estate ESG providers such as GRESB could be used in addition to the indicators in the results. Additionally, a time-intensive analysis would involve satisfaction surveys to determine the well-being of the tenants. Ideally, satisfaction surveys would be conducted by the asset owners. Consideration should be taken to how extensive the rating should be, which will influence the number of indicators utilized in the rating.

The indicators listed in the results are the outcome of an initial analysis and require further examination pertaining to the feasibility and costs for data collection, relevance, methodology for implementation into the tool, the weighting of the indicators and determination of a final ESG-rating. Furthermore, the strategy of the rating will need to be taken into consideration pertaining to the extensiveness of the rating and the participants who should be involved (tenants, owners, facility managers, etc.).

Social and governance facts are difficult to measure and quantify in practice. A possible problematic with indicators for use in an ESG rating are undesired affects and behavioral changes that can result from them. When using public information as a source to determine ESG indicators, and the surrounding environment and amenities in the area such as distance to amenities, parks, and forests is considered in a rating, these are factors that building owners cannot directly influence and control. Therefore, if investors choose to invest in real estate in poorer areas to contribute to an appreciation of the neighborhood, but the surrounding environment leads to poorer grades, this could act as a deterrent to invest in specific geographical areas with certain demographics. Therefore, careful consideration regarding the chosen indicators in a further analysis is essential.

Furthermore, the inclusion of indicators for smart cities, grey energy, and the transformation of underutilized buildings to match community needs would require several indicators and an in-depth analysis and were therefore not included in the scope of this paper. A rating that includes biodiversity would also be extensive and should be considered in-depth. Only basic indicators for biodiversity were included in the analysis.

8. Methodology and Results for a Comparative Analysis of Swiss Real Estate Funds

This chapter compares a sample of Swiss real estate companies and corresponding real estate funds regarding the frameworks and reporting methodologies that they utilize. Furthermore, an overview of pertinent and relevant information and metrics that can be retrieved from annual reports for each of the funds is provided.

First, the methodology for the comparative analysis is outlined including the company and fund selection process, the data sources utilized, as well as the metrics and information collected for the analysis. Thereafter, the results are listed and described.

The aim of the analysis is to determine what frameworks and certificates real estate fund management companies utilize, who they collaborate with, and what information about fund properties are released to the public in annual reports. This data collection will be useful to determine what available information could be utilized in the determination of an ESG-rating for indirect real estate. The indicators that will ultimately be estimated in a later study include the actual CO_2 and heating performance, the obsolescence of the building, as well as forward looking emissions in 2030 and 2050. Depending on the information available, CO_2/surface area and CO_2/revenue would be estimated.

8.1. Company and Fund Selection Process

Table 14 lists the sample of 12 real estate companies and 12 corresponding real estate funds that were selected for the comparative analysis. Large corporations of banks and fund management companies with Swiss real estate funds were chosen for the analysis. The companies were selected through a search over Swiss Fund Data, an internet search, and cross-checked with a list of funds provided by Conser. The list of funds from Conser include real estate funds for which they would like to build a real estate rating. Thereafter, a real estate fund was selected from each of these companies from the list provided by Conser or through the corresponding company website.

Table 14: *Banks and Firms under Investigation for Fund Comparison*

Bank/Company	Fund	ISIN
Bank Raiffeisen	Raiffeisen Futura Immo Fonds	CH0225182309
UBS	UBS Property Fund – Swiss Commercial 'Swissreal'	CH0014420886
Credit Suisse	Credit Suisse Real Estate Fund Green Property	CH0100778445
Swisscanto (ZKB)	Swisscanto (CH) Real Estate Fund Responsible IFCA	CH0037430946
Swissinvest	Swissinvest Real Estate Fund	CH0026168846
Swiss Life	Swiss Life REF (CH) ESG Swiss Properties	CH0293784861
Helvetia	Helvetia (CH) Swiss Property Fund	CH0513838323
Baloise Asset Management	Baloise Swiss Property Fund	CH0414551033
PSP Swiss Property	PSP Swiss Property	CH0018294154
Schroders	Schroder ImmoPLUS	CH0395718866
BernInvest	Immo Helvetic	CH0002770102
Swiss Finance & Property Funds	SF Sustainable Property Fund	CH0120791253

8.2. Source of Data

The data abstracted for the comparative analysis was obtained through the latest sustainability reports for each company and the latest annual reports for each fund. These were found on Swiss Fund Data and the individual companies' websites. Sources for the sustainability and annual reports are found in the table of results in Appendix C.

8.3. Metrics collected for the Comparative Analysis

Approximately 80 metrics were collected for each of the companies and their corresponding funds and compiled into a table to give an overview of the frameworks and certificates that the companies utilize, as well as the sustainability content and specific property information that is released to the public. The table is based on a check-list system with additional fields for individual information and comments. Financial statement and

income statement metrics and individual financial positions were not included as reporting on these figures is mandatory and can be found in any financial report.

The emphasis of this collection was on the sustainable framework and methodologies utilized by each fund, information pertaining to sustainability content of the funds, as well as information on a building level that can be utilized in the creation of a real estate rating proxy for indirect real estate.

The first section contains a list of utilized frameworks and methodologies such as GRESB, PACTA, TCFD, CDP and SSREI, and includes a field to manually enter rating agencies or partners that complete sustainability analysis for the company, and a field for additional information on their sustainability practices.

The second section contains fund information for each of the companies, what parties are involved, and how information is disclosed pertaining to maintenance, refurbishments, default rates, the types of buildings in the portfolios and further details about each building type and their location, whether results from certifications are published (AMAS, SSREI, GRESB, GEAK, Wüest Partner).

The third section contains disclosure information on energy and emissions consumption, greenhouse gas emissions, types of heating systems in the fund, scopes 1-3 emissions, biodiversity, water consumption and the inclusion of social aspects.

The final section gives an overview of the disclosure of individual property details such as building certificates for each building, the number of rental objects, types of rental objects, area of the rental objects, number of apartments, year of the last renovations, rental default rates, rental income of each building, among others.

8.4. Results of the Real Estate Fund Comparative Analysis

The results of the comparative analysis are found in Appendix C in table format.

Frameworks and Methodologies Utilized by the Companies

The comparison of the twelve companies shows that GRESB is the most highly used real estate framework with seven of the twelve companies utilizing GRESB for all or a portion of their real estate properties. AMAS is mentioned in seven reports regarding financial reporting, but no reference is made to AMAS in the form of sustainability measures. TCFD was reported by two companies with PSP Swiss Property implementing TCFD for the fiscal year 2022. CDP is only used by PSP Swiss Property and SSREI by Bank Raiffeisen. None of

the companies currently use PACTA in their reporting with Swissinvest stating implementation from October of 2022.

Certificates are used more frequently, with half of the sample of companies using Minergie and GEAK. LEED is used by four of the 12 companies. DGNB, SNBS and BREEAM were utilized by 3 companies. CRREM was only found in one instance. Certificates are used by the banks and companies to varying degrees. For example, Bank Raiffeisen, Swisscanto and Helvetia do not mention real estate certificates in their annual reportings and PSP Swiss Property AG stated in their sustainability report that they do not place a high priority on certifications and only 8.2% of their buildings are Minergie or LEED certified. UBS specifically states that they are concentrating on DGNB certificates and that all new buildings must be DGNB or Minergie certified. Swissinvest and Swiss Finance & Property Funds both concentrate on GEAK certifications with a small portion of Minergie certifications. Baloise and BernInvest only certify their buildings with GEAK whereas Credit Suisse and SwissLife implement 5-6 various certifications. Noteworthy is that the certificates are currently not applied to entire entities in a fund but only to a small portion of the properties.

Furthermore, although seven companies stated the use of GRESB and half listed the use of GEAK certifications, only 3 companies (25%) provided the results in the annual reports of the funds, two of which also provided the results on an entity level. Three funds also shared the Wüest Partner matrix on building location and quality.

Half of the sample of companies state in their sustainability reportings that the UN PRI is utilized as a framework. One-third use UN's SDGs and/or the SIA energy efficiency path as a framework.

The companies either report using internal sustainability strategies, or they gain additional input from external companies. For example, Bank Raiffeisen has commissioned Inrate to complete their sustainability analysis, Credit Suisse works with IAZI and REIDA, Swissinvest and Baloise Asset management collaborates with Wüest Partner, and Swissinvest follows the policy of the Pensimo Group. UBS states work with innovation partners concerning recyclable concrete and wood modular construction for their real estate assets. Five of the 12 companies make direct mention of conformity with the goals of the Paris agreement.

Comparison of Disclosed Fund Information

Concerning the organization of the funds, 17% of the companies have external fund managers and do not manage the real estate funds in-house. More than half of the funds have

kept the property management in-house. Furthermore, 8 of the 12 companies commission Wüest Partner to conduct their third-party valuations.

Ordinary maintenance and repair costs provided as a percentage or nominal value are provided by all companies, but the costs of refurbishments are only provided by 33% of the companies. Rental default rates are given either in Swiss francs, as a percentage or as both. The building usage (residential, commercial, mixed-use) as a percentage of the fund is listed for all funds. Further information pertaining to the building usage on a fund level is generally provided such as the market value (83%), rental income (75%), default or vacancy rate (92%). However, the total area for each building use type is only provided by half of the sample.

Energy and Emissions Consumption:

Table 15 shows the percentage of funds which provided energy and emissions data in their annual reports. Two-thirds of the funds provided information on total energy consumption and CO_2 emissions of the funds, but further information was found in only a minority of the funds. Evidence to back-up the statements appear to be missing. For example, two of the funds specified a methodology for life cycle emissions but three further funds stated the consideration of life cycle emissions without specifying any details.

Furthermore, a break-down of emissions into scopes 1, 2 and 3, as well as water intensity and social aspects do not appear to be of importance by the fund managers at the present time.

Table 15: *Percentage of Funds that Report on Energy, Emissions and Social Metrics*

Metric	**Reporting Percentage**	**Metric**	**Reporting Percentage**
Specification of oil heating replacements	25%	Description Life Cycle Emissions	17%
Specification of installation of photovoltaics (PV)	8%	Scope 1 emissions (in %)	17%
Energy consumption kWh/m^2	67%	Scope 2 emissions (in %)	17%
Greenhouse gas emissions kg CO_2-e./m^2	67%	Scope 3 emissions (in %)	8%
PV electricity generation MWh/year (last, current, next year planned)	17%	Water intensity (m^3/m^2)	17%
Energy sources in % (gas, oil, district heating, general electricity, heat pumps)	58%	Inclusion of social aspects	8%
Life Cycle Emissions	17%	Other Measures	8%

Real Estate Information Provided on an Entity Level

The information provided on an entity level is limited. Table 16 provides an overview of information that can be abstracted from the annual reports on an entity level and the percentage of funds which provide the given information.

The overview shows that, except for basic information such as the address, rental default rates and market value of each entity, there is no further common information which is provided for each of the funds on an entity level in more than 90% of the funds. In more than 75% of all funds, information is provided about the number of total apartments, commercial objects, total number of rental objects and the total number of objects per building type. Very few funds provide information about the property size, total building rental area, and the year of renovations (or type of renovations), which would be useful for estimation purposes of the required indicators.

Table 16: *Percentage of Funds that Report on Various Entity Level Metrics*

Metric	**Reporting Percentage**	**Metric**	**Reporting Percentage**
City	100%	Number of commercial objects	83%
Street Name and Nr.	100%	Total number of rental objects	75%
Year of construction	67%	Year of renovations	8%
Property size (m^2)	25%	Market value	92%
Total building rental area (m^2)	33%	Gross profit (CHF) per building	42%
Total number of apartments	75%	Rental income per building	67%
Number of car parking spots	67%	Total number of objects per building type	83%
Rental default rate or vacancy rate (per property) in %	92%	Number of apartments in number of rooms per building (<3, 3-3.5, 4-4.5, >5)	50%

9. Conclusion

9.1. Discussion of the Findings

Critical issues and State of the ESG Real Estate Landscape in Switzerland

The real estate sector in Switzerland faces various issues which challenges the feasibility of achieving the goals of the Paris Agreement and the UN's 2030 Agenda for Sustainable Development.

The largest issue, which is the basis for many other issues in the real estate sector, is the large carbon emissions output in the real estate sector due to the high percentage of buildings that use carbon (oil and gas) as a primary heating source, and the volume of housing in need of retrofitting measures such as improved insulation. Due to the unfolding energy crisis, the industry is experiencing a sudden trend towards intelligent building methods and energy reduction due to increased pressure from tenants on property owners to switch to non-carbon heating sources.

Other critical issues facing the real estate sector include insufficient and scarce resources available for reaching the 2030 and 2050 emissions reduction targets, a lack of urgency within the real estate industry and on a governmental level to reduce emissions, and the shortage of industry experts needed to measure and monitor emissions. There also needs to be greater consideration for grey energy, circular economy, the downcycling and disposal of construction materials and biodiversity.

Switzerland does not have the resources, both physically and in terms of human resources, to reach the carbon emissions reduction targets for 2030 and 2050. The rate of refurbishments in Switzerland will need to double until 2030 from the current 1% and an estimated annual investment volume of 2.1 billion francs will be needed in the building industry, which will require public and private funding as well as subsidies. Taxes have proven to be problematic in the past as was witnessed with the rejection of the CO_2-law in 2021. Furthermore, the pressure for profit hinders consideration of sustainability measures in the decision-making process. The mandate of pension funds is to secure sustainable returns and decisions are primarily based on profitability with sustainability only taking a secondary role in many cases.

A further issue is that since reporting measures are not standardized, there is an overabundance of real estate ratings, frameworks and certifications on the real estate market and many asset owners, banks and corporations use proprietary methods for sustainability

reporting, making portfolio comparison difficult for market participants. The methodologies utilized are often static in nature and lack visibility, transparency and forward-looking strategies with concrete emissions reductions measures.

Mandatory reporting on the TCFD is set for the 2023 fiscal year for large corporations, which is considered a positive contribution to sustainable real estate due to its mapping of risk scenarios and coverage of key carbon emissions metrics. TCFD will also bring transparency and standardization into the real estate market, and help digitize the real estate branch, which is currently lacking in the industry. However, TCFD will only become mandatory for large companies and therefore does not cover a large portion of the building stock. Also, the concern is that reporting takes precedence over a real transition to low carbon.

Furthermore, social and governance aspects are less transparent and less evaluated in the real estate sector and are found sparingly in the reporting of real estate funds, even though these factors can make a building more attractive, reduce vacancy rates and ultimately increase long-term returns. Climate is given the highest weighting due to the urgency to reduce carbon emissions, and its physical and financial impact, which is difficult to reflect on a social level.

ESG Ratings, Disclosure Frameworks and Certifications

The problem with third-party ESG-ratings is a lack of clarity and alignment. They do not clearly and consistently define what they intend to measure, the scope of the underlying data, the update of the ratings, and weightings that are used for each indicator. Therefore, companies cannot verify the accuracy of the final grading. Further, where data is not provided by the asset owners, data collection is difficult, and many companies are either not in the position, or not willing to disclose information on numerous environmental indicators. Imputation is often needed to estimate missing data, which adds to the transparency issues. Further, conflicts of interest can ensue where ESG-providers offer consultancy services to the companies being rated, and a lack of communication between ESG rating agencies and the corresponding companies can ensue.

The Swiss real estate sector contains various standards and certificates available for use by investors and fund managers, both binding and non-binding and each with their own rating criteria. The numerous offerings on the market allow companies to choose an ESG-reporting tool or certification that suits their needs and gives an asset owner an overview of a real estate object.

According to the interview responses, building certifications do not guarantee that a building will reach the Paris agreement climate targets. Further, they are expensive, can require annual verification, are difficult to compare, and are often not compatible with European equivalents.

The interviews provided an overview of the advantages and disadvantages of the certifications and benchmarks. According to their feedback, GRESB is high level and represents the ESG area relatively well. However, it is expansive and requires substantial resources to complete, making it useful for large corporate companies but not suitable for smaller investors. As a result, it does not cover a large part of the real estate sector. It is also static and takes a minimalistic forward-looking view. It's weakness clearly lies in its time-consuming implementation and annual recertifications that are required, as well as the additions that are introduced on an annual basis.

AMAS is very static and only reflects CO_2 impact and a heating index but does not include a decarbonization strategy from 2030. One interview partner stated that the rating is insufficient regarding its capacity and measurement coverage. In contrast, the Swiss Climate score is applicable to real estate and includes forward looking measures. The SIA norms, which are utilized in Swiss certifications, use actual measurements from buildings. PACTA, on the other hand, is based on estimation models and not on actual consumption data.

The view on SSREI varies. Although it is not yet established on the market, it is considered to have potential as it is closely aligned with SNBS and can be applied to portfolios with reasonable effort. However, its biggest weakness is that there is no validation of the results due to the sampling methodology utilized. It is also a static model that focuses on inventory and is not believed to adequately map operating parameters.

The SGNI is the Swiss version of the DGNB label. The advantage of this label is that the DGNB is an established international label that is extensive and includes a third-party conformity check to ensure transparency unlike the SSREI. The SNBS is a young label that has tried to utilize the strengths of other certifications on the market and to apply to various building usages. It takes a static view and is not forward-looking.

GEAK and Minergie are well established on the Swiss market and are in depth, concrete, and transparent. GEAK puts a strong focus on energy with some weight on CO_2 measurement. However, they do not cover social aspects, biodiversity and risks, and the evaluations are focused on operational energy and do not consider embodied carbon. In

comparison, the international label BREEAM is more comprehensive and considers factors beyond buildings such as transportation connections and parking.

Relevant ESG Indicators for a Real Estate Rating

The impact of ESG on the real estate industry goes beyond the reduction of carbon emissions. Therefore, various ESG indicators should be considered in a real estate ESG rating tool apart from typical carbon indicators.

The initial analysis determined two types of indicators; some can be utilized using public information or data that can be purchased, while others require disclosure by the property owner or facility manager.

The indicators were assigned to various themes such as housing, accessibility, mobility, landscaping/biodiversity, healthy living, health, infrastructure, convenience, crime, resource usage, technology, communication, well-being, and risk mitigation. They were further broken down into ESG categorization, topic, measurable indicator, property type and tracking methodology. Each indicator was described and listed potential sources for data collection.

Further analysis should consider how extensive the rating should be, which will influence the number of indicators utilized in the rating, and whether the property owners and tenants are involved. Public data sources and purchased data will not require involvement of the property owners and will allow application to both direct and indirect real estate. On this level, it could be possible to collect environmental, social and governance factors concerning the surroundings and basic state of a property, local services, amenities, infrastructure, public transportation, noise and smog levels, water quality, weather, and crime rates.

Several data sources are foreseeable, though usage will depend on the budget and scope of the rating. Governmental statistics, city and communal data and geospatial data could be used to obtain many of the indicators, but some indicators may require more extensive resources such as those pertaining to social housing or ground floor usage. Further analysis would be required to determine the feasibility of affordable housing indicators using public data.

If direct real estate is considered and participation of real estate owners is ensured, the ESG real estate tool could integrate housing indicators pertaining to affordability, diversity, tenant inclusion, tenant well-being, communication, technology building air quality, and biodiversity measures. Tenant satisfaction surveys would ensure data reliability pertaining to

tenant well-being but would be time intensive and costly. Therefore, building owners would ideally complete the surveys and report on the findings. Furthermore, should the rating involve real estate owners and an in-depth analysis is chosen, the inclusion of similar social and governance indicators from current real estate ESG providers such as GRESB could be considered in addition to the indicators determined for this study.

Relevant Information from Annual Fund Reports for Use in Determining Proxies for a Real Estate Rating

The aim of comparing various real estate funds is to get an indication of what available information could be utilized to determine proxies for indicators of an ESG real estate rating for indirect real estate. This includes current CO_2 levels and heating performance, the obsolescence of the building, as well as forward looking CO_2 emissions in 2030 and 2050, CO_2/surface area and CO_2/revenue. The information provided in the real estate annual reports and company sustainability reports vary widely.

From the sample of funds under analysis, all of them either report using internal sustainability strategies, or they gain additional input from external companies such as Inrate, IAZI and Wüest Partner. The Swiss funds under analysis use various frameworks and methodologies. GRESB is the most highly used real estate framework with just over half of the funds using this annual real estate tool. However, no rating or framework is used consistently by all funds.

The use of building certifications in funds is also inconsistent. Certifications provide useful information concerning emissions, heating performance and the state of a building. However, certification coverage of housing entities in funds are limited, the buildings that are certified are not specified, and only a small percentage of funds disclose the results of the certifications. One third of the funds do not have certifications issued for their buildings. The remaining funds certify a small number of buildings in the funds. Minergie and GEAK certifications are found in half of the funds, which is more than the others such as LEED, DGNB, SNBS and BREEAM, but only 25% of the companies provide the results of the certifications.

In the annual reports, information provided on a fund level in more than 90% of the funds include rental default rates, vacancy rates and building usage. Typical financial and income statement details are included in all funds.

On an entity level, more than 80% of the funds provided metrics including the building address, rental default rates, market value, number of rental objects per building type and the

number of commercial rental objects for each building. Only few funds provided further data such as the year of construction, property size, building area, number of apartments and car parking spots, rental income, gross profit per building, and the number of apartments and commercial objects.

Total energy consumption and CO_2 emissions of the funds is found in two-thirds of the funds. Further information pertaining to energy and emissions is sparse such as life-cycle emissions, scopes 1-3 emissions, water intensity, information about photovoltaic installations and electricity generation, among others. Only one of the 12 funds included social aspects in their reporting.

9.2. Conclusion of the Findings

This research paper aimed to outline the current state and most critical issues facing sustainable real estate, to provide initial research into ESG indicators that could be incorporated into an ESG real estate tool, and to determine relevant information that could be abstracted from annual reports for use in developing proxies for indicators of an ESG rating for real estate funds.

In doing so, qualitative research of the real estate market was carried out to outline the sustainability goals of the Swiss Confederation, carbon emission volumes in the real estate sector, and current ESG reporting, ratings, certifications, and disclosure frameworks for real estate in Switzerland.

Based on qualitative analysis consisting of desk research and interviews with industry experts, various issues were identified in the real estate sector in Switzerland which challenge the feasibility of achieving carbon emissions reduction targets as set forth in the Paris Agreement and ESG-related improvements of the United Nations SDGs.

The most critical issues are largely associated with the high carbon emissions output in the real estate sector and include insufficient and scarce resources available to reach the 2030 and 2050 emissions reduction targets, a lack of knowledge within the real estate industry and on a governmental level in understanding the urgency to reduce carbon emissions, the shortage of industry experts needed to measure and monitor emissions, and the lack of consideration for biodiversity, circular economy, grey energy and the downcycling and disposal of construction materials.

The mobilization of public and political authorities is required to address current problematics such as tax laws, the need for greater subsidy funding to increase investment in fossil-free heating sources, clear specifications regarding calculation methods and the level of

assumption-making allowed in reporting, material passports on building materials found in buildings to account for circular economy, as well as the lack of conformity with the EU-taxonomy and standards regarding sustainability reporting, and the importance of driving solutions that account for grey energy and biodiversity.

Additionally, transparency issues have arisen due to the large offerings of real estate ratings, benchmarks, frameworks, and certifications on the real estate market. Various methodologies and calculation methods are utilized making comparability for real estate investors difficult. Furthermore, many of the tools are static in nature and lack visibility, transparency and forward-looking strategies with concrete emissions reductions measures and can be time-consuming and costly.

Although the mandatory TCFD reporting should bring transparency and standardization into the real estate market, and help to digitize the real estate branch, there is still concern that the reporting will take precedence and a real transition to low carbon will be neglected.

The impact of ESG on the real estate industry goes beyond the reduction of carbon emissions. Therefore, various ESG indicators should be considered in a real estate ESG rating tool apart from typical carbon indicators. The inclusion of social and governance factors in real estate can make a building more attractive, reduce vacancy rates and ultimately increase long-term returns. However, they are found sparingly in the reporting of real estate funds.

Indicators that use public information or purchased data could include indicators related to housing (exclusion lists, social housing), accessibility, mobility, landscaping (biodiversity and green space, green roofing), healthy living (access to recreational activities and spaces), health (noise and smog levels, water quality), infrastructure (police, fire, and waste services), and convenience (distance to amenities). Government statistics, city and communal data and geospatial data could be used to obtain many of the indicators. Further indicators such as those pertaining to social housing or ground floor usage may require more extensive resources.

Indicators that require data to be provided by the asset owners or property managers could include metrics related to affordability, diversity, tenant inclusion, tenant well-being, communication, technology, building air quality, water intensity, biodiversity, and risk mitigation. Tenant satisfaction surveys would ensure data reliability pertaining to tenant well-being. Circular economy, and biodiversity would be suitable for integration but would require

in-depth analysis. Cooperation with an external third-party to obtain relevant data could also be considered.

The aim of comparing various real estate funds was to get an indication about available information that can be utilized to determine proxies for indicators of an ESG real estate rating for indirect real estate. For proxy determination, sufficient data points are required to acquire meaningful results. However, very little common information is provided by the funds in annual and sustainability reports.

Available information that could be useful in determining the proxies on a fund level include total energy consumption, CO_2 emissions, rental default rates, vacancy rates and building usage type. On an entity level, the addresses of the entities are provided and rental default rates, market value, number of rental objects per building type and the number of commercial rental objects for each building are provided by most funds. Addresses of the entities are of particular importance, as they could be used to draw valuable information when combined with geospatial mapping and other pertinent tools.

Certifications cannot be used to obtain information on a fund level due to their inadequate usage by the funds. However, an analysis of a sample of certification results could be utilized to find patterns between various building characteristics.

No concrete information is provided on future refurbishment plans, which would be useful to calculate future emissions. However, some sustainability reports, such as ZKB, have defined emissions reductions targets for their real estate funds until 2030. Information on a building level such as year of construction, property size, building area, number of apartments, rental income and gross profit per building, and information pertaining to energy and emissions including life-cycle emissions, scopes 1-3 emissions, water intensity, information about photovoltaic installations, electricity generation is not sufficiently represented in the annual reports. Furthermore, data on social factors is missing in the funds.

The results of the fund comparison indicate that further data sources will be essential in determining the proxies, that strong assumptions will need to be made, and that pattern recognition modelling of data sets and/or the use of satellite imagery to determine building characteristics could be useful in the ESG real estate rating determination.

9.3. Implications of the Findings and Recommendations

The results of the qualitative research of desk research and recommendations provided by the interview partners indicates the urgency to make changes within the real estate sector to meet the targets of the Paris Agreement and to align with the UNs SDGs.

The Swiss Federal Council needs to address the issues of the shortage of human resources in sustainable real estate. With the support of industry and finance institutions, specialist training could be offered in the measuring and monitoring of energy indicators. Furthermore, decisive and timely action from the federal government towards inclusion of circular economy and biodiversity is needed. Material passports that list building materials could be an initial step. Architects, designers, and planners need to become aware of circular economy and its incorporation into measurement tools, which could be offered in bachelor-level and further education courses for architects and civil engineers. These measures will also require training and additional human capital.

Concerning regulations such as TCFD, companies must understand that there will be sanctions if alignments to reduce carbon emissions are not made. Laws and regulations are essential in real estate to ensure changes are made. If adequate improvements are not made by 2030, a scenario for improvement could include the imposition of strong sanctions for asset owners who do not adapt to emissions reduction, which would push inefficient buildings out of the market. Also, to encourage the switch to renewable energy sources, a stronger focus should be placed on subsidies for all real estate owners including private owners, fund managers, and institutional players such as pension funds to accelerate emissions reductions.

The Federal Council should also work on a plan to harmonize reporting and disclosure frameworks and to initiate focus on one widely accepted standard, which is compatible with the EU-taxonomy. Additionally, clear specifications regarding calculation methods and the level of assumption-making allowed, as well as the need for third-party verification of data and increased industry transparency is recommended. Furthermore, emissions could be reduced by laying the groundwork to increase digitization of building information that can be used for retrofitting strategies, and by providing affordable and easy to use tools to assess grey emissions.

Finally, market players should not await standardization and regulation measures to be enforced but should shift from short-term planning to making long-term, specific, and detailed forward-looking strategies. Such measures would include strategies towards decarbonization through elimination of fossil fuel heating as a primary energy source and refurbishing

buildings to improve insulation. Social and governance aspects should be incorporated in long-term strategies, which would also improve long-term returns.

9.4. Limitations of the Study

The research questions and qualitative analysis of this thesis places a focus on institutional market players such as banks, fund managers and pension funds. The behavior of private real estate owners and their options for emissions reductions (such as subsidies) were not the scope of this thesis.

A limitation of this paper was the number of expert interviews conducted. Interviews with seven industry experts were given, and these results can be used to provide indications of the state of the real estate sector and the critical issues being faced. However, the number of interviews is not enough to be statistically significant in determining the general opinion of the industry. Furthermore, the interviewees were consultants or were affiliated with pension funds. However, fund managers were not represented in the pool of interviewees.

The scope of this paper allowed for an initial analysis of ESG indicators that could be included in an ESG real-estate rating. The results of the analysis will therefore require further examination pertaining to the feasibility and costs for data collection, relevance, methodology for implementation into the tool, weighting of the individual indicators and determination of a final ESG-rating. Furthermore, the inclusion of indicators for smart cities, grey energy, biodiversity, and the transformation of underutilized buildings to match community needs would require several indicators and an in-depth analysis and therefore were not included in the scope of this paper.

The comparative analysis of Swiss real estate funds included 12 large Swiss real estate funds and does not necessarily reflect the Swiss real state fund universe, and particularly the behavior of smaller funds. Furthermore, the fund comparison is an initial analysis that provides details about information found in the funds. How the data is utilized in developing a proxy will be the scope of further analysis.

9.5. Future Outlook

The follow-up of this study would be to determine what ESG indicators would be best suitable for implementation into the ESG rating, to determine a suitable methodology for measuring and weighting the indicators, and determining a final rating for the environmental, social and governance indicators.

Pertaining to the fund comparison, further data sources will need to be explored to determine proxies of real estate indicators for indirect funds. Data could be collected from direct real estate sources, along with typical maintenance and refurbishment plans from fund managers and utilized to complete pattern recognition. Building characteristics such as the state and size of houses, typical heating costs/m^2, water usage (m^3/m^2) and further data could also be part of further steps in determining proxies of real estate indicators.

Furthermore, various studies could complement this paper. Feedback from interview partners indicated that the energy crisis has changed the awareness of tenants towards heating costs. A future study could evaluate how tenants value various environmental, social and governance factors in monetary terms. This could be utilized to determine the willingness of tenants to pay more for those factors. Additionally, the study could evaluate how tenants relate the state of a building (heating system, insulation, type of windows, building materials, state of the building, etc.) to the rental costs to determine whether tenants over or underpay their rental costs when utilities expenses are considered. If it could be proved that tenants are willing to overpay for certain building characteristics (such as social determinants), it could incentivize property owners to improve ESG components of their properties.

A behavioral study could be completed to determine how taxes and subsidies effect the behavior of people towards decision making. This could be used to determine how subsidies or taxes would influence the real estate market and to what degree higher subsidies lead to higher investments in carbon-free heating systems than would increased taxes.

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Appendix A: Potential ESG Indicators using Public Information

The following table lists potential ESG indicators that could be integrated into an ESG Real Estate tool using public information.

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
G	Housing	Tenants on exclusion list	Tenants on exclusion list (Yes/No)	R, O, I	Institutional investors with funds that have tenants that offer products or services on the exclusion list (ie. tobacco, alcohol, coal)	Screen addresses for registered companies that are affiliated with products and services on a pre-defined exclusion list	Fund data for addresses, government data base with list of registered companies/addresses or using public information
S	Housing	Affordable housing	Rental amount/m^2 compared to market prices in area. Or taxable income levels in area, vacancy rates	H	Attract tenants with lower income. Leads to low vacancy and stable income for owner. Contributes to population mix in a region	Rent charged in comparison to average rents/ m^2 in the local area. Assumption that rental amount details provided by property owner due to nature of this housing. Otherwise, it will be an indicator using information from asset owner. Alternative: vacancy rates over time (confirms price/performance ratio).	Property owner or estimation through revenue and living area of rental objects in annual reports (for funds) if information is available; Homegate, government statistics over rental prices for comparison
S	Housing	Social housing (for homeless, mentally ill, disabled, youth, low-income individuals)	Social Housing (Yes/No) based on pre-determined set of criteria and in % of total offering in building	H	Funding/subsidies often paid directly to property owner or to tenant from government. It is a social aspect from landlord to offer housing for this use. Can be in the form of an entire house or apartments within a building	Generally supported on a governmental level (Federal Housing Agency, Bundesamt für Wohnungswesen BWO) or by NPOs/NGOs. Track by determining if social housing criteria is met (yes/no), and the percentage of apartment units offered as social housing	To retrieve directly from the Cantons, BWO, or the organization

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
S	Housing	Social housing for aging population (elderly care and nursing homes)	Yes/No based on pre-determined set of criteria	H	Increasing need for suitable housing for aging population. Facilities for the elderly require retrofitting of most existing buildings, therefore requiring special investment from property owners.	Rental amounts could be difficult to retrieve and are irrelevant. Track by determining if social housing criteria is met (yes/no If affordable housing for the elderly, compare rental price/m^2 compared to market prices	Elderly care and nursing home facilities are registered and can be found/accessed online along with indicator data
S	Housing accessibility	Wheelchair accessibility	Yes/No of ramp access between street and house entrance	I, O, R, H	Shows whether accessibility to house for wheelchairs and baby strollers is available	Google earth, geospatial data or similar to determine presence of ramp access to entrance of building	Google earth, geospatial data or similar
S	Housing	Community involvement	Public ground floor Yes/No	O	Creates a sense of community. No private area or security in ground floor of building. Public access such as shop or restaurant	Google street view or address records or similar to determine presence of public space in building	Google street view, address records
E, S	Mobility	Public Transport	Distance to nearest public transportatio n system	I, O, R, H	To ensure people are well connected and to reduce reliability on fossil-fuel driven vehicles	Distance between house and next public station as shown in sbb.ch or through the usage of geospatial data	Swiss Federal Office has a developed matrix on how buildings are connected to public transport; Sbb.ch, geospatial data, etc.
E, S	Mobility	Shared Transport (cars)	Distance to nearest Mobility station	I, O, R, H	To improve connectivity, and to reduce the need for people to own their own car	Distance between house and next mobility station (and other car sharing services)	Mobility (car-sharing) and other similar providers

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
E, S	Mobility	Shared Transport (other)	Distance to bike, scooter stations	I, O, R, H	To improve connectivity of people	Distance between house and service area of bike and scooter stations	Lime, Publibike, etc.
E, S	Landscaping	Green Space	Nr. of trees on property	O, I, R, H	To contribute to biodiversity, reduce stress of temperature rise, and improve well-being of tenants	Geospatial data	Geospatial data, company Urbio or similar
E, S	Landscaping / Biodiversity	Green Space	Percentage of natural surface area	O, I, R, H	To contribute to biodiversity, reduce stress of temperature rise, and improve well-being of tenants	Geospatial data to determine the percentage of natural surface area on property (not concrete, etc).	Geospatial data, company Urbio or similar
E, S	Landscaping / Biodiversity	Green Space	Percentage of Roof Greenery	O, I, R, H	To contribute to biodiversity and reduce stress of temperature rise	Geospatial data as a percentage of total roof surface area (area of solar panels not included in total surface area)	Geospatial data, company Urbio or similar
E, S	Landscaping / Family	Playground facilities	Playground on property	H	For the well-being of families	Use of satellite imagery to determine if playground on property	Google earth or geospatial data
E, S	Healthy Living	Access to Parks	Distance to next park	O, I, R, H	For the well-being of the tenants	Use of satellite imagery to determine distance from property to next park (ie. 0-100m, 101-500m, 501m-1km, > 1km)	OpenStreetMap, Google earth or geospatial data
S	Healthy Living	Access to Recreation	Distance to Recreational facilities	O, I, R, H	For the well-being of the tenants	Measured either as the number of offerings within 500m radius or based on distance to a selection of recreational facilities (ie. 0-100m, 101-500m, 501m-1km, > 1km)	Google maps or similar

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
S	Healthy Living	Quality of Life / Health	Distance to fitness facilities	O, I	For the well-being of the tenants	Mapping of distance from the property to the next fitness facility (ie. 0-100m, 101-500m, 501m-1km, > 1km)	Google maps or similar
S	Healthy Living	Access to Nature	Distance to next forest, water source (lake, river)	O, I, R, H	For the well-being of the tenants	Mapping of distance from the property to the next forest or water source (ie. 0-100m, 101-500m, 501m-1km, > 1km)	OpenStreetMap, Google earth or geospatial data
E, S	Healthy Living	Bike lanes	Percentage of bike lanes and 30km/h zones in neighborhood	O, I, R, H	For the well-being and safety of the tenants	Either speed limit of street (see below), which can be directly extracted from ASTRA or as a percentage of bike lanes and 30km/h zones in neighborhood	Federation for streets (ASTRA) (Bundesamt für Strassen)
E, S	Healthy Living	Speed limit	Speed limit on house street & number of lanes	O, I, R, H	For the well-being (noise level) and safety of the tenants	Speed limit of property location	Federation for streets (ASTRA) (Bundesamt für Strassen)
S	Infrastructure	Childcare	Distance to childcare	H	Basic amenities in the neighborhood	Measured as a distance to the next childcare offering, (ie. 0-100m, 101-500m, 501m-1km, > 1km)	Google, Handelsregister or similar
S	Infrastructure	Schools	Distance to schools	H	Basic amenities	Use of satellite imagery to measure the distance between the property and the next public school (ie. 0-100m, 101-500m, 501m-1km, > 1km)	Google maps or geospatial data or similar or use city/communal data available

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
S	Infrastructure	Hospitals	Distance to next hospital	O, I, R, H	Basic amenities	Measure distance from property location to nearest emergency center (ie. 0-1km, 1-5km, 5-10km, >10km)	Google maps or geospatial data or similar or use city/communal data available
S	Infrastructure	Community services	Distance to next community center, district office, voting center	O, I, R, H	Basic amenities	Mapping of distance from the property to community services. Measured as a distance to the offerings, (ie. 0-100m, 101-500m, 501m-1km, > 1km)	Google maps or geospatial data or similar and governmental data on location of services
S	Infrastructure	Police Presence	Average emergency arrival times	O, I, R, H	Basic amenities	Use the average emergency arrival times for the neighborhood (ie. 0-5 min., 5-10 min., 10-30 min., >30 min.)	Federal statistics office or open information available from the city/municipality
S	Infrastructure	Fire protection	Average emergency arrival times	O, I, R, H	Basic amenities	Use the average emergency arrival times for the neighborhood (ie. 0-5 min., 5-10 min., 10-30 min., >30 min.)	From the city or municipality such as (Stadt Zürich, 2022e)
E, S	Infrastructure	Household waste removal	Frequency and distance to next waste collection depot	O, I, R, H	Basic amenities	Measure frequency of pick-up, distance to next household waste removal depot (at property or collection depot). Household waste such as garbage, paper, carton	From the city or municipality. Public information.

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
E, S	Infrastructure	Recycling	Distance to next collection depot	O, I, R, H	Basic amenities	Mapping of distance from the property to the next recycling area. Measured as a distance to the offerings, (ie. 0-100m, 101-500m, 501m-1km, > 1km)	From the city or municipality. For example: (Stadt Zürich, 2022b)
S	Convenience	Amenities	Distance to next grocery shopping, drug store, restaurant, etc.	O, I, R, H	Basic amenities in the neighborhood	Measure whether basis number of amenities are available within a certain radius from property location (ie. 500m or 1km)	Data retrievable from the city and communities. For example, (Stadt Zürich, 2022c) and LISA App (Stadt Zürich, 2022a), geospatial data
S	Health	Noise Level	Sound level of street	O, I, R, H	Noise protection	Sound level measured against minimal requirements of the Federal Council or Communities. Alternative: assumptions using driving speed limit of street and distance to next highway.	Data retrievable from cities and communities. For example (Stadt Zürich, 2022d)
S	Health	Noise Level	Distance to next airport	O, I, R, H	Noise protection	Sound level: information retrievable from the respective cantonal office and, in large cities, the corresponding municipal office	(Bundesamt für Umwelt, 2021)

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
S	Health	Smog Level	Ozone smog values	O, I, R, H	Air smog protection	Air quality measurements from each neighborhood/city, measured against maximum European Target value of 120 Mikrogramm pro Kubikmeter (µg/m³) als 8-Stunden-Mittel (Umwelt Bundesamt, 2022)	(Bundesamt für Umwelt, 2022a) or on a city level such as (Stadt Zürich, 2022f)
E, S	Health	Water quality	Water quality	O, I, R, H	Generally not an issue in Switzerland	Could include by measuring level of contaminants.	Public data
E, S	Health	Weather	Number of sunny hours, rain, snowfall, temperature	O, I, R, H	Weather plays a role to health of the population. Various indicators could be measured as listed under measurable indicators	Measure indicators in comparison to the country average or against a further suitable benchmark	Wetter API such as Meteomatics (Meteomatics, n.d.), Meteo Schweiz, or other
E, S	Crime	Crime rates	Number of registered offenses in neighborhood	O, I, R, H	To determine the safety of the area	Statistics of neighborhood compared to the national average	Public information on a city/communal level
E, S	Crime	Crime rates	Number of registered stealing offences	O, I, R, H	To determine the safety level of the area	Measure the number of registered stealing offences in the neighborhood. Statistics of neighborhood compared to the national average	Public information on a city/communal level
E, S	Crime	Crime rates	Number of registered burglaries	O, I, R, H	To determine the safety of the area	Statistics of neighborhood compared to the national average	Public information on a city/communal level

Note. E = Environmental, S = Social, G = Governance; O = office, I = industrial, R = Retail, H = Home; Source (based on qualitative analysis and own ideas)

Appendix B: Potential ESG Indicators using Information from Asset Owners

The following table lists potential ESG indicators that could be integrated into an ESG Real Estate tool using information from asset owners, facility managers or tenants. If information is available or can be collected from asset owners, existing ESG-rating tools such as the GRESB questionnaire could be used as a basis for E, S and G indicators. (GRESB, n.d.-a). Further indicators are listed in the following table.

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
S	Housing	Diversity in housing	Combination of rental amounts/ m^2 in building	H, O, R	Integration of various income levels in a building, office, or retail area. Contributes to decrease in rich and poor neighborhoods in an area	Asset owner to confirm at least one apartment or facility with rental amount/ m^2 below average rent/ m^2 for the area, or rental incomes of tenants or other methodology	property owner or facility management and/or taxable income levels from tenants
G	Housing	Strategy for tenant diversity in housing	Policy in place (Yes/No)	H	Set, implement, and monitor policies for improving tenant diversity for existing assets	Asset owner has a methodology or policy in place for ensuring diversity of tenants	Property owners, facility manager
S	Housing	Multitenant shared spaces	Shared spaces (Yes/No)	O, I	shared conference rooms, bathrooms, secretary services, kitchenette, parking spaces, IT services	Asset owner to provide information on a yes/no basis, confirmation with contract	Property owners, facility manager
G	Housing	Strategy for inclusion in housing	Policy in place	H	Documented strategy in place with targets towards including socially marginalized people such as migrants and homeless	Documented strategy	Property owners, facility manager

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
E	Resource usage	Environmentally suitable allocation of resources	m^2 / tenant of living area, number of rooms per tenant	H	To ensure no misallocation of resources in the real estate sector	Set a threshold for living area per person m^2/person or similar	Property owners, facility manager
S, E	Technology	Smart Houses	Use of technology for easy living and for environmental improvements	O, I, R, H	Control of heating over app, energy efficient light bulbs, water saving taps in showers, etc.	Check-list of technology available on the property	Property owners, facility manager
S, E	Technology	Alternative drive technologies	Number of electric car charging stations and parking spaces for bicycles	O, I, R, H	To promote environmentally friendly transportation methods	Property owner to indicate number of car charging stations and m^2 for bicycle storage	Property owners, facility manager
S, G	Communication	Communication network	Communication between asset owner/management facility and tenants	O, I, R, H	To ensure proper communication between tenants and property owners or facility management company	Documented measures in place showing communication measures undertaken. Confirmation from tenants (if not time consuming)	Property owners, facility manager
S, G	Well-being	Well-being of tenants through amenities	Availability of facilities, tenant feedback	H	fitness room, leisure areas, party rooms, urban gardening, etc.	Documentation of available facilities from property owners / facility managers, tenant satisfaction surveys	Property owners, facility manager, tenant feed-back

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
S, G	Well-being	Well-being of tenants through amenities	Availability of facilities, tenant feedback	O	fitness room, leisure areas, cafeteria, restaurant in vicinity, quiet areas	Documentation of available facilities from property owners / facility managers, tenant satisfaction surveys	Property owners, facility manager, tenant feedback
S, G	Well-being	Well-being of tenants through tenant interaction	Tenant feedback	H	Determine whether the housing environment allows for tenant interaction (social events, public outdoor space, etc.)	Tenant satisfaction surveys	Property, owners, facility manager, tenant feedback
S, G	Well-being	Cleanliness	Tenant feedback	H	Cleanliness of the housing facilities	Tenant satisfaction surveys	Property, owners, facility manager, tenant feedback
E, S	Air quality	Ventilation and air quality	Air quality within building, tenant feedback, number of openable windows	O, I, R, H	Air quality influences health of tenants	Documentation of air quality from 3rd party or number of openable windows per m^2 or building certification such as Minergie, tenant satisfaction surveys	Property owners, facility manager, building certifications, tenant feedback
G	Risk mitigation	Corruption	Risk management plan in place to decrease probability of corruption	O, I, R, H	Corruption within the building sector leads to disadvantages for tenants and community	Risk management plan of owner in place with set processes to decrease risk of corruption	Property owners, facility manager

ESG	Theme	Topic	Measurable Indicator	Property Type: I, O, R, H	Description / Outcome	Tracking Methodology	Source of Information
E, S	Biodiversity	Biodiversity	Permeable, unsealed soils (in m^2/total area), type of grass area (cultivated grass or wildflowers, for example), size of underground structures, façade and roof greening, number/type of trees, nesting opportunities for animals, etc.	O, I, R, H	Biodiversity is very complex. Would need to determine how extensive biodiversity indicators should be included.	Manual data collection using a checklist of criteria or cirtification of an external surveyor evaluation or proof of biodiversity certification	Property owners, facility manager, certifications, possibly external surveyors

Note. E = Environmental, S = Social, G = Governance; O = office, I = industrial, R = Retail, H = Home; Source (Collection from the qualitative analysis, interviews and own ideas)

Appendix C: Comparison of 12 Swiss Real Estate Funds

This table provides an overview of sustainability criteria, measures, methodologies, and further relevant information for various Swiss real estate funds as found in official public documentation. While the checkmarks indicate that the factors are included, the Xs indicate that they are not.

Bank/Company	**Bank Raiffeisen**	**UBS**	**Credit Suisse**	**Swisscanto (ZKB)**	**Swissinvest**	**Anlagestiftung Swiss Life**
Source	(Raiffeisen, n.d.)	(UBS, n.d.)	(Credit Suisse, 2019, 2022b)	(Swisscanto, n.d.)	(Pensimo, 2022; Swissinvest, 2022b)	(Swiss Life Asset Managers, 2021a)
Utilized Frameworks and Methodologies:						
GRESB	X	✓	✓	✓ (from Fall 2022)	X	✓ (65% coverage)
PACTA	X	X	X	X	✓ (from Oct, 2022)	X
TCFD	X	X	X	X	X	✓
CDP	X	X	X	X	X	X
SSREI	✓	X	X	X	X	X
AMAS	X	✓	✓	✓	X	X
CRREM	X	X	X	X	X	✓
DGNB	X	✓	✓	X	X	✓
Minergie	X	✓	✓	X	✓	✓
GEAK	X	X	X	X	✓	✓
SNBS	X	X	✓	X	X	✓
LEED	X	X	✓	X	X	✓
BREEAM	X	X	✓	X	X	✓
UN SDG as framework	X	X	✓	X	X	X
UN PRI as framework	X	X	✓	✓	X	✓
SIA as framework	X	X	X	✓ (SIA 2040)	X	X

Bank/Company	**Helvetia**	**Baloise Asset Management**	**PSP Swiss Property AG**	**Schroders**	**BernInvest AG**	**Swiss Finance & Property Funds AG**
Source	(Helvetia Gruppe, 2022)	(Baloise, n.d.)	(PSP Swiss Property, 2022b)	(Schroders, 2021)	(Berninvest AG, 2022)	(Swiss Finance & Property Group, 2022)
Utilized Frameworks and Methodologies:						
GRESB	X	✓	✓	✓	X	X
PACTA	X	X	X	X	X	X
TCFD	X	✓	From 2022	X	X	X
CDP	X	X	✓	X	X	X
SSREI	X	X	X	X	X	X
AMAS	✓	✓	X	X	✓	✓
CRREM	X	X	X	X	X	X
DGNB	X	X	X	X	X	X
Minergie	X	X	✓	✓	X	✓
GEAK	X	✓	✓	X	✓	✓
SNBS	X	X	✓	X	X	X
LEED	X	X	✓	✓	X	X
BREEAM	X	X	X	✓	X	X
UN SDG as framework	X	✓	✓	✓	X	X
UN PRI as framework	✓	✓	X	✓	X	X
SIA as framework	X	X SIA 380/1	X SIA 112/1	X	X SIA 380/1	X

Bank/Company	**Bank Raiffeisen**	**UBS**	**Credit Suisse**	**Swisscanto (ZKB)**	**Swissinvest**	**Anlagestiftung Swiss Life**
Name of Partner / rating agency advisor and/or In-house	Inrate	In-house	In-house, IAZI, REIDA	In-house	Wüest Partner, policy of Pensimo Gruppe	In-house
Further Information on utilized sustainability measures:	-	• Minergie, • Concentration on DGNB certificates • Work with innovation partners about recyclable concrete and wood modular construction • Number of all and new buildings with AMAS certificate listed; all new buildings need certificate	• For ESG criteria determination, use of GRI (Global Reporting Initivative), INREV, EPRA Best Practices • Net-Zero goal for global real estate by 2040	• Exclusion criteria • Use of proprietary models with sustainability criteria • 2C degree target (Paris agreement) • Exercise voting rights on the basis of UN's 17 SDGs • Target values for non-renewable energy demand and GHG-emissions with 2000-watt society	• Follows the corporate responsibility policy of Pensimo Gruppe • Actual consumption values of all buildings are recorded and evaluated • GEAK certificates for buildings • Portfolio quality (property quality and location quality) through Wüest Partner	• Launch of a sustainable global IT platform for real estate with integrated ESG data gathering, storage and analysis into daily business tools, inclusion of social factors

Bank/Company	Helvetia	Baloise Asset Management	PSP Swiss Property AG	Schroders	BernInvest AG	Swiss Finance & Property Funds AG
Name of Partner / rating agency advisor and/or In-house	Helvetia sustainability risk framework (since 2021)	In-house, Wüest Partner (CO_2 reduction path)	Internal ESG processes including CO_2 reduction plan, social and governance factors	In-house environmental management system EMS (ISO14001 certified): framework for sustainability principles (energy, water, waste, social) in real estate life cycle	In-house	In-house
Further Information on utilized sustainability measures:	• Conformity with emission reduction from the Paris agreement • ESG dynamic analysis	• UN SDGs as a framework: Goal 13 • Member of SFS, SVV, AMAS, SSF • ESG evaluation through specialized agencies)	• follows EPRA (European Public Real Estate Assoc.) • 2022: Circular economy to be introduced to employees • Certficiates not a priority: 8.2% of buildings with Minergie and LEED • 2022: adjustment of current policies to match TCFD, SFDR, CSRD, EU Taxonomy • construction projects use SNBS und SIA 112/1 as basis, energy and CO_2 data calculated with Myclimate's Smart3 data management system and an external partner	• Best Practices from EPRA • Conformity with emissions reduction from the Paris agreement	-	• Conformity with emissions reduction from the Paris agreement • Use of own system with dynamic view of emissions

Examples: Swiss Real Estate Funds						
Fund Name	**Raiffeisen Futura Immo Fonds**	**UBS (CH) Property Fund - Swiss Commercial "Swissreal'**	**Credit Suisse Real Estate Fund Green Property**	**Swisscanto (CH) Real Estate Fund Responsible IFCA**	**Swissinvest Real Estate Fund**	**Swiss Life REF (CH) ESG Swiss Properties**
Fund ISIN	CH0225182309	CH0014420886	CH0100778445	CH0037430946	CH0026168846	CH0293784861
Source	2021/22 Annual Report (Raiffeisen, 2022)	2021 Annual Report (UBS, 2022)	2021 Annual Report (Credit Suisse, 2022a)	2021 Annual Report (Swisscanto, 2022)	2021/22 Annual Report (Swissinvest, 2022a)	2020/2021 Annual Report (Swiss Life Asset Managers, 2021b)
Portfolio Value (Net Fund Assets) (CHF)	334.7 million	2.1 billion	2.3 billion	1.8 billion	862.4 million	1.5 billion
Fund Management	VERIT Investment Management AG (Zürich)	UBS Fund Mgmt. (Switzerland) AG, Basel	Credit Suisse Funds AG, Zürich	Swisscanto Fondsleitung AG, Zürich	Pensimo Fondsleitung AG, Zürich	Swiss Life Asset Management AG, Zürich
Valuation Experts	CBRE (Zürich) AG, Wüest Partner AG	KPMG	Wüest Partner AG	Swiss Valuation Group AG, Luzern	Wüest Partner AG	Wüest Partner AG, Zürich
Auditor	Pricewaterhouse-CoopersAG	Ernst & Young AG	Pricewaterhouse-CoopersAG	Ernst & Young AG	Deloitte AG, Zürich	PricewaterhouseCoopers Ltd.
Property Management	In-house	Livit AG, Wincasa AG, Apleona Real Estate AG, Privera AG, De Rham & Cie	Credit Suisse Asset Management (Schweiz) AG, Schweiz	Zürcher Kantonalbank (Asset Management)	Regimo AG in Basel, Bern, Genève, Lausanne, St. Gallen, Zug, Zürich	Livit AG and Ledermann Management AG
Property Valuation Method	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF
Rental income current and previous year	✓	✓	✓	✓	✓	✓
Rental income over last 3-5 years	X	✓	✓	X	X	X
Ordinary maintenance & repairs	✓ (CHF)	✓ (% und CHF)	✓ (CHF)	✓ (% und CHF)	✓ (CHF)	✓ (% und CHF)

Examples: Swiss Real Estate Funds						
Fund Name	**Helvetia (CH) Swiss Property Fund**	**Baloise Swiss Property Fund**	**PSP Swiss Property**	**Schroder ImmoPLUS**	**Immo Helvetic (Bern Invest)**	**SF Sustainable Property Fund**
Fund ISIN	CH0513838323	CH0414551033	CH0018294154	CH0395718866	CH0002770102	CH0120791253
Source	2020/2021 Annual Report (Helvetia Asset Management Ltd., 2021)	2021 Annual Report (Baloise Asset Management, 2022)	2021 Annual Report (PSP Swiss Property, 2022a)	(Schroders, 2021)	(Berninvest AG, 2022)	(Swiss Finance & Property Funds AG, 2022)
Portfolio Value (Net Fund Assets) (CHF)	548.2 million	649.3 million	9.1 billion	1.4 billion	1.5 billion	1.4 billion
Fund Management	Helvetia Asset Management AG, Basel	Baloise Asset Management	PSP Swiss Property AG	Schroders	BernInvest AG	Swiss Finance & Property Funds AG, Zürich
Valuation Experts	Wüest Partner AG, Zürich	Pricewaterhouse Coopers Ltd.	Wüestpartner AG	WüestPartner AG	T. Graf, T. Welti, M. Rychener	WüestPartner AG
Auditor	KPMG, Zürich	Ernst & Young AG	Ernst & Young AG	Pricewaterhouse-Coopers AG, Zürich	Ernst & Young AG	Pricewaterhouse-Coopers AG, Zürich
Property Management	Helvetia Swiss Insurance Company	In-house	In-house	Privera AG, Gümligen	Berninvest AG	GRIBI Bewirtschaftung AG, Basel, IBSG Gossau
Property Valuation Method	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF	Discounted Cashflow DCF
Rental income current and previous year	✓	✓	✓	✓	✓	✓
Rental income over last 3-5 years	X	X	X	X	✓	X
Ordinary maintenance & repairs	✓ (CHF)	✓ (CHF)	✓	✓	✓ (% und CHF)	✓ (CHF)

Fund Name	**Raiffeisen Futura Immo Fonds**	**UBS (CH) Property Fund - Swiss Commercial "Swissreal'**	**Credit Suisse Real Estate Fund Green Property**	**Swisscanto (CH) Real Estate Fund Responsible IFCA**	**Swissinvest Real Estate Fund**	**Swiss Life REF (CH) ESG Swiss Properties**
Refurbishments (CHF and in % of rental income)	X	✓ (% und CHF)	X	✓ (CHF)	X	X
Rental default rate	X	✓ (% und CHF)	✓ (% und CHF)	✓ (%)	✓ (%)	✓ (%)
Profit (CHF)	✓	✓	✓	✓	✓	✓
Building use (Type and % of portfolio)	residential buildings, commercially used properties, mixed-use buildings	Commercial, mixed, residential, unused land, buildings under construction	Residential, commercial, mixed, unused land, buildings under construction	Residential, commercial, mixed, unused land, buildings under construction	Residential, commercial, mixed, unused land, buildings under construction	Residential, commercial, mixed, unused land, buildings under construction
Total area of each building type (ie. m^2 of residential, mixed)	✓	X	✓	X	✓	X
Market value for each building use	✓	✓	✓	✓	✓	✓
Rental income for each building use	✓	X	✓	✓	X	✓
Rental default in % for each building use	X	✓	✓	✓ (vacancy rate)	✓ (vacancy rate)	✓ (rental loss in CHF)
Location of buildings by Canton (%)	✓	✓	✓	X	✓	X
Key Figures according to AMAS	X	✓	X	X	X	X
Key Results according to SSREI	✓	X	X	X	X	X
Key Results of GRESB listed	X	X	✓	X	X	✓
Key Results of GEAK listed	X	X	X	X	✓	X
Key Results from Wüest Partner listed (building & location quality)	X	X	X	X	✓	X

Fund Name	**Helvetia (CH) Swiss Property Fund**	**Baloise Swiss Property Fund**	**PSP Swiss Property**	**Schroder ImmoPLUS**	**Immo Helvetic (Bern Invest)**	**SF Sustainable Property Fund**
Refurbishments (CHF, % of rental income)	✓ (CHF)	X	✓	X	X	X
Rental default rate	✓ (%)	✓ (%)	✓ (CHF)	✓ (%)	✓ (% und CHF)	✓ (% und CHF)
Profit (CHF)	✓	✓	✓	✓	✓	✓
Building use (Type and % of portfolio)	Residential, mixed usage	Residential, commercial, mixed, Parking, storage space,	Office, Retail, Gastronomy, Other	Office, Retail, Hotels/retirement living, parking, residential	Residential, commercial, mixed	Residential, commercial, mixed
Total area of each building type (ie. m^2 of residential, mixed)	✓	✓	✓	X	X	X
Market value for each building use	✓	✓	X	X	✓	✓
Rental income for each building use	✓	✓	X	✓	✓	✓
Rental default in % for each building use	✓ (vacancy rate)	✓ (vacancy rate, rental loss in CHF)	✓ (CHF)	✓ (CHF and %)	✓	✓
Location of buildings by Canton (%)	✓	✓ By region	✓	X	✓	✓
Key Figures according to AMAS	✓	X	X	X	X	X
Key Results according to SSREI	X	X	X	X	X	X
Key Results of GRESB listed	X	✓ publicize in next year's annual report	X	✓	X	X
Key Results of GEAK listed	X	✓ results to be publicized	X	X	✓	✓
Key Results from Wüest Partner listed (building & location quality)	✓	X	X	✓	X	X

XXX

Fund Name	Raiffeisen Futura Immo Fonds	UBS (CH) Property Fund - Swiss Commercial "Swissreal'	Credit Suisse Real Estate Fund Green Property	Swisscanto (CH) Real Estate Fund Responsible IFCA	Swissinvest Real Estate Fund	Swiss Life REF (CH) ESG Swiss Properties
Energy and Emissions consumption:						
Specification of oil heating replacements in fiscal year	X	Yes, no specifics to number, type of replacement or amount spent	X	X	X	X
Specification of installation of photovoltaics (PV) in fiscal year	X	Yes, no specifics to number, area or amount spent	X	X	X	X
Energy consumption kWh/m^2	X	✓	X	✓	X	✓
Greenhouse gas emissions kg CO_2/m^2	X	✓	X	✓	X	✓
PV electricity generation MWh/year (last, current, next year planned)	X	✓	X	X	X	X
Energy sources in % (gas, oil, district heating, general electricity, heat pumps)	X	✓	X	✓	X	X
Life Cycle Emissions	X	Yes, but not stated what is done at this time	Yes, but not stated what is done at this time	Yes, but not listed	X	X
Description Life Cycle Emissions	X	States desire to work with innovative parties for recycled concrete and wood module structures	✓	X	X	X

Fund Name	Helvetia (CH) Swiss Property Fund	Baloise Swiss Property Fund	PSP Swiss Property	Schroder ImmoPLUS	Immo Helvetic (Bern Invest)	SF Sustainable Property Fund
Energy and Emissions consumption:						
Specification of oil heating replacements in fiscal year	✓	✓	✓	X	X	X
Specification of installation of photovoltaics (PV) in fiscal year	X	X	✓	X	X	X
Energy consumption kWh/m^2	✓	✓	✓	X	✓	✓
Greenhouse gas emissions kg CO_2/m^2	✓	✓	✓	X	✓	✓
PV electricity generation MWh/year (last, current, next year planned)	X	X	✓	X	X	X
Energy sources in % (gas, oil, district heating, general electricity, heat pumps)	✓	✓	✓	X	✓	✓
Life Cycle Emissions	X	✓ Mapped out until 2050	✓	X	X	X
Description Life Cycle Emissions	X	X	✓	X	X	X

Fund Name	**Raiffeisen Futura Immo Fonds**	**UBS (CH) Property Fund - Swiss Commercial "Swissreal'**	**Credit Suisse Real Estate Fund Green Property**	**Swisscanto (CH) Real Estate Fund Responsible IFCA**	**Swissinvest Real Estate Fund**	**Swiss Life REF (CH) ESG Swiss Properties**
Scope 1 emissions broken down in %	X	X	X	✓	X	X
Scope 2 emissions broken down in %	X	X	X	✓	X	X
Scope 3 emissions broken down in %	X	X	X	X	X	X
Water intensity (m^3/ m^2)	X	X	X	✓	X	X
Biodiversity	X	X	X	X	X	X
Inclusion of social aspects	X	X	X	X	X	X
Other measures	-	-	-	-	-	-
Schedule of Real Estate Properties: Information provided on property/building level						
Listing of certificates for each building	X	X	✓	X	X	X
City	✓	✓	✓	✓	✓	✓
Street Name and number	✓	✓	✓	✓	✓	✓

Fund Name	**Helvetia (CH) Swiss Property Fund**	**Baloise Swiss Property Fund**	**PSP Swiss Property**	**Schroder ImmoPLUS**	**Immo Helvetic (Bern Invest)**	**SF Sustainable Property Fund**
Scope 1 emissions broken down in %	X	X	✓	X	X	X
Scope 2 emissions broken down in %	X	X	✓	X	X	X
Scope 3 emissions broken down in %	X	X	✓ (incl. business travel)	X	X	X
Water intensity (m^3/m^2)	X	X	✓	X	X	X
Biodiversity	X	X	✓ Pilot project 2022	X	X	X
Inclusion of social aspects	X	X	✓ For employees, not tenants: 'Great Place to Work' methodology, bike-to-work, personalized fitness program, ergonomics, mental health	✓ (working on integration in renovations and new constructions)	X	X
Other measures	-	-	IT infrastructure, digitalization (App: PSP Connect), special focus on tenants, employees, corporate governance, waste	-	-	-
Schedule of Real Estate Properties: Information provided on property/building level						
Listing of certificates for each building	X	X	X	X	X	✓ GEAK with grade
City	✓	✓	✓	✓	✓	✓
Street Name and Nr.	✓	✓	✓	✓	✓	✓

Fund Name	**Raiffeisen Futura Immo Fonds**	**UBS (CH) Property Fund - Swiss Commercial "Swissreal'**	**Credit Suisse Real Estate Fund Green Property**	**Swisscanto (CH) Real Estate Fund Responsible IFCA**	**Swissinvest Real Estate Fund**	**Swiss Life REF (CH) ESG Swiss Properties**
Year of Construction	✓	✓	✓	X	X	X
Property size (m^2)	✓	X	✓	X	X	X
Total rental area in building (m^2)	✓	X	✓	X	X	X
Total number of apartments	✓	✓	✓	X	✓	✓
Number of car parking spots	✓	✓	✓	X	✓	✓
Number of commercial objects	✓	✓	✓	X	✓	✓
Total number of rental objects	X	✓	✓	X	✓	✓
Year of Renovations	X	X	X	X	X	X
Number of apartments in # of rooms/ building (<3, 3-3.5, 4-4.5, >5)	X	✓	✓	X	✓	X
Apartment size in # of rooms, (in %)	X	X	X	X	X	X
Market value (Verkehrswert)	✓	✓	✓	✓	✓	✓
Rental default rate (per property) in %	X	✓	✓	✓ (Vacancy rate)	✓	✓ (Rental loss)
Gross profit (CHF) per building	X	✓	✓	X	✓	X
Rental income per building	✓	X	X	✓	✓	✓
Total number of objects per building type	✓	✓	X	✓	✓	✓

Fund Name	**Helvetia (CH) Swiss Property Fund**	**Baloise Swiss Property Fund**	**PSP Swiss Property**	**Schroder ImmoPLUS**	**Immo Helvetic (Bern Invest)**	**SF Sustainable Property Fund**
Year of Construction	✓	✓	✓	✓	✓	X
Property size (m^2)	X	X	✓	X	X	X
Total rental area in building (m^2)	✓	X	✓	X	X	X
Total number of apartments	✓	X	X No apartments	✓	✓	X
Number of car parking spots	✓	X	✓	X	✓	X
Number of commercial objects	✓	✓	✓	✓	✓	X
Total number of rental objects	✓	✓	✓	✓	✓	X
Year of Renovations	X	X	X	✓	X	X
Number of apartments in # of rooms/ building (<3, 3-3.5, 4-4.5, >5)	X	✓	X (no apartments)	X	✓	X
Apartment size in # of rooms, (in %)	✓	X	X (no apartments)	X	X	X
Market value (Verkehrswert)	✓	✓	X	✓	✓	✓
Rental default rate (per property) in %	✓ (Rental loss)	✓ (Rental loss)	✓	✓ (rental loss in CHF, %)	✓ (rental loss in CHF, %)	✓
Gross profit (CHF) per building	X	X	✓	✓	X	X
Rental income per building	✓	✓	X	X	✓	✓
Total number of objects per building type	✓	✓	✓	✓	✓	X

Appendix D: Interview Transcript 1

Interview number: 1

Date, time: 3.11.2022, 10h00

Location: Online (Microsoft Teams)

Recording mode: Microsoft Teams

Duration: 00h33m00s

Speakers: LAS: Interviewer (Laura Archer-Svoboda); IA: Interviewee (Ivo Angehrn)

Transcriber: Laura Archer-Svoboda

LAS: ***what are the most critical issues being faced in sustainable real estate at the present time with a focus on Switzerland (and in the general context on an international level)?***

IA: Yeah, I would say there are a number of issues. The first one, especially if we talk about the climate crisis, because this is this is the most burning issues overall for the real estate industry. As everybody knows, real estate buildings are the major contributor to energy consumption, resource consumptions, CO_2 emissions and the most critical issue at this point in time is that progress towards any of the objectives of reducing emissions, reducing material consumptions or anything else like that is not progressing nearly as fast as necessary. At the Swiss scale at the European scale and at the global scale.

Related to that, there's a I would say 2 main topics. The one is in terms of addressing the existing building stock, the retrofit and renovation rates are way too low, 1% more or less. This is not enough to reduce especially energy emissions, to get rid of fossil fuels in the remaining time until 2050 or any similar horizon.

And the second in terms of new construction: there it's well known how to be OK on the operational side of the energy. So, to have more or less a fossil free or low fossil style operation of the building. But the challenge of CO_2 emissions related to the construction of new buildings is still largely untapped and this is a large part of the CO_2 emissions of the construction sector. And this one is now. So, whatever we build in the next 30 years will consume part of our remaining CO_2 budget. And this is not even in the attention of many players yet being tackled. Yet being clear what needs to be done to get there.

LAS: ***Do you think that there's too many new buildings being built? Because this, I mean, the whole building and new building creates a lot of new emissions, whereas when you retrofit, you don't use as many emissions.***

AI: Yep. I would say. I mean, one of the most obvious levers must be to keep more of the existing portfolio and build less new. Nevertheless, especially in Switzerland, there's still a growing demand for demographic and other reasons growing demand for residential space as well for office space. So as the population needs, Switzerland is growing. There will be no way around also increasing the real estate. And from a resource perspective, we can see that more or less three times more material is going into the building stock that is coming out of the building stock. So that means just reusing what is already there would not be sufficient to fit the demand of resources for new construction. So yes, I mean the building industry must fulfill the demand. But on the other hand, of course it is as let's say a societal or political problem. Whether it's really necessary to extend, for example, the areas of square meters per person every year, still, whether there is some sort of rethinking of how much space everyone needs. This is definitely something. Which however cannot with a good lever really be addressed with by the real estate industry.

LAS: ***from the recycled materials point of view, do you see anything happening?***

IA: Well, there's a lot happening in terms of, I would say the construction sector in Switzerland. Most of the, let's say, valuable materials are being recycled and fed in back into the construction sector or some other sectors. The problem is that it's mostly recycled slash downcycled, so it's not really a circular economy that that material is not being used at the same level of value. So that means for example, facade glass is then ending up at as bottled glass is then ending up as Insulation material, it is the third cycle being downcycled every time.

Or concrete: It is being degraded to filling material for roads or infrastructure. And if there's not real recycling at the same level. So, this is a problem, yes. Nevertheless, in terms of the overall material, yes, construction is still issuing a lot of material that is going to landfills, but most of that is actually not from the construction itself but is rather from the excavation part of the construction and this, to be honest, that's not really reuse of materials, but that is just shift of landmass that needs to be done somehow. So, there I think there's a big lever that needs to be addressed right now.

LAS: ***Do you also see any issues pertaining to transparency or lack thereof or a lack of social and governance aspects?***

IA: Yep. On the one hand side, I would say on the energy resource and CO_2 related aspects, there is an increased point of transparency, there are more measuring methods coming up, even though those are not really standardized in many areas. So, there are still things to be done. But if you look at the integral ESG perspective, clearly social and governance aspects are less transparent or less clearly evaluated. However, my personal belief is that it's not so clear in these aspects how

much at the individual building level this is to be considered, and really this is the right field of action. So, for example, if we look at biodiversity, to have a nice biodiverse roof greening at every building is nice, but it's probably not solving the problem. So, some of these aspects needs to be considered, in my view, rather at a company, organizational level or let's say city, or at least water level and not so much at the individual building level. So, the efforts to try to rate and improve each individual building at each aspect of ESG is in my view not really efficient. But nevertheless, there's a lack of standardized measures. In the last two years, we have seen a lot of drive to go forward in sustainability and the ESG topic is coming from the investor side. And for the investors, there's clearly a lack of, OK, something that is being called a green bond or a green asset or whatever. What is it, really? So there's really a lack of transparency in terms of taking right investment decisions. There's some progress, but it's not enough on the demand side in terms of companies or individuals that rent space, there's still little demand for more transparency. I would say most of the people do not really care whether the building they're in is green or sustainable or whatever. But from the investor side, we see more, much more pressure.

LAS: ***Do you think for, for example, pension funds, insurance companies, I mean it's in their interest if they invest in their in their buildings also from the physical risks point of view and maintaining the value of their housing, then so do you think that they're from their point of view, there would be a demand to look into these issues on an environmental level, or also from a social point of view due to long term revenues.***

IA: Yeah, I think there is a demand. There's a demand in terms of securing long term revenues or in terms of risk perspective. We see more long-term investors like pension funds that are interested in that. But many other investors are not looking into that.

LAS: ***And what would these pension funds need for them to move forward?***

IA: One of the issues that there are not really standardized reportings and many portfolio holders try to evaluate their portfolios but with their own instruments and methods and so on. And this creates of course a big mess for someone that looks from the outside and wants to compare assets from portfolio holder X versus assets from portfolio holder Y.

LAS: This actually comes into my next question because I'm looking into the current weaknesses of the ratings, like GRESB, SSREI, PACTA. Swiss climate scores. There are so many different options that you can go with. What do companies need to take into account? What do you actually see as weaknesses with GRESB, for example, and other individual ratings, and from a general overview point of view with having too many offers on the market?

IA: I mean, in general, having too many offers on the market is of course the problem because you have to decide as an investor with which one you want to go with, and you cannot fulfill all of them. It's just too expensive and there are lots of overlaps and it's not easy to do and also not useful to complete all kind of ratings. So clearly it would be nice to have less standards and more real standards or widely accepted standards. In terms of the individual ones. I think GRESB is quite high level, but it's a lot of effort and it's actually used only by few large corporate companies and it's not suitable at all for smaller investors and therefore not covering a large part of the real estate, the portfolio, and I don't think that it really has an intention to somehow go there. So I don't see a development that it goes into a lighter approach that might increase the coverage but GRESB really wants a global scoring system for a small part of the market which is important for portfolio holders but not for the entire mass.

LAS: Do you find it to be too much of a static point of view which doesn't take long term views into account?

IA: No, I think in terms of coverage, it's for me OK. It's not ideal, but it's relatively OK.

In terms of SSREI, I think it's a very good approach what they have developed but it's not yet widespread by far in Switzerland. I think it has quite a potential, it is closely aligned with the SNBS individual building system. It would be for me a good candidate of a really getting a good standard in Switzerland that can be applied to larger portfolios with relatively OK effort. But as long as it doesn't get the traction or it doesn't have some of the larger portfolio holders using it instead of developing something alone, it will be difficult to be widely accepted. So I think it's still a niche player. I see some potential, but it's going to be difficult for them to become the real big one. In terms of coverage, I think it's fine. It's a little bit more restricted, but I think it's one of the better approaches in terms of covering overall ESG perspectives.

PACTA, to be honest, I know I don't know well enough. I don't have enough experience on that one that I could rate it.

In terms of the Swiss climate scores and certificates, especially Minergie and GEAK, are really mostly energy focused with a little bit of CO_2. So that's of course they're strength and weakness, in a way weakness because it's not covering some social, biodiversity and other parts and risks. Also, the CO_2 part is mainly focused on the operational energy and not the embodied carbon side. This is a weakness of them. On the other hand, they are very tangible and concrete in their main domain, which is improving energy efficiency. I think they're good in-depth. They're very concrete, they're very transparent. It's very clear how the rating gets together and it's very comparable. But I think typically this comes at the expense of not being able to cover all aspects.

And on the other hand, if I look at the SNBS and SGNI, the two main Swiss labels that use Swiss standards for measuring, I think that they're equally good. We'll have a slight preference for SNBS because it's more adapted to Switzerland. That's SGNI is more or less the German system with a little bit applied application to Switzerland.

The issue there is that I think this is a generic problem of these rating systems. You have a number of factors. You have some averages that get your ratings. You have some minimal criteria, yes, but still to have a certificate like that, even an SNBS gold label or something like that is not ensuring that your building is really on the pathway of the Paris Agreement in terms of reaching climate targets. So, they're having a good overview, but they're not sufficient to get us out of the climate crisis.

LAS: ***Do you consider them to be more complimentary to something bigger? From a strategic point of view, what do you suggest? What should companies like pension funds do on a strategic level?***

I think they should have a clear strategy regarding their labels and not decide in each individual project. What we see too often is in each individual product has a discussion. How should we do this or that? Then what is easier or what is more beneficial and so on. They should really have a portfolio strategy how to go on with these certifications to have at least within their portfolio, a certain comparability.

LAS: Are they capable of doing that?

IA: Well, they would be capable to do that. They must be willing to do it, but they would be willing, and capable to do that. The second topic is they have to address how they want to evaluate their portfolios right now and this is the typical question. They look at the available standards, none of them is really fitting. So they invent something else and there I think they need to align themselves among each other in whatever common organizations that they have to either develop or come to a common agreement how to do that. It's not really useful if they keep inventing their own things on ratings.

LAS: What about the TCFD reportings? Because that is a reporting in itself and will be become mandatory also for large corporations.

IA: Yep, I think for the large corporation this is good because it really is really focusing on some of the key figures in terms of CO_2 emissions, which are really critical in terms of the climate crisis, and I think this is good. Nevertheless, it's going to become mandatory for large corporates but it's not necessarily covering the large part of the rest of the portfolio of the building stock and there I

don't see that Switzerland, from a governmental perspective, is acting anyway fast enough to say OK, we need to have something comparable or something that is fitting together with that that is covering all investors or like I don't see really any fast enough development in this area.

LAS: So it's just good to the bigger companies, but not for the others. But for larger companies. Do you think that it's (TCFD) good enough like it is? Or what would it be missing?

IO: That's the typical problem. As soon as you want to have something that is applicable to a whole universe of large companies covering financial institutions, industry companies, real estate companies, of course, for the real estate companies, it's good, but it's not enough because it's not specific enough. You have some key figures in terms of carbon emissions and so on and so forth, but actually this is not good enough in terms of really getting transparency.

LAS: What do you think would be missing specifically?

IO: Missing specifically in my view would be some more transparency on really the pathways to move in the future, so reporting is typically the status today. Maybe over time you will be able to see the development of the companies, but I think there's still a lack of seeing how fast someone is moving from where he stands to the right level.

LAS: OK. do you think it's more static and needs to be more forward-looking?

IO: Yes, but this by far by nature is very difficult because it's forward-looking. You can state whatever you want right now. And then the question is who is following up on whether these commitments are really being done. But this is the same problem at the global, political, national level, as well as the portfolio level.

LAS: I think we're running near the end. Do you have any additional inputs on what you think needs to change? You've already mentioned a lot, but perhaps you have something else you'd like to add. What about pertaining to the 2050 goals of the Paris Agreement?

IO: I would come back to the topic of embodied carbon. I think this and circular economy needs to move really fast into the eyes of the actors in the real estate industry because people today are not aware that actually the majority or maybe even up to 80% of the carbon emission of a building over the lifetime is coming out of construction and not out of operation. So, they're not even having this in their mind. And therefore, they don't start even looking at that or tackling that. And at the same time, we have various customers from the institutional side that are looking into that, that have understood the challenge, but how to address this challenge is still something very, very difficult.

LAS: Do you really think that you need the regulations in order to things to move forward? I feel that big companies have the need to compare themselves with other companies to prove that they're doing a good job or doing better than others or some kind of a benchmark.

IO: Yeah, I think there is a need for standardization, but there is more urgent need to start acting and not waiting for standardization and regulation.

LAS: Are your clients asking for this?

IO: We have right now a very interesting group of large investors from the public and private sites together who are who have sort of built a group where they say, OK, they want to drive this forward as a joint effort with having common targets until 2030 and also doing some innovative projects together to really get advanced there rather than waiting for regulations or standardization. But at the same time, they're facing the challenge that in an individual project, that you depend on architects, designers, planners that sometime have no idea about that. And it's not enough just to say I want to have a good circular building. You cannot put this at the Pender and then expect that something good is happening.

LAS: That's a really good point you make. I was talking to somebody yesterday who works for the Ministry of Environment. And they were saying that her colleagues had get now developed a whole catalogue on circular economy that they're going to be putting forth.

IO: Yeah, there are. I mean, I wouldn't say there is complete blindness of what could be done. And if you look for it, there is enough material. Sometimes, but this is not widespread, and it's not known to many people. And secondly, sometimes these books are really listing all the possible levers and this leads to a potential problem that the big levers are forgotten and the attention is turned to the simple things that can be done easily, but they don't bring a lot of benefits and we think that the complete design process if you take these aspects seriously need to be somehow turned around, because if you start with an architect developing a certain kind of construction and building, some of the major decisions that have impacted on the CO_2 footprint of these buildings are taken at a very early stage where typically there is not even a dialogue between the investor and the architect on that. And as soon as the architect comes with, this is my proposal going back and saying no, I want to have something else is very difficult. And then at the same time, the investors are not. It's not easy to have this dialogue and have an informed discussion with the architect of what the expectations are because this is not the widespread market practice. I think this has a real impact on how things are being built because if you start thinking of OK, how do I make a building with the less possible material using as much as possible for what is already there from potential existing building stock and only at the third or fourth level you start thinking, oh

OK, what is good material, whether I should go with concrete or wood construction or things like that. This thinking is not done automatically in the design process. It's a different approach and as soon as you're progressed some steps into the design process, you can still ask these questions, but people will say yeah, but now I cannot change my complete project. This is a real difficulty.

LAS: Thank you very much for taking the time to speak with me.

IO: You’re welcome.

Appendix E: Interview Transcript 2

Interview number: 2

Date, time: 8.11.2022, 9h00

Location: Online (Microsoft Teams)

Recording mode: Microsoft Teams

Duration: 00h45m

Speakers: LAS: Interviewer (Laura Archer-Svoboda); I2: Interviewee (Anonymous)

Transcriber: Laura Archer-Svoboda

LAS: What do you believe are critical issues being faced in sustainable real estate at the present time in Switzerland (for example, from a regulatory point of view, transparency issues, lack of resources, neglect of social aspects, circular economy, etc.)?

I2: Die Renditenfragen stehen sehr stark im Vordergrund immer. Nachhaltigkeit wird meistens mit Minergie gleichgesetzt. Das heisst, es wird recht teuer gebaut und der Nachhaltigkeitsbegriff zu stark immer auf diesen Minergie Labels fokussiert. Man sollte eher intelligent bauen. Die Labels machen Gebäude sehr teuer. In gewissen Regionen macht es gar keinen Sinn nach Minergie zu bauen, weil die Mieten in diesen Regionen gar nicht bezahlt werden können oder nicht bezahlt werden. Nachhaltigkeit sollte eher intelligent gebaut werden. Nämlich, die Fenster an die richtige Stelle und mit dem Baum vor dem Fenster für den sommerlichen Wärmeschutz und nicht in die Richtung hochtechnisiert.

Nachhaltigkeit hat immer was mit hochtechnisiert. Wir sammeln Daten, wir sparen 1 Kilowatt stunde aber der Blick auf die Langlebigkeit ist nicht unbedingt so….Ich sehe eine gemeinte Müdigkeit. Zum Beispiel, dort ist eine Zertifikatsmüdigkeit, denn die Zertifikate kosten Geld. Im Endeffekt, dass man nachhaltig baut als Gemeinde, wenn man nicht renditeorientiert ist, das ist selbstverständlich. Man baut in Anlehnung an Minergie, man baut ökologisch. Das ist bei der öffentlichen Hand eigentlich gesetzt. Bei Privaten Investoren hat das Label sehr häufig den Aspekt, dass man Marketing fragen mitreineinbringt, aber es wird nicht aus dem Herzen raus, sondern mehr, man braucht die Label. Dann dreht man es so, dass man es hinbekommt. Das hat aber nichts mit Nachhaltigkeit zu tun. Bei den Privatinvestoren ist es das notwendige übel. Dann bei der Industriekunden, sie sind anders gesteuert. Die Industriekunden, wenn wir grosse Pharmakonzernen anschauen. Wenn bei ihnen ein Gebäude schlecht gedämmt ist, spielt das keine grosse Rolle. Weil wenn etwas an ihre Lieferketten ändern, hat das ein grösserer Impact als die Fenster zu wechseln.

Man muss nicht alles neu erfinden. Es gibt gute Lösungsansätze: Intelligent bauen mit Energie Speicher, damit man weniger Energie braucht. Das man Solarzellen einsetzt, wenn immer möglich, aber es geht eher in Richtung intelligentes Bauen und nicht hochtechnisiert, mit vollverglastem Gebäude und klimatisiert es dann hochtechnisiert nachhaltig.

Es ist eher diese Missinterpretation von den Begriff Nachhaltigkeit.

LAS: Von der Pensionskassen Seite, wie verhalten sie sich? Sind sie eher auf Labels fixiert oder sind das eher Banken und weitere Grossfirmen?

I2: Wir als Pensionskasse stellen schon immer die Fragen bei unseren Anlagen: wie nachhaltig sind sie, wie sozial sind sie? Es entsteht ein gewisser Druck auf die Anlagegefässe, dass sie auf Nachhaltigkeit achten.

LAS: Achten die Pensionskassen auf den Lebenszyklus, vorwärts-schauend oder werden Liegenschaften eher statisch betrachtet?

I2: Es ist sehr statisch. Das andere ist, wir als PK, wir kaufen ein in Fonds, wir achten schon auf die Gebäude. ABER, wir auf Pensionskasse, unser Auftrag ist es, eine nachhaltige Rendite zu bewirtschaften. Und für uns ist es unverantwortlich, wenn wir in ein Fond investieren, der nur auf Nachhaltigkeit setzt und zu wenig Rendite erzielt. Wir sind für Nachhaltigkeit, wir stupfen bei den Generalversammlungen und bei den Banken. Wir bringen das Thema immer wieder auf den Tisch. Wenn es aber um eine Entscheidung geht, wir haben 2 Fonds, der eine ist, nachhaltig, der andere ist Standard (ohne Waffen, usw.), dann nehmen wir das, was mehr Gewinn reinbringt.

Was ich mittlerweile schon automatisch mache bei der Auswahl, ich schaue die Gebäude an, die in diesem Fond sind. Wenn ich sehe, dass sehr viele Gebäude renovierungsbedürftig sind und in einem schlechten Zustand, dann schaue ich was auf sie zukommen. Dort ist das Thema da, der klassischen Immobilien/Fondbewertung, das von den Regulatoren, die kosten für ESG, die fliessen derzeit überhaupt nicht in die Bewertung von Fonds ein. D.h., wenn wir 2 Fonds haben, die haben einen Ertrag und vielleicht ein Discounted Cashflow, dann hat ESG kein grosser Impact, im Gegenteil.

Wir wissen jetzt nicht was für Regulationen in den nächsten Jahren kommen. Und dann stellt sich die Frage, wenn das umgesetzt werden muss, dann wird es sehr kostenintensiv. Von dem her, geht es nicht nur um schlechten Zustand. Teilweise, Gebäuden um 1900 sind viel nachhaltiger als Gebäude von heute.

LAS: Was möchtest du / könntest du beantworten von meinen Fragen? (I2 hat eine Liste vor sich).

I2: Mit dem jetzigen Problem in Real Estate mit Data Sammeln und 'lack of uniform standards', sehe ich schon so. Die Labels haben unterschiedlichen Grundlagen und wenn man mit einem Label nicht weiterkommt, dann benutzt man ein anderes Label, dass man andere Grundlagen hat. Die Vergleichbarkeit ist recht schwierig. Ich schaue es mir an als Baufachfrau. Die Zertifikate, es gibt sehr viel auf dem Markt. Man findet ein Zertifikat, dass man verwenden kann.

LAS: Wieso wird so viel Wert auf die Zertifikate gelegt?

I2: Image.

LAS: Nachhaltigkeit ist dann nicht auf erste Stelle?

I2: Die öffentliche Hand. Da wird nachhaltig gebaut. Punkt. Das ist gar keine Frage. Bei Unternehmen, die bauen je nach dem, wie sie als Unternehmen das Sehen, oder wie sie sich darstellen, bauen sie nachhaltig. Bzw. billig. Aber wenn sich als Firma positionieren wollen, dass sie nachhaltig sind, dann geht es teilweise in die Richtung Greenwashing. Wobei das kann man nicht bei jedem Unternehmen sagen. Es gibt wirklich viele Unternehmen mittlerweile, wo Nachhaltigkeit auch eine Herzensangelegenheit ist, wo das ausser Frage kommt, wo es umgesetzt wird. Dort spielt aber ein Label nicht unbedingt eine Rolle, weil sie es machen.

LAS: Ich habe 12 Immobilienfonds angeschaut, und die meisten benutzen GRESB aber die anderen werden wenig benutzt…es gibt nicht einen direkten Weg oder eine Richtung, dass alle Firmen benutzen…wie du gesagt hast…

I2: Bei den Fonds haben wir festgestellt, dass die meisten GRESB verwenden, aber das hat damit zu tun, dass es ums Image geht. Wie gesagt, die Investoren fragen das nach. GRESB ist relativ einfach. Die anderen sind sehr aufwendig.

LAS: Interessant. Ich habe eher gehört, dass GRESB auswendig ist. Ich bin froh um diese Meinung. Bisher habe ich gehört, dass es sehr auswendig ist, zum Ausfüllen, es braucht viele Ressourcen im Vergleich zu PACTA oder anderen.

I2: Ja, es kann sein, dass GRESB auswendiger ist. Man muss die Energiedaten eingeben. Wenn wir aber die klassischen Labels anschauen wie BREEAM, SGNI, die Kosten in der Zertifizierungsphase sehr viel Geld, kommen mehrheitlich bei Neubauten zum Tragen und nicht bei Bestandsbauten. Und die Fonds haben natürlich Bestandsbauten. Folglich kommt für die Bestandsbauten mehr oder weniger nur die GRESB, PACTA oder SSREI in Frage oder GEAK. Und von dem her, diesen Labels wie Minergie sind für Neubauten. GEAK ist relativ simpel und

betrachtet die Energie teil. BREEAM betrachtet das umfassender mit ÖV-Anschluss und Parkplätzen und sind nicht nur bezogen auf das Gebäude. Die sind dann umfassender.

Bei den Unternehmen, viele machen es aus Überzeugung. Dort wird schon umgesetzt, aber man muss es sich leisten können.

LAS: Was müsste geändert werden damit man auf das Netto-null Zielsetzung kommt?

I2: Ich denke, dass die Energiekrise jetzt, dass was bisher schwierig war, Strom war vorher zu billig, Energie war zu billig. Das hat den Mieter sowieso bezahlt und die Mieter haben das nicht nachgefragt. Der wollte eine günstige Miete haben. Dadurch das jetzt plötzlich steigende Preise da sind, plötzlich ist das Thema Energie da. Und plötzlich ist dieser Gedankengang da, wieso haben wir vollverglast gebaut, und wenn ich ein Stromausfall habe, sitze ich in einem Gewächshaus. Von dem her, denke ich, findet im Moment gezwungenermassen der Trend zum Intelligenten Bauen. Wie kann ich es vermeiden, Energie zu verbrauchen.

LAS: Es wird sicher eine gewisse Zeit brauchen bis die Veränderungen umgesetzt werden, weil es in der Planung reinfliessen lassen muss und das nicht von heute auf Morgen passieren.

I2: Ja. Es wird sicherlich dadurch einen grösseren Druck auf die Investoren geben. Wie gesagt, die Energiekosten schlagen jetzt zur Buche und wenn ich irgendwo hinziehe, dann werde ich heute wahrscheinlich eher schauen, wie viel Strom brauche ich, wie hoch sind die Heizkosten, und vorher hätte es ihnen nicht interessiert. Jetzt findet indirekt durch diese sehr unschöne Situation etwas Gutes. Nämlich, dass man das überdenkt. Das man diesen Aspekt Nachhaltigkeit nicht nur auf Minergie, sondern mit Intelligent bauen umgesetzt wird.

LAS: Von der Pensionskasse, sie Sozialen Aspekte, kommt das überhaupt in Frage bei Ihnen? Falls ja, wie?

I2: Was für uns sicherlich wichtig ist, ist einmal die Pensionskasse, das Unternehmen, der den Fond führt, moralisch, etisch, eher auf Governance.

LAS: Von den sozialen Aspekten, von den Menschen, den Mieter, die in den Häusern wohnen, werden auf sie geachtet?

I2: Nein und das finde ich bedenklich, persönlich. Wie gesagt, sehr viele Menschen, wenn ich Minergie mache, wird das teurer. Ich habe auch Wohnbaugenossenschaften. Sie haben nur Kostenmiete. Wenn sie nach Minergie bauen, sind sie im Markt plötzlich teurer. Wenn ich anfange jedes Gebäude, damit es kostendeckend ist, energetisch zu sanieren, dann habe ich ein grosses Problem für die Mieter. Die Labels sind für ganze viele, die kosten viel Geld, es ist eine

Geldmaschine. Man muss jährlich bezahlen, um die zu erneuern, aber wenn man es fürs Image macht, und hat keinen Mehrwert sonst. Man baut so als Mensch so wenn man überzeugt ist.

Es braucht das Image und Transparenz bei den Fonds. Aber dort kommt das Sozial mit rein. ES ist sozialer das man mehrere Wohnblocks hat, die günstige Mieten haben, wo mehrere Leute wohnen können. Dann kommen die soziale Aspekte in Frage.

Wenn plötzlich saniert wird, stehen dann plötzlich Mieter auf die Strassen.

LAS: Als Fazit dann: Man müsste weniger auf die Labels achten und mehr auf die Sanierungen aber damit es noch bezahlbar ist für die Mieter nachher.

I2: Ja, das wäre der Social Impact.

Das Fazit ist, dass man Nachhaltigkeit hinterfragen sollte, nicht hochtechnisiert, extrem teuer, sondern intelligent.

Man kann langlebig, sucht Materialien aus, die langlebig sind. Das findet man vermehrt statt. Ein Beispiel war, er hat alles gemacht, die man denken könnte. 10 Jahre später müssten dann die ganzen automatischen Storen ersetzt werden, die Verkabelung müssten ersetzt werden. Der Servicetechniker war am hin- und her fahren, und hat mehr gekostet als die eingespart wurde. Deswegen intelligent bauen. Mit der Handkurbel, das Fenster an der richtigen Stelle, gute Materialien aber nicht hochtechnisiert.

Nachhaltigkeit neu definiert. Auf die Sozialen Aspekten die auch stärker zum Tragen kommt. Und nicht hochtechnisiert.

Die Labels machen durchaus Sinn, aber ich fände es schöner, wenn es simple bleibt. Mit GRESB wird alles verteuert, weil die Daten gesammelt werden muss. Ein unglaublicher Aufwand, der dort getrieben werden muss. Weniger ist mehr. Die Handkurbel, kein Motor für die Storen. Alles was elektrisch ist, braucht es Strom und ein Service Techniker. Dann habe ich viel mehr Energie und Ressourcen verbraucht und es kostet mehr. Das ist nicht nachhaltig. Schulhäusern aus den 20er Jahren sind nachhaltig.

Für den Blick auf den Lifecycle kosten, dort sollte mehr der Fokus daraufgelegt werden, ‘to keep it simple’.

Appendix F: Interview Transcript 3

Interview number: 3

Date, time: 8.11.2022, 10h20

Location: Online (Microsoft Teams)

Recording mode: Microsoft Teams

Duration: 00h40m

Speakers: LAS: Interviewer (Laura Archer-Svoboda); JL: Interviewee (Jean Laville)

Transcriber: Laura Archer-Svoboda

LAS: Jean, thank you for speaking with me today. You received my questions in advance. Starting with the first question: what do you think are the most critical issues right now in real estate from a sustainability point of view at the present time, for example, from a regulatory point of view, transparency issues, lack of resources, neglect of social aspects, circular economy, any of these things.

JL: All. All. All. What I consider as the most dramatic aspect now is the refurbishment of building. This is the main challenge we face. As I remind you, the Swiss Confederation has an objective of 15 kilos CO_2 / m_2 by 2030 and most of the building are not there yet. And if we want to have our pension funds or real estate funds managing that, it means that they have to refurbish. This means 80% of their buildings during the next seven years, which is technically impossible for two reasons.

First, they don't have enough internal resources to manage the refurbishment of more than one, two or three building a year. You have to perhaps do 10 to 30, so it means that internally most people who own these types of buildings don't have the internal capacity to manage such an acceleration in that.

Secondly, if we want to go there, we have to calculate now how much we have to invest in that to refurbish and then I can refer you to the study from Swiss Banking Association. They have a number where they evaluate for how much we have to invest in the real estate every year from now if we want to reach this objective in 2050 and we see that they didn't make a reality check, this number. We don't have the resources even physically or in term of human resources, we don't have the resources actually to do this transition at that speed for our real estate funds. That's the most difficult and it’s not realistic. And it's there where we have the problem that when we work with pension funds on a plan, what we find is that investments during the next five, ten or 30 years, this constraint is very difficult to integrate. To see how much this will have an impact. We expect

we are not doing some greenwashing story because we want to do it. So, we announce we want what we want to do, but we are not able to prove that the market will be able to absorb this amount even if you have the money. You can do a perfect plan of investment. There is an uncertainty on how we will be able to do that. That's the first. The first idea is that in a sector we have now good discussions on how to decarbonize this real estate. We realize we don't have the resources.

But it's the same. You know, it's the same as we have now. If we want to do the same, to go to a solar panel, do we have the raw material? No, we don't have the raw material and to it is for me, as I am very active with indigenous people. This is only compatible if we come to the indigenous people and take their land.

You see what the second issue is? so this global program of resources is such a short-term period. If we had begun 30 years ago, perhaps it would be easier, but now we have to go steeper and steeper. And so it sets a brand. real estate is the same. We will clearly not be able to do the transition.

Even if we convinced real estate funds now to move, they will not be able to. Specialists say we don't know how we can do that within the next year knowing that it's not easy to train young people.

And that is a political issue of how we develop that now if we do this retro planning? What do we have to invest every year? Swiss banking has done that. Nobody discusses the issue. They have done the plan, you know, ecology, planification, you know traditional.

LAS: ***What do you suggest needs to be done then and what steps should be taken next?***

It's really now that we mobilize public political authorities, OK, we have targets here. We have the money; we have the strategy. We have people who want to decarbonize the thing, but we don't have the structure. We don't have the market. That's the problem. We have to address it at the high level. We have to do that.

And there is some reaction, people lagging, you know. Signa Terre’s parter organized a technical course for education to really train people how to monitor etcetera. They don't have people joining because professionals do not realize that they need this knowledge.

That's the same the same I have when I teach sustainable finance. Professionals do not realize that it's complex, and that as they don't capture it, they don't train, and they don't do. But at the moment they don't realize enough that they are totally outdated in terms of education.

LAS: ***Yes, it's probably they don't think about it from that aspect. They think of their funding of what they can give, but they don't think about how it works on the whole chain of events of what you need.***

JL: And they don't think what the new knowledge is that they have to integrate to manage that. For example, Signa Terre has done now a certification with PWC on how to calculate energy measurement just to protocol that. It's a complex protocol on how to calculate. How do you allocate that type of energy to heating etcetera. It's complex and we need people trained, but people even do not realize that it's complex and they need additional knowledge because they continue to work on traditional measures which is just return, risk and premium. So that's the problem. We don't have the culture now. We don't have the professionals, but the model is there, what is the good news is that we have people who are doing the job. There are already people doing it, so it's not a question on developing a framework. We have it all. If you want to do it now, you can do it in term of strategy etcetera measurement. The uncertainty is what will happen in the market. How will be able to find a partner to do that, to find the material in a relative time period according to your budget. That's uncertainty.

LAS: ***With the product that you're creating also right now and you're staying simple. You're trying to get to the point of what really is important for pension funds to look at. And I'm also looking a little bit at the current systems of GRESB and PACTA and all of these different scorings. Could you outline a bit what their weaknesses are? I know you had said that in one of our meetings you said GRESB is much too complicated.***

JL: Yes, here is the same that we have with the ESG analysis. In the past when I started in 1995, I developed my first model with ESG analysis etcetera. And now finally that is still there, you know, but people are looking at another matrix now which is net zero. You see what I mean? There is another matrix who come would try to push that a little away. The problem is now no more to convince companies to better treat their employees, etcetera. That's still important. But now what have is to change the business model and remember that historically we have a type of best-in-class analysis. So, you need mining, OK, take the best miner. But don't challenge the way we use mining. You just use mining. Now you want to ask him to move the model from using the type of mining to another view of your model which is for example switch away from coal to go to renewable energy.

So, we are moving from an ESG approach, which was, you know, more on the management system to another, which is an impact measurement.

ESG is an obligation of means. You announce what you will do. It's a moral obligation to do things. What we have to move now to is an obligation of result. And the result is a net zero. The 1st result is net zero from the Paris Agreement and the 2nd is SDG.

SDG and the Paris agreement: how a new way of thinking. We are having another objective which is an obligation of performance. Until 2030, for SDG's and 2050 for Paris, it's a revolution.

And traditional ESG is just an obligation of means. You have to put energy to manage it. And now it's not anymore enough. It was a good model 30 years ago. But as it has not been done in a sufficient way, only some small steps have been done, but not a radical step. We have now that this model is still there, but it is not enough to ensure that we are climate compatible.

LAS: ***So, you're saying that these other models, because your product is going for the 2050 goals, so are you saying that GRESB and some of the other ones are based on the older model then or what are you?...***

JL: Yes, it's the model of obligation of means. Exactly. How do you manage your stakeholder? This is this quality model. The ESG model is a total quality model, it is the one we have adopted in the 90s to say, but how do we analyze such a complex site?

LAS: ***Yes, because I noticed GRESB they have their social scoring is more based on the social from the company perspective like from a fund. But it doesn't go into the social aspects of the people living in the buildings.***

JL: Yes, it's also an evaluation what they do. It's good. I don't say we have to oppose them. We have to combine them you know. But at the moment when you want to look in the forward-looking, It's small. The climate, which is the most important because it has also a very material impact on your physical and financial performance, is one. For social, it's very difficult. When we ask, when I do Charta for pension funds, I ask them ‘do you want to have something, to see some positive impact on your renters, of the people living there?’, they say ‘no, it's not our objective’.

LAS: ***So, they're not that far yet. They don't want it.***

JL: They think it’s not their role to ensure that they are happy, and they just provide the service. Because it's too complex, too complex.

LAS: ***Ah, do you think that this is going to come though? I mean, if you really thinking of the UN's SDG's and they have all the social aspects in there, then they're not actually going to be achieving anything in that area if the tenants are not happy from the real estate point of view. Do you think this will come or?***

JL: That depends on how you look at it. You know, at the level of 1 building it's very difficult. On the level of multiple buildings, we have very nice solution. I don't know if you are familiar with the association SEED in Switzerland.

LAS: ***Ah yes.***

JL: So, I am a founder of that. And there we have developed 30 criteria. And with the 30 criteria we were inspired by one planet living. Now we have reduced. And for each of the indicators we have social indicators but what we ask for is there is an animation in the neighborship with things like that.
Yeah, if you have multiple houses, you have to have a structure locally, paid by the owners to make an animation to ensure people are happy, you know, to ensure people. that's a new way. And we've seen that's the best way to produce social value is to ensure that there are resources dedicated. To ensure to make connection with all participants and see where has a problem. For example, in Zurich they have social professionals have been hired by the cooperatives. And that's where we see a real progress. Otherwise, if you just ask, you know, in this GRESB questionnaire, satisfaction of employees, I mean, what does that mean? But if you have action like that, we have a budget. For example, in SEED, they have to pay 2 CHF per square meter to ensure that this social dimension is financed.

LAS: ***Are you meaning owners with which have multiple buildings you're talking about together in one area? Or***...

JL: Yeah, because it's a certification process.

LAS: ***Is that also on a fund level as well then? Or more on just a block of buildings together?***

JL: It's physical. It's an area, and then you have professional investors, private investors, public investors and all that they have to apply all the certification is applied to all type of owners.

It is a way, when they buy, they buy your certification and if they don't respect, it's a dynamic certification, not like Minergie, which is just as one point. It's dynamic and at some point, something in those respective for example, social animation, you lose the certification.

It's totally new in terms of now pushing real things. In that and being based no more on just declaration but having to a declaration an action.

LAS: ***Do you think then that GEAK right now and Minergie? Do you think this is going to die out with time? Or do you think this is something that companies still wanted to show off? I have my done my sustainability part. I'm good now. I have my building certified. Do you think this is something that will…?***

JL: It will be the same. We need these numbers. But now we have to look at what is inside? What is the business model inside? Is this business model good or not? You know, it's not enough to just know the CO_2, do you have to understand? Is it something in the process that is sustainable?

LAS: ***Yes.***

JL: You know, not only on analyzing the output. You have to analyze now if something is sustainable, this company.

LAS: ***But then how do you think you can get the companies and the banks, the fund managers to even realize this? I mean, I've been going through a bunch of funds just to see what they're using, and they all use different certificates.***

JL: The problem is that the model we are using is the one of real estate corporates, autonomous. That's the model of reference. The best model is this one.

People own the house collectively. I have lived in that I am very fan of that and there is a decision that they can collectively make for people who are living there. Still, we have this model is the owner is not living here. This model cannot be sustainable. And we see now cooperatives for the new generation. This model will be very, very highly competitive. It's cheaper. It’s managed safely.

LAS: ***For which one?***

JL: For real estate, well, is that you don't buy your house, it's a cooperative and association who buys a house and you manage that.

LAS: ***Yes***.

JL: And not the third investors like, you know, pension fund, et cetera, real estate fund. That model is always pushing the price up. And the model of cooperative is the same as the private investor. As soon as you reimburse your loan, it's going down. But for real estate, it's always going up. Because you never reimbursed, you always have the right to ask for the full rent. Even if after this building has been totally reimbursed. It's why we have the two parts. One is going always up and

the other is going down and then you do a refurbishment and then it's going down like your private money. As soon as you reimburse your Hypothek, then you're going down.

But it's never the case for listed firms. Never. Never. No.

How much we can change the system. The only system that makes sense is the one where the people living in them own the building.

LAS: ***Yes. Now that makes sense.***

JL: It's much more important than all the rest. And we see that this type of current are much more efficient in term of energy. Because it pays the bill, they pay the bill.

LAS: ***Just maybe I know we're out of time now, just with the new regulations coming up the TCFD. Do you have any concerns about it? Or do you think it's going to bring anything? You're talking about, right?***

JL: Do you mean for real estate or more generally?

LAS: ***Now I'm talking about for real estate specifically.***

JL: Yes, it's what I say is that this year it's new one regulation because it forces you to integrate future scenarios.

LAS: ***Yes.***

JL: That's what is interesting in that. Not only do you have to say what are your projects, which was the carbon disclosure project was doing that when I launched that in Switzerland in 2008. We just asked what is now. TCFD goes one step further and says, how will your business be positioned in three types of scenarios'? One is a highly intensive medium. It forces you to anticipate what would be your future in a different stress test.

LAS: ***Yes, like a risk-based model, yeah.***

JL: It's more risk based but the future and you have to become with these scenarios to adapt the scenarios and if you apply that to real estate, it's exactly what we want to do. The legislation gives you the solution. You first have to decarbonize. Whatever you want is, you don't need the scenario as the law has decided for you.

LAS: ***And do you think that with integrating this now the company's larger companies need to start? Putting forth to report with these regulations. Are they in the position to do that at the moment?***

JL: For real estate you say?

LAS: ***For real estate.***

JL: Yeah, you have seen that AMAS has now published some folk and no, no one is prospective. No one. That's it.

Future oriented. You just have to publish your CO_2 impact and your heating index. Just the actual one.

LAS: ***Yeah, you were saying that AMAS is very static and not…***

JL: So, they are totally out of the concept. And at the same time, Swiss banking says we have to invest every year X million and they are totally unable to make the link. Between this forecast, but for real estate, it's simply it's done. The confederation has decided. It's 15 kg. 5 kg by 2050. The path is done. Whatever you want, it's the job is done for real estate. The Confederation has done the job.

LAS: ***They've done the work, but I mean the companies still have to report on it.***

JL: They have to report, but they don't have to imagine what will be my situation in the future. They know they have to be 15 and five. Knowing we don't know what the sanction will be, for example, in France they have categories and now if you are the worst one, you cannot, If you are building energy Tarif F, you cannot increase your rent. Meaning that the owner is fully supporting the increase in energy.

JL: But it's more interesting with me as I didn't have to make anything to reinvest to make the building better. They have now to OK. They have taken the catch and now, OK.

LAS: ***Do you think this will come for Switzerland at some point?***

JL: I think in a way or other. I think this thread must exist that at some point there will be sanctions. How we will do it as a Swiss way. But this is at some point people have to imagine that if I am not aligning, something will happen. Because regarding others who invest in the building and, you know, invest so they have less return in terms of what we know. If I do nothing, I have higher return. Can you imagine that the market will accept that?

Yes, the market can accept that the Confederation on social population say perhaps no. We have now, because there's people who are doing now cashing and making people living, they're paying higher fees. We will fight if, if in a situation where we have no in Geneva, you don't have any

choice. Yeah, my two children are now searching flats. It's a nightmare. They will take the first ones they will have. They'll be fine. It's a very low incitation for tenants to do something.

But it's why we need the law for real estate. It's clearly the law will do the job.

The job will do the job. Yeah, it's where we see now. It's already the law. It's doing the job.

LAS: ***With the TCFD will they? Will the companies see what they need to? Does it help them create strategies though it doesn't go that far? They're just going to see it's forward-looking. But as far as strategies concerned.***

JL: Yes.

LAS: ***They have to make their own strategies out of it.***

JL: Yes, but you can imagine that. Suppose now the Confederation is pushing for a high scenario. They will have higher sanctions for people not adapting. That's the scenario one I will advise –that the confederation will reach this 5 kg and will impose sanctions. That scenario is the most advanced one, so you have to anticipate that there could be a sanction above each threshold in perhaps 10 years. That is the first scenario you have to work on. And the other scenario is,

It's OK, but the market is more relaxed now and the surprise of the market will be adjusting with the part of the fee, which is dedicated to your flat and the one for energy. Most people now only consider the first part, and now they're understanding that the second part, which will have to be considered when you take a decision to come into a building. Actually, we consider that it's quite all the same. So, you just look at the first part. But now that we begin to say 'Ohh, what is the charge?' And the market now when you look at in the newspaper, you don't have this number very often, you know. And now it's every people will begin to see. They will think now in both and that will put buildings that are very inefficient very rapidly out of the market.

LAS: ***If the companies want and they have these real estate objects and they know they could have sanctions coming up then are they in the position to make those changes to make sure that they're set well in the years to come? Because you were talking about even…***

JL: Yeah, if you are in this situation, you have different scenarios. The first if you want to do a decarbonization, you can go in two directions. One, you can change your primary energy. And the second is that you can refurbish your building, you know, making more. Yeah. And very rapidly, you can switch if your building is not too bad, you can switch. That will be possible for most of the buildings to switch from gas to heating plan of what we advise it is common heating, you know, public common heatings. Chauffage a distance….what do you call that?

LAS: ***Yeah, I know you mean, district heating.***

JL: To switch to that, to force that and to have a plan to do that, they have something to do if they want to do a CO_2 policy and then there is a lot of solutions there. If you want now to do the other, which is refurbishing the building, it's much more complex. It's much more complex, so it's much more difficult to plan it, to find them, to organize it. It's what happened with Signa Terre. When they do a planification. They say, OK, this heating system will be out in 10 years. OK, so they plan, they say, OK, in 10 years we have to change. And now they ask people, do you agree that but actually within 10 years you will emit CO_2? Do you want to do something additionally? And there is the most interesting discussion. And now people who owns the building, really. You know. To unlock the CO_2 by investing before the natural cycle. Is that's the problem and we see now all our buildings, we are still now with new buildings wasting with gas, we'll have a problem. We call that locking. But you know this term it's locking. Because they will not change that within the next 10 years. And that is the most dangerous situation. We still have a lot of locking that people will not change. Now the problem if we come to heating. Is that OK… I can accept to perhaps anticipate with a subvention. Subventions are very important there. I anticipate, I accept to change before it's natural cycle that we see it for energy, but we don't see that for the building. Suppose if you have your roof, you'll say 'your roof, you have to change it in 15 years'. It will be very hard to convince this guy to do it in the next five years. You see, it's totally different subject. It's why if we want to accelerate, we have to switch from energy to $CO_2$and accelerate the switch from primary to that we see more people anticipating the natural cycle to emit less CO_2. But for that we need either an obligation, but it will be very difficult, but we clearly need subventions.

That's for me, is the only way to get out of that is to have subventions subventions subventions.

LAS: ***But subventions you mean more for private people than for the pension funds. This is not for pension funds then?***

JL: For everyone. For all. If we want to switch, we have to go not with the tax because you have seen we have a CO_2 tax. You have seen that acting now, no one cares about that because the taxis 106 or 8 or 20. I don't remember how much, and no one really cares about it. You have seen that now when we have voted on our CO_2 package, when the tax would have reached level which will have to be damageable. People refuse it. This tax was tolerated because it's small and it doesn't force me to change. I can accept that. As you receive part of this money issue through your insurance. But we have seen when we have to vote for a tax to hurt me, people will not agree. So, we have to switch, and they think now, we have to switch from this model. We see how people are coming poorer and poorer, we know how, and the only model is it takes the money where we

can't find money and transfer it there. JL: And even if people are thinking, you know, first if your company are making 50 million billion profits. Does it make sense?

LAS: ***So, it doesn't make sense. OK, no, this is good. So, you think subventions for everyone? Would be the way to go.***

JL: If you want to really want to make changes, finance subventions.

LAS: ***And that makes sense because then it's an incentive to change before the life cycle ends to kind of get it rolling.***

JL: Yeah, if you want to accelerate renovation, we have to do subvention. Otherwise, the market will not do it.

LAS: ***And you mean subventions not just on uh fossil fuel, heating switching, but also for other measures, do you think as well? Yes.***

JL: As a measure, I have done a study for the Canton. As a measure, it is very much difficult when we have to evaluate the impact, we call that best provisionell de charge. When you have to evaluate if you now increase your wall thickness, what type of impact you have. And the model is very difficult, and we always see that they overestimate the positive impact.

LAS: ***Are you? You were saying that with Wüest Partner?***

JL: No, it's not the same. What Wüest Partner is doing is giving a poor result and underestimating the real costs and overestimating the capacity. That's the problem of this model. That's what Signa Terre has proven.

What I am saying is that in Geneva. If you do a refurbishment, you have to calculate how much your energy savings will be. And according to that you have the right to increase the rent for the people. *(The next section was removed as it contains sensitive information).*

JL: It's very sensitive, very sensitive. It's I say the only thing for me now. I am an economist. Generally economists enjoy tax but for me it's finished. I think in this situation the population is no more able to accept taxes. It's finished. That was possible 30 years ago. Now it’s too late.

LAS: ***Jean. I would like to thank you so very much for talking with me and taking the time.***

JL: I wish you what's the best good luck for your thesis.

Appendix G: Interview Transcript 4

Interview number: 4

Date, time: 12.11.2022, 9h30

Location: Online (Microsoft Teams)

Recording mode: Microsoft Teams

Duration: 00h20m

Speakers: LAS: Interviewer (Laura Archer-Svoboda); ADW: Interviewee (Angela deWolff)

Transcriber: Laura Archer-Svoboda

LAS*: What do you think are the most critical issues that are being faced right now in real estate in Switzerland?*

ADW: The major issue currently is the underestimation of the transformation needed to reach net 0 carbon for Switzerland and the effort that the real estate sector has to do and I'm not sure they are ready and I'm not sure they've really considered the amount of effort and renovation needed. So they will be missing resources, people, technology and capacity to get with this quite impressive pace to reach this ambitious goal.

LAS: ***And what do you suggest needs to be done? I mean, do you think this is the goal, something that pension funds should know that they need to do you think that regulations need to be increased or what do you think would be the best way to move forward?***

ADW: I think it would be a little bit of chaos, but because now regulation is really entering in force and many, I would say pension funds today have a number of real estate buildings, but they have not planned this change because they are quite reacting on a short term of modification and now it's really about making this planning very specific, very detailed. But I know also that sometimes when it gets going, people get more pragmatic, then they find solution and there will be expertise emerging. Probably there would be some delay. Until 2030 we'll see how much is realistic or not.

LAS: ***Do you think that it's going to be more chaotic with the TCFD regulations coming in that also pension funds in different actors in the market and investors will start making their own solutions? Which will also have an effect on transparency? Or do you think that they have a clear direction of what they want go with?***

ADW: No, they don't have. Everybody will try to come with a solution that will try to figure out how to make it. But why do you think that this TCFD is going to be complex?

LAS: ***I don't think it's going to be complex, but I think if the companies haven't taken the time to address the issues, they're going to need to put resources in to find a solution to be able to report on them. And then it's the question who do they ask? Who do they talk to? Where did it get to know how to do this? And then at that point, I think they'll probably start to expand a little bit and then they're going to need a solution. And how do they know what solution to take?***

ADW: Yeah, but there will be experts around and they will find out. I think they are. There are some. The fact is, are they just limiting themselves to make the reporting or are they really, you know looking because you can report 2-3 years and there is no change. So the perspective is quite impressive. So I think that the reporting is one thing, but it's really not mandatory, it's not very stringent so I'm very afraid about the fact that people say 'OK I found the solution to report', but the real mission is not to report. It's to ensure that we transition, and this is not very clear yet.

I think that's the way people work. We ask for transparency and once we have the transparency we say 'ohh terrible'. We need go and we have to compare with others, and we see others getting quicker and that will bring, I would say, the momentum. But I mean that regulation will come and say, 'well, now that we report, this is Switzerland's requirement to be net zero in 2050. You are very far away, so now you get with regulation'. That's going to happen I think until 2030. There will be reporting, transparency and there will be an assessment saying 'WOW, we are not in the right direction'. Or we are and people have done it and that's great.

LAS***: Do you think that sanctions will then be needed at some point?***

ADW: If we don't manage to get where we want, yes, I think that's the reality. It's not just a nice game where we just publish data. We need to ensure that the commitment of Switzerland has been taken and I think it's politician...

LAS: ***Do you think that the federal government will take it seriously? They appear to move slowly.***

ADW: Yeah, because 2050, it's very far away. We are 30 years in France. So, it's honestly today, it's hard to say. OK, we will manage. People sign. They say 'OK, it's in 50 years, we don't care'. And I think there will be this reality check in five years and Switzerland is committed and Switzerland is serious. If Switzerland doesn't get there, they will not get out. So, there is something that will happen in one sense or another. And I I think if we can show and people will show and pull it, the young generation will say 'you're not getting in the right direction'. There is no return back. It's not just OK don't care, it's another subject. The topic is to make solution. It's not about

reporting. So I don't know. It could be a change in politician. It could be a new generation. But if in 2030 we are not there, there will be sanctions, yes.

LAS: ***I see on the market, there are so many different products on the market. You have GRESB, SSREI, you have GEAK and all the different certificates with Minergie and the SNBS and there are so many offers on the market. How do companies, banks, pension funds. How do they deal with this mass of offerings?***

ADW: I don't know. They deal. I agree. It's complex for us to being in the field, being the expert and this is what's going to happen. We will be experts simplifying and that's why we hope to get this innovation. It's about now making aggregation, putting our intelligence in to make it clearer and simpler. The market is smart. Where you have opportunity there will be other experts other than us entering and making this translation from all this complexity. And I think if we manage to get the Innosuisse support, probably was something also to say we need it for the market to clarify and to get something simple, accessible and that would be possible. But yes, for people it's very, very many constrained and I think they have to navigate now with the increasing constraint, or they accept that indeed they have to move and take fun in moving or they remain reluctant and it will be an effort and it will be difficult.

LAS***: As one last question, why is your view on social aspects? Do you think this should be a strong focus at the moment? Looking into the UN's SDG's, incorporating them also into strategy? Or do you think that the focus should be placed more on the environmental aspect and later getting into the social? Are making from the from the market demand.***

ADW: Personally, I think if we don't manage to get jointly moving with a smart, sustainable way of thinking it's not going to happen. But yes, there is an urgency for climate. Now there is a fight inside NGO's. It's probably more risky to focus on the social or because you say if we don't manage to handle the climate, we are not anymore on the earth so it's better to sacrifice on the social aspect, but that's the wrong approach because it's only having everybody on board that we manage to get the climate situation relief and this is my personal view, I think it's onboarding, it's really thinking globally and more holistically. And if you have a place where it's nice to live, you have people you know producing the right way of respecting the climate. So, without humans you are not managing climate. It’s the case in reforestation. If you don't add the people around, you don't have reforestation and if you don't educate, if you don't give them money, if you don't give them a business model, it's worthless. It's just putting trees in a way. And it’s similar for architecture. It's thinking now more about the ecosystem, which should introduce the lifestyle and people and combination. So this is my logic, but probably there is a need to go there more quickly or so on

this climate issue. Some will put more focus on climate and others more in social. But at the end it's just a combination that we can solve any something.

LAS: ***Yeah. And I guess the issue is just what are the interests of the of the fund managers, for example, if they are really only interested in having their returns? Do they really? What is the need for them to even put in the social aspect.***

ADW: But to have return you need people to come in your building. So if you have ugly buildings in ugly places. I don't know if it's a good business.

LAS: ***I noticed from the reportings like from the reporting, I was looking through a lot of different funds to see what systems they use and there's no mention of social aspects. Very, very little.***

ADW: We have clients really that say we don't want to have just climate. So it will be interesting to have social and I know Jean, I discussed here yesterday with Jean and I, I know that you want to share with you the fact that in France now they can really geolocalize your place. Consider also the risk of the future in terms of climate. Is your building sustainable for higher temperature? So I think you know, not just taking today what's happening, but is the building capable to be right for tomorrow.

LAS: ***For sure, physical risks and how they affect the property value in the future.***

ADW: Yeah, and that should be also introduced in our tool or in our assessment. And that is by geolocalization, it's not about information coming from the building.

LAS: Yes, ***I see. Thank you so much Angela….***

Appendix H: Interview Transcript 5

Interview number: 5

Date, time: 12.11.2022, 11h15

Location: Online (Microsoft Teams)

Recording mode: Microsoft Teams

Duration: 00h37m

Speakers: LAS: Interviewer (Laura Archer-Svoboda); SS: Interviewee (Sonja Supra)

Transcriber: Laura Archer-Svoboda

LAS: ***Welches sind aus deiner Sicht die kritischsten Themen in Bezug auf nachhaltige Immobilien in der Schweiz?***

SS: Es ist natürlich die ganze Klima Diskussion. Aber was ich auch merke ist, das liegt wahrscheinlich stark an Corona, dass die gesundheitlichen Aspekte sehr stark in den Vordergrund geraten sind, diese gesellschaftlichen und gesundheitlichen Aspekte. Was man vorher belächelt hat, und gesagt hat 'ja, das kann man sowieso nicht bewerten', das kommt jetzt im Investorenbereich eine andere Dimension. Der Druck kommt insbesondere von der Nachfrageseite. Leute wollen in gesunden Immobilien wohnen mit der Umstellung von Buro auf stärkeres Homeoffice. Das ist ein ganz anderes Bewusstsein, andere Bedarf.

Wenn man es aus den Nachhaltigkeitssicht anschaut, ist im ökologischen Bereich sicherlich die ganze Klimadiskussion CO_2 sehr stark. Was schade ist, dass es sehr darauf reduziert wird und man sich weniger die graue Energie anschaut, die Ressourcen Knappheit, usw. Und was auch zu kurz kommt ist die Biodiversität, beispielsweise im ökologischen Bereich. Es fokussiert sich alles auf dieses CO_2.

LAS: ***Ich finde es sehr spannend, dass du den sozialen Aspekten erwähnst. Du sagst, das kommt von der Nachfrageseite. Wer fragt dann nach? Die Pensionskassen oder die individuellen Anleger?***

SS: Tatsächlich die Nutzer der Immobilien.

LAS: ***Wie nehmen dann die Fonds diese Information auf? Nehmen Sie das ernst?***

SS: Ich denke, sie sind gezwungen das ernst zu nehmen, ob sie dann so weit sind, dass sie das ernst nehmen, ist eine andere Frage. Bei Sinovis haben wir zwei Standbeine: Einmal die Gebäudetechnik, und dann haben wir ein Steuerungstool zum Raumklima und da ist Energiesparen ein Thema aber auch Innenraumqualität und wohlfühlen. Da merken wir in der Schweiz, ihr seid

zurückhaltend. Aber Beispielsweise in Deutschland ist es sehr auf dem Vormarsch und bei Fonds usw. kommt immer mehr das Bewusstsein, dass das wichtig ist. Ich meine, wir wissen schon seit vielen, vielen Jahren zum Beispiel, dass die Produktivität runtergeht, wenn das Raumklima schlecht ist. Aus dem Spitalbereich gibt es auch Untersuchungen, dass die Leute dann länger im Spital bleiben, wenn die Bedingungen nicht optimal sind, und und und.

Aber ich glaube, ob es wirklich den Stellenwert erreicht hat, den es haben soll, ist die Frage.

LAS: ***Interessant. Ich habe mir die Jahresberichte verschiedener Fonds angeschaut, und es steht selten etwas über die sozialen Aspekte drin. Der ökologische Aspekt wird von den meisten beachtet. Sie haben den Blick aus Deutschland. Was wären denn verschiedene Indikatoren, die man messen könnte, z.B. die Innenraumqualität. Wird auch Biodiversität berücksichtigt?***

SS: die Zertifikate bilden das ganz gut ab. Wenn man Beispielsweise SGNI oder DGNB anschaut und wie die Entwicklung da ist. Das man auch stärker das Bewusstsein bei den Betrieben von Gebäuden viel machen muss. Wie das sich dann entwickelt hat. Das ist in der Schweiz leider nicht so inkludiert, die EU-Taxonomie. Das wird in spätestens 1-5 Jahren in der Schweiz ein Rieses Thema sein. Aber das wird alles ausser Acht gelassen. Da sieht man wo die Schwerpunkte liegen und jetzt, das konkret zu beantworten. Im Prinzip auch, im sozialen Bereich die Wohlfühlindikatoren – was wird noch angeboten. Ist es nur Wohnen oder hat man die Möglichkeit, sich dort aufzuhalten, mit den anderen Bewohnern in Kontakt zu kommen, und und und. Das wird sehr stark unterschätzt und oft belächelt. Das vielleicht mit dem Innenraumklima ist vielleicht schon eine Stufe weiter. Aber wenn so was umgesetzt wird, und wir haben aus Dänemark unheimlich viele Vorzeigeprojekte, dann initiativeren sich die Leute ganz anders mit dem Wohnen, mit dem Quartier und kümmern sich ganz anders. Sozialkontrolle, Sicherheit, all diese Punkte kommen im Prinzip automatisch.

Häufig wird ESG auf das E reduziert.

LAS: ***Wie werden sozialen Aspekten in Deutschland gemessen? Gibt es ein Raster?***

SS: Das ist meist qualitativ.

LAS: ***Wird das von den Firmen selbst gemacht und gemessen?***

SS: Über diese Zertifizierungssystemen kann man das ganz gut abdecken. Was natürlich auch wichtig ist, es ist bei fast allen Zertifizierungssysteme, ist diese Nutzerzufriedenheit. Das man wirklich den Nutzer einbindet. Das geht von dem was wir gerade besprochen haben, über Mobilität, zum Wohlfüllen Temperatur. Das ist gut abgedeckt und das ist etwas, was man als Check-liste nehmen kann für solche Punkte.

LAS: ***d.h. man müsste die Nutzer miteinbeziehen.***

SS: Ja.

LAS: ***Die TCFD Regulationen, die in der Schweiz eingeführt werden. Was hältst du davon? Wird es schwierig sein, sie in der Schweiz umzusetzen? Geht es zu wenig weit?***

SS: Ich denke mal, dass natürlich Österreich oder Deutschland in der EU sind, haben sie einen ganz anderen Druck, das umzusetzen. Andererseits ist es so, wenn die CH im europäischen Markt mitmischen möchte, dann müssten sie sich einlassen und mitmachen. Im Investoren Bereich ist das klar, wie es dann umgesetzt wird, ich glaube es gab jetzt dieses Jahr die erste Evaluation dazu. Wobei ich die Ergebnisse nicht präsent habe. Man merkt, dass dadurch, dass die CH nicht den direkten Druck hat, dass sie nicht in die EU ist, dauert es ein bisschen länger, bis man sich verpflichtet dazu fühlt. Wenn man im Prinzip im Markt dabei sein möchte, dann ist es absolut notwendig.

Im Prinzip, ob es die TCFD ist oder die EU-Taxonomie, es gilt die gleiche.

LAS: ***GRESB, PACTA, CDP, SGNI, GEAK, was siehst du da für Schwächen?***

SS: Da könnte ich Stundenlang darüber verzählen! ES ist schon so, es ist wichtig, dass man etwas tut. Egal was man anwendet ist es gut.

Bei GRESB ist es so, die bilden im Prinzip den ESG-Bereich relativ gut ab, sind aber sehr sehr aufwändig durch die jährliche Rezertifizierungen und Anpassungen und so, das ist unheimlich umfangreich und dann werden da relativ viele Neuerungen da eingebracht von Jahr zu Jahr. D.h. da ist eindeutig die Schwäche, dass es relativ aufwendig ist. Im Finanzmarkt ist es ein gutes Tool. Wenn man sich tatsächlich Immobilien anschaut, dann wäre etwas anderes vielleicht besser.

Die SSREI, der fokussiert sich auf Bestandes Gebäuden, aber er bildet die Betriebsparameter nicht ausreichend ab. Der fokussiert sich wirklich zu 20% auf dem Betrieb und 80% auf den Bestand und was hier die Schwäche ist, dass es keine gesicherte Prüfung gibt, kein Bewerten der eingereichten Ergebnisse, weil sie das nur stichprobartig machen.

SNBS: der hat sich relativ spät entwickelt und kann natürlich von den anderen schon vieles aufgreifen und da die Stärken und Schwächen umsetzen. Was hier das Ziel war, dass man ein mögliches schlankes Bewertungssystem für alle Nutzungen von Immobilien abbildet. Für Infrastruktur gibt's, aber Infrastruktur ist hier nicht das Thema. Das ist sehr schwierig. Andere Bewertungssysteme wie BREEAM, LEED, DGNB haben das versucht und haben dann gemerkt, dass die Nutzung entscheidend ist. Wenn man wohnen mit einem Labor vergleicht, dann muss

man spezifizieren. Und ich glaube auch hier, obwohl sie es versucht hat es schmal zu halten, doch relativ gross und umfangreich geworden.

In der Schweiz ist es auch schon so, dass die Schweizer auch gerne ihre eigenen Sachen hat, deswegen werden GEAK und Minergie bleiben. Und wie die SNBS durchsetzt muss man gucken, weil es ein relativ junges Bewertungssystem ist.

Die SGNI ist im Prinzip das DGNB Label. Sie haben natürlich den Vorteil, dass die DGNB sich mittlerweile international aufgestellt hat. Das gibt ja auch in Kroatien, Dänemark. Sie sind international tätig mit dem Internationalen Zertifizierungssystem im China und Indien und so weiter. Die grosse Stärke von diesen Bewertungssystem ist, dass es sich immer adäquat weiterentwickelt. Vor drei Jahren haben sich massiv um Gebäude im Betrieb gekümmert und im Gegensatz zu SSREI haben sie tatsächlich die Kriterien so gewählt, dass der Betrieb des Gebäudes/Immobilien im Vordergrund steht.

Das grosse Problem ist, und es ist egal ob es in Fonds ist oder in anderen Gebäuden sind. Die Daten zu haben, wie funktioniert man Gebäude jetzt. Das weiss man, wenn es neu gebaut ist, aber ich hatte schon Projekte, die waren zwei Jahre alt und es gab keine Unterlagen. Man wüsste nicht, man müsste neu erheben wie viel verbraucht das Gebäude, usw. D.h., die Stärke, zum Beispiel von diesen Gebäuden in Betrieb ist es, dass man Zielsetzungen setzt, und guckt, wie man das erfüllt. Was sie kürzlich integriert haben ist die EU-Taxonomie. D.h. man kann im Prinzip, wenn man da rübergeht, weiss man auch, dass es Taxonomie konform ist. Und sie reagieren auf die Entwicklungen im Markt. Nutzung unterscheiden sie, aber sie haben auch Flex-systeme, wo man sagt 'Ok, die Nutzung die noch nicht abgedeckt sind, kann man aus dem anderen Zusammensetzen'. Mittlerweile gibt es das DGNB System seit 15 Jahren, in der Schweiz seit 12 oder 13 Jahren. Und aus meiner Sicht ist das auch ein System, dass umfangreich ist aber das auch relativ viel abdeckt und im Gegensatz zu SSREI, dass durch die Konformitätsprüfung, dass jedes Projekt geprüft wird, hat man Transparenz und es wird extern geprüft, und vorwärtsschauen. Für Gebäude im Betrieb ist das Ziel tatsächlich von Jahr zu Jahr zu verbessern.

LAS: ***Findest du es ein Problem bei anderen Systemen, dass sie zu statisch sind?***

SS: Teilweise schon, wobei das kommt darauf an. Bei SGNI gibt's den Neubau. Da wird es einmal bewertet und dabei bleibt es dann. Wobei die DGNB ist eine grosse Überarbeitung für nächstes Jahr geplant hat. Was man relativ gut vergleichen kann ist sicherlich SGNI (Gebäude im Betrieb) mit SSREI. Da ist vielleicht SSREI etwas einfacher aber diese Prüfung/Bestätigung fehlt damit es konform ist. Und wie gesagt, es bezieht sich nicht so stark auf die Betriebsparameter, sondern tatsächlich auf den Bestand.

LAS: ***Firmen müssen dann schauen, was für sie am besten passt?***

SS: Es kommt darauf an, was habe ich dann? Wenn ich amerikanische Mieter habe, dann sind sie meistens verpflichtet ein LEED Zertifizierung nachzuweisen. Da muss ich mir Gedanken darüber machen. Wenn es in der Schweiz ein Gebäude ist, wird wahrscheinlich irgendeine Form von Minergie verlangt werden. Wenn ich auch so zurückdenke an die Projekte, die ich hatte, es war eigentlich immer so, dass ich eine Mehrfache Zertifizierung hatte. GRESB ist auf einem anderen Level und in GRESB wird auch bewertet, ob Nachhaltigkeitszertifizierungen da sind. Z.B. SGNI oder Minergie.

Man muss zuerst schauen, was brauche ich? Was passt bei mir am besten und was sind meine Ziele? Dann kann es natürlich sein, dass man mehrere Bewertungssysteme oder Zertifizierungssysteme nehmen muss.

LAS: ***Das wird dann teuer. Hat das dann einen Einfluss auf die sozialen Faktoren, weil die Miete teurer wird? Sind die Zertifizierungen wichtig oder wäre es am besten die wegzulassen und einen Plan oder Strategie zu erstellen.***

SS: Meistens ist es so, dass die Zertifizierungen zeigen, was für eine Qualität das ein Gebäude hat und in welche Richtung, dass es gehen soll. Ich finde es wichtig ein Zertifikat zu haben. Wenn man die Kosten für so ein Zertifikat in Vergleich zu der Bausumme sieht, ist es vernachlässigbar. Aber man hat so viel Mehrwert darüber. Man hat eine sehr gute Dokumentation, man kann meistens die Gebäude unterschiedlich untersuchen, teures Vermieten und Verkaufen, das liegt bei 7-10 Prozent, glaube ich. Man hat auch für den Kunden einen Nachweis über dieses Gebäude. D.h., wenn ich ihm sage, ‘du wirst Betriebskosten in Höhe vom …haben’, dann kann er mir das glauben. Wenn ich das ihm im Prinzip aufzeigen kann, das wurde im Zertifikat angegeben und es wurde so akzeptiert, dann ist natürlich der Nutzer kann von was ganz anderem ausgehen.

Oder wenn wir die gesundheitlichen Aspekte angucken, ich denke, gerade jungen Familien gucken ganz besonderes darauf, wie Schadstoffe, usw. Von daher, glaube ich, dass der Nutzen ein Vielfaches höher ist als die Kosten und zum anderen, wenn man sich früh darüber einigt, was man möchte, und das relativ früh platzieren kann, sind die Mehrkosten nicht mehr so hoch. Wenn man natürlich irgendwann kommt gegen Ende der Bauphase und möchte ein Zertifikat, dann muss man im Prinzip Untersuchungen nachrechnen oder Dinge nachfordern und dann wird es natürlich viel teurer.

LAS: ***Und für Neubauten?***

SS: Bei Bestandes Gebäuden denke ich, es das extrem wichtig, weil man einfach nicht weiss, was man hat. Bei ganz vielen Projekten, fragt man wie hoch der Energieverbrauch ist und man hat keine Ahnung. Manchmal gibt es nicht mal einen Überblick über die Flächen, die man hat. Dann geht es um Transparenz.

LAS: ***Fändest du es wichtig, Zertifizierungen verbindlich zu machen?***

SS: Mit dem Klimaneutralität bis 2050 hat man schon einen Zwang. Es ist auch so, die Nachfrage wird immer mehr dahin gehen, Energieeffizienter und danach nachhaltige Gebäude zu bekommen. Das heisst, der Druck wird aus verschiedenen Richtungen kommen. Wenn ich so ein Zertifikat habe und sage, dass mein Gebäude ist schlecht, dann kann ich mir Gedanken machen, was sind Möglichkeiten für die nächsten 10 Jahre, dann kann man das im Prinzip einplanen, und schauen, was das macht für die Energie und CO_2 aber ich kann das auch finanziell einplanen.

Es ist im Prinzip ein Planungsinstrument für mich. Ich werde mich verbessern. Wenn die Immobilie schlecht ist, kann ich den Plan aufstellen und kann ich vielleicht in 5 Jahren auch sagen ‘schau mal, ich habe mich so verbessert, dass ich es für einen höheren Preis vermieten kann’. Weil die Betriebskosten runtergehen, dann kann ich den Kaltpreis höher setzen.

Wir wissen, dass der SBB hat sich verpflichtet, alle ihren neu Immobilien nach DGNB und SGNI zertifizieren zu lassen, ca. 2011. Da wurde die Schweiz in 3 teilen aufgeteilt und es wurde Nachhaltigkeitslose vergeben. Da war das Ziel, jedes Gebäude zu Zertifizieren. Die Post zertifiziert auch viele ihre Gebäude. Eigentlich gibt es praktisch kein Neubau mehr ohne ein Zertifikat wie Minergie-ECO. Von da her sieht man in der Schweiz, dass es wichtig ist. Von da her, ist die Wichtigkeit auch da. Aber vielleicht sehe ich das aus einem anderen Blick, denn ich biete diese Dienstleistung an. Natürlich hatte ich oft in der Akquisition das Problem ‘ja, warum brauche ich ein Zertifikat’. In der CH hatte ich auch im Infrastrukturbereich Projekte gehabt. Da haben wir Beispielsweise in einem grossen Strassenbauprojekt, konnten wir den ganzen Prozess beschleunigen. Wir haben ziemlich früh alle Stakeholder an einem Tisch geholt und haben diese Nachhaltigkeitsbewertung zu einer Zielvereinbarung gemacht, dass für alle in Ordnung ist. Damit haben wir Einsprachen und Klagen vermieden, die das Projekt wahrscheinlich verzögert hätten.

Das sind extreme Vorteile, die man hat. Deswegen habe ich eine andere Sicht, weil ich von der anderen Seite komme.

Die Zertifizierungstools haben erkannt, und arbeiten dahin, dass man Fonds zertifizieren kann. Es gibt eine Möglichkeit, dass man den ganzen Fond zertifiziert wie ein Basiszertifikat. Dann kann

ich schauen, dass ich einzelne Immobilie zertifiziere. Das haben die andere Seite, die Zertifizierungstools, erkannt, dass da ein anderer Bedarf ist. Die Credit Suisse hat mit ihrem System relativ früh angefangen. Sie waren sehr fortschrittlich und hätten wahrscheinlich nicht etwas Eigenes gehabt, wenn sie später angefangen hätte.

Es wird viel tun in nächster Zeit. Es kommt darauf an, wie das von der Politik gesteuert wird. In Deutschland ist das so, dass man eine Förderung bekommt für zertifizierte Gebäude. Die Nachfrage nach diesen Zertifizierungen ist eine andere.

In Frankreich zum Beispiel, teilweise nicht zertifizierte Wohngebäude nicht mehr vermietet werden dürfen. Das ist eine politische Entscheidung, wie man das möchte.

LAS: ***Vielen Dank Sonja.***

Appendix I: Interview Transcript 6

Interview number: 6

Date, time: 15.11.2022, 15h30

Location: Online (Microsoft Teams)

Recording mode: Microsoft Teams

Duration: 00h32m

Speakers: LAS: Interviewer (Laura Archer-Svoboda); MZ: Interviewee 1 (Marius Zumwald); RR: Interviewee 2 (Robert Radmilovic)

Transcriber: Laura Archer-Svoboda

LAS: ***What do you think are the most critical issues in sustainable real estate right now? I mean, apart from the CO_2 emissions being too high, from a regulatory point of view or transparency issues, lack of resources, neglect of certain things like social aspects, circular economy?***

MZ: That's not an easy question. I mean, obviously, yes, your CO_2 emissions are the main issue, I would say, and the most obvious issue and most easy measurable issue. And yeah, there are a lot of reporting frameworks and non-mandatory frameworks, and they get mandatory for some larger organizations. Maybe they will get mandatory for smaller organizations as well, but I mean reporting is not action and I think that there is an obvious gap in my opinion. Reporting itself does not lead to any change, there are actually academic studies in the field of ECFT reporting, not for real estate, but there's one researcher at the ETH that showed clearly that just reporting does not mean there are actual results out of this. And I think that's a very interesting issue.

LAS: ***Do you think that all with the TCFD regulations that are coming in because they have these risk elements that they're going into as well, that they're looking at and that it's more forward-looking, will that actually do you think force companies more to think about how they can change?***

MZ: I mean, the empirics say no, right? As I said, there is quite a recent study from a researcher from the ETH that looked at TCFD Reportings but not real estate, really more overarching reportings. And they found no evidence that larger, better reporting on environmental risks, that does not per se lead to a kind of change, right? Therefore, I would say no. Everybody likes to hear that everybody says it, but the empirics so far can't see anything there. So, for me I think that's maybe more an issue on a legislator level.

LAS: ***What would you suggest then to get things moving?***

MZ: We want to reach the Paris agreement we have signed, right? Switzerland has signed it, most of the countries have signed it. So there needs to probably be more pressure if you want to reach them.

LAS: ***From who then? Am I understanding you correctly, you think the companies are maybe doing too little, but you would have to maybe go from a governmental standpoint to get things pushed or do you think that will take too much time?***

MZ: I'm not a politician, I'm not a lawmaker but current environment doesn't seem to be enough to keep us pushing towards the net zero 2050 goal. Maybe Robert can say something about this, a lot of pension funds and funds, they I think they have large buildings. They're in urban or urban areas. So, there's a lot of district heating available and they manage it quite well but when we look at the mortgage sector for instance, so I'm not sure if that is your focus. I'm not sure how the target should be reached without any additional pressure.

LAS: ***Some people were mentioning subsidies as a good way to go because the CO_2 laws are not going anywhere. Robert, sorry I haven't asked you yet. What do you think? What is the most pressing issue right now?***

RR: Well, I also think as Mario said, the real estate sector isn't digitized at all. But I think frameworks help to digitize the real estate. I mean, if you want to do action, you need to have digital data of your objects. Because investors also have the pressure. It depends. If it's like a real straight product like funds, they have to pay dividends, you know they can't invest like everything. I mean it's already profitable you know to switch to renewables. But the thing is, all the funds they cannot switch from today to tomorrow to renewables because those have to pay out dividends. And I mean they just can't, you know, invest everything at once. So that's an obstacle. And as Mario said, I think the private households, the mortgage sector, they have to be incentivized even more, because you can show them that it's profitable if you calculate it over the long term. But they think really short-term and I think also banks want to do net zero and they say like I mean mortgage, the mortgage business in the scope three. And they also say, yeah, we also want to be net zero and scope three. So they also have the pressure now and they're trying it out. I don't know. Marius, you can correct me. But, like with new mortgage products where you have less costs for the mortgage owner, for example, if you can reach a good EPC level, the owner pays less financially. So for the investment. So yeah.

MZ: The topic of green mortgage. I mean, they count it as their emissions. For instance, banks, or at least the share they finance, but still there I'm quite skeptical because the Netherlands for instance, they are quite far in this regard, and they've tried out already a lot and it's just the carrot without a stick. It doesn't seem to help that much, so that's again also what they've learned from the Netherlands, basically that they have green mortgages. They have tried a lot of things. I mean it doesn't seem to be enough to really transform the hole sector in terms of your decarbonization. And in Switzerland, we are even. I mean now there's the self-regulation from Bankier Vereinigung that was released a few months ago where they said 'Ohh we need to have knowledge, we need to consult clients about environmental, sustainable topics' and I mean it's quite new and now they're just thinking about, 'OK, how do we do that?' And until they implement it, it takes again a while and there are a lot of banks with even 2040 targets. I mean, yeah, this will be tough.

LAS: And also, we have the whole issue of, you know, um, Grey, Grey energy and circular economy, which is not really taken into consideration. How do you both see this moving forward also in the future?

MZ: The problem now is if you don't look at grey energy from refurbishments, I think we might even come to wrong conclusions quite often and this is a huge problem.

LAS: What do you mean about wrong conclusions? In what sense?

MZ: Yeah, it can be that it doesn't make sense to energetically refurbish the walls and windows, maybe just makes sense to replace the heating system and leave the old facade in terms of CO_2 emissions. If you include the grey energy and costs, CO_2 emissions of the insulation material and everything. So, it can in terms of CO_2 emissions, you can come to wrong conclusions. I mean, I don't say financially that's a different…, I mean anyway, replacing a heating system is much cheaper than refurbishing or insulting an old building, generally. But we lack the tools to do that very systematically. We work very hard on it and have, you know, first prototypes, products and case studies where we do that. But then it's not kind of rolled out and in the standard process, but I think it will be in the next one. I hope end of next year we have that kind of more as a standard. I would say that's the idea.

LAS: Ah, OK. Will it be like a circular economy or really just grey emissions or what is it focusing on? The tool.

MZ: I mean the first thing is really grey energy of refurbishments and compare it with emissions from direct emissions, right? So that you see. Again, if you refurbish and how much emissions do I save? When I replace the heating system that you can optimize better. And I I would say that's

the main focus and I mean the circular economy is kind of a buzz word and I don't really know what exactly it means sometimes. I think I would say we focus mostly on that. But maybe Robert, you have additional insights there.

RR: Well, I mean everything is said is I mean correct with the scope one and two and three emissions. So, we want to take in account all the scopes, but what we see with circular economy is like, some other obstacles in the sense that we had one customer who was really trying to do something with circular economy, and he found like I think a bit older windows, not very old, but like 10 years, 15 years I don't know. And he wanted to use that for his transformation or for a project to build. I mean, for a huge refurbishment. And then the obstacle was that he couldn't use those windows because of the external noise emissions. Just because of 1 Decibel, I think, because of the threshold. So, the Behörden declined the usage of those. And I think in circular economy I mean real estate is so complex. You know every property is individual. It's not something you produce massively and it's so complex and it's really difficult to have such a marketplace to reuse (materials). I mean, there's also reuse and recycle and everything. I think there are some instruments, but I think one big step would also be if you want to take in account the carbon emissions of scope three. Also, like AMAS did now for scope one and two maybe to declare the scope 3 emissions. Maybe you'll have a tax on it. I don't know. You have taxes now of 120 francs on one ton of direct emissions. Maybe it could help if you have a tax on grey energy, I don't know. You know, like those could accelerate net zero because scope three is really very intransparent. Also, how do you calculate it? Also, the standards, the norms, SIA, they're like reviewing it or they will, I don't know if they are working over it in 1-2 years. There will be a new norm. I mean a lot of stuff isn't defined yet, you know.

LAS: OK, so it's not defined at the moment, but you foresee this.

MZ: It could be very important. Yeah. I mean, for instance, the question in terms of CO_2 emissions, so the decision to rebuild. You have an existing old building, and you just make Ersatzneubau or Kernsanierung basically. And I mean for this decision, using a CO_2 and holistic view, like what's the grey emissions that are already there and that we don't need to rebuild and to do that more. I mean some clients like early movers they ask this themselves. But I would say that's quite a minority at the moment. But I think part of it is also that the tools are not there to like to have this really easy and quite fast and cheaply assessed. And that's something we're working on, and I think in the next few years there will be also a lot of tools that help with this assessment.

LAS: Do you also think that the customers, I mean, you both have customer contact, what are customers asking for now? You said some of them are looking to measure these elements, but do they also take social factors into account? Are most customers just focused on emissions, just the normal scope one and two emissions or do they care about social factors, governance factors or grey energy when they make their decisions?

RR: I think a lot of them focus on scope one and two emissions because I mean also if you look at how digitized they are and how much effective consumption do they have, etcetera, etcetera, it's really not that digitalized, and you have a lot of errors going to the process with the data and everything. It's always the same discussion and I think they really need good data if you want to think further about Scope 3 emissions. But for the social factors, I think it really depends on the customer. Some customers want to use some labels, or they have their own like policies or KPIs which they want to measure or goals they want to achieve. For example, barrier free building, do you have a communal space, etcetera. So, they try to do that with the help of some labels. And also with IAZI, I have one customer, a pension fund there. I've worked with the rating from the University of Zurich. They have a lot of social indicators and a catalogue. And I think it's important for them, but it's not let's say it's not that in the focus because it also depends on the sustainability strategy of the company itself. So, they have a lot of different strategies and different focuses.

LAS: So, it's not generally a certain sector that's interested? It varies from company to company? I mean would you say fund pension funds are different than insurance companies or from corporations?

RR: I think so. Yeah. I mean, you can correct me, Marius, but I have the feeling like the big ones for example. I mean, they use GRESB, right? And GRESB has a big focus on governance, on the company level but not a lot on social and environment. I don't know why I have the catalogue two years before. I mean GRESB is also always changing but governance, for example there is a big focus

LAS: Which has a focus, I guess on the social as well, because the governance factors that they're measuring have social components to them.

RR: Yes, it's like mixed. But if you look on property level, I mean the one thing is, yeah, the company, but there's also like the governance aspects on the property like, you know.

MZ: So, but we actually have, Robert hasn't mentioned, we have our own ESG rating which we apply and we have like an all automated version kind of a light version where you also have a lot of new data, also social aspects such as how the diversity is at every point in Switzerland in terms

of social economic indicators, age groups, income for every point in Switzerland. So, you just give us the address we give that to you. But we also have more in-depth ratings.

LAS: What do you know when you give in an address?

MZ: We know for this address, what's the diversity of the age in a certain radius, what's the diversity of income, of the housing around, what's the diversity in their age and room size and flat size and so forth.

LAS: Ah, so you have all of the building data for all of the buildings, you know exactly.

MZ: I mean, all our location factors we process 1.5 terabytes data. So that's the product we offer. But again, they go even more in depth. Like Robert, they have like a more in-depth ESG rating. They take data from us. So they optimize, but then they also look at floor plans, are they wheelchair accessible, do they fulfill some SIA norms. This whole ESG rating is a product we offer, but I also think of the stance I have and I think Robert has the same is, the times that clients come to us and say 'I don't want to think about this, just give us a rating and we're happy' it's more like a tool to think about which aspects you might improve? Which aspects you're good on that, but the customers are kind of, most of them have realized now that they really need to think about those issues also in detail and they need to go, OK, 'what are problems with heat or what are problems with, I don't know, wheelchair accessibility or whatever'. So so and I think this is dance. With this rating, you have one number at the end, but to really learn about it and the disengagement with the nitty gritty details, I think is kind of needed also from the customer side. So maybe you have a different stance on that Robert.

RR: No, I mean, maybe 10-15 years ago you could just give them a rating, they'd be, but today, our customers are building up their ESG teams. They also have a lot of competences and knowledge that they're building up. And so they're also interested in that. I mean, in a guidance, it's also important for them to have a rating like GRESB because of the financial components. So they can find some investors, whatever. But I mean, most of them sometimes after a few discussions, they actually don't care if our rating for example is benchmarkable or not. Well, like they want to have an instrument, how can they improve their portfolio in terms of the different dimensions so that is important for them and not to have three stars, four stars of the scores because the big potential is also the prospective or they call it an in the future after the investments they have, maybe they have an old building stock, but I have a huge potential to realize after doing investment, they're putting in after a couple of years.

LAS: Umm. And I mean the customers that are asking for these social aspects, why are they asking for these details? Are they within funds then like on a fund level? I mean, what are they investing in? I'm just curious, you said you can, you can tell somebody details for a specific location?

MZ: Also, the diversity for instance and then compared to market rent, right. You want a kind of a sustainability perspective kind of a spread there. tuff like that would be of interest.

LAS: Are these customers that are looking to purchase a house and they want to know a little bit more about the area?

MZ: Portfolios.

RR: So the diligence I think is there's a really high demand also now for like ESG due diligence when they're trying to buy something, I think until 1-2 years ago, that wasn't a question at all in Switzerland. I think our colleagues in Germany, they have ESG due diligence for years because it's important. Because of the EU-taxonomy, in Switzerland we see that customers are having the demand for that one, also for acquisitions.

MZ: I really need to leave. I'm sorry.

LAS: Thank you, Mario.

RR: I have 5 minutes or six.

LAS: Biodiversity, is that an issue? Do people look for biodiversity at the moment?

RR: Yeah, Marius could explain better, but we analyze the satellite images and then you have like how much is green of your surrounding like for example, trees, Wiese and bushes. So like how green is the surrounding but then we have the other ratings I mean labels. Biodiversity is also really important I know for insects, birds, etcetera like invasive plants that don’t belong here. It can get really complex in biodiversity. We don’t look at this ourselves. We don’t have the data at least. But we have like a checklist. And then and then we look at it, you know, if we get the good information or like the plan material or the plans of the landscape architect, whatever but not with our rating. With other ratings like for example green property of Credit Suisse. But biodiversity is a thing that is coming. But I mean there it’s really difficult to have the data because it's something really specific. You have to analyze it on property level.

LAS: I think probably exactly, and I think a lot of the times you just don't have the data because you would need to get it from the from the property owners, right? So trying to figure out what you can do with just open source data is the issue, yeah **You know the social indicators that you're measuring within your company. Those are also just based on open data, right? Are you getting this information from the asset owners themselves?**

RR: I think there's a lot of open data of governmental entities. And then I don't know our data team areas could explain it better is processing the data or analyzing it or enriching it with other data sources. Yeah, a lot of info we have to ask the customer. For example, if they are making questionnaires with the tenants. But this is more like a social governance level aspect like for example, do you ask your tenants with questionnaires? Interviews with your tenants. How satisfied are they? And do you derive from the satisfaction level improvements for the property.

LAS: So this is more governance and this is something I guess you would do with like fund managers, I guess, right?

RR: Yeah. With the fund managers.

LAS: Great. Thanks a lot for the interview.