



PICARD ANGST



The Long Road to Net Zero

Swiss Real Estate

September 2023



AGENDA

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The path to CO₂ neutrality and its challenges

It is undoubtedly gratifying to welcome transparency on the long road to net zero in Switzerland. It is a driving force behind the switch to fossil-free heating systems and energy renovation measures. However, given the plethora of different sustainability certificates and labels, it is crucial that property owners keep a close eye on the ambiguities and differences in calculation methods.

In this white paper, we take a look at the challenges and opportunities on the road to CO₂ neutrality in Switzerland. Using two examples, we explain which parameters are measured and how these measurements should be carried out. In addition, we show how Realstone's real estate experts deal with this issue in a concrete example. With transparency as our guiding principle, we are shaping a sustainable and environmentally friendly future for the real estate industry together.

Facts & figures about Swiss CO₂ neutrality

Climate Engagement

Switzerland has signed the Paris Agreement and is committed to limiting global warming to well below 2°C, with the aim of continuing efforts to limit it to 1.5°C. The Federal Council has also set the goal of achieving net-zero emissions by 2050.

What is Net Zero?

Net zero means that all GHG emissions caused by human activities must be offset by measures taken to reduce emissions. This brings the Earth's climate balance to zero, after natural and artificial sinks are taken into account.

The contribution of buildings

In Switzerland, emissions from buildings have decreased more than those from transport and industry. However, they still account for about 26% of total emissions.

Progress made in renovating buildings

Building retrofits, conversion of oil and gas heating systems to heat pumps, and district heating systems have helped reduce greenhouse gas emissions from buildings.

The challenge of heating

In 2021, however, about 60% of Swiss residential buildings were still heated with fossil fuels.

Renovation Rate

Only 1% of the building stock is renovated each year. Accelerated renovation is urgently needed to achieve the goal of CO₂ neutrality by 2050.

A wide range of Sustainability Certificates

In the Swiss real estate market, there are a large number of sustainability certificates and labels that use different calculation methods. The Swiss government has introduced a rating from A (green) to G (red) for every residential building as of March 2023.

Various Certificates

The various certificates vary in terms of establishment, scope of topics, costs, period of validity, and eligibility for subsidies. The leading certificates in Switzerland are GEAK and Minergie.



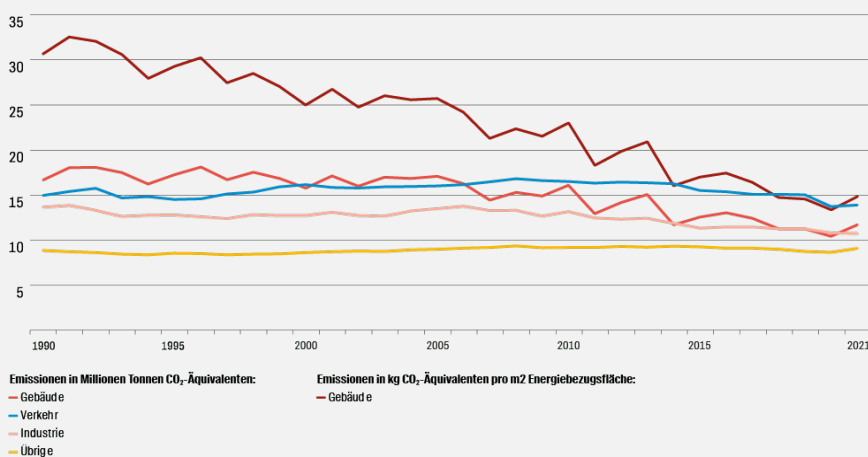
Switzerland on the road to sustainability: Focus on building renovation

Switzerland faces significant challenges in achieving its CO₂ neutrality goals. Effective retrofitting of buildings and uniform assessment of sustainability aspects are crucial to pave the way to a sustainable future.

Besides the building stock, transportation and industry are the largest CO₂ emitters in Switzerland (see graph).

The CO₂ emissions of the Swiss building stock in 2021 was 30% lower than in 1990, almost on the reduction path of the Paris Climate Agreement. This is remarkable because, on the one hand, the energy reference area of buildings increased by 45% over the same period and, on the other hand, transport (-7%) and industry (-21%) did not improve to the same extent.

Greenhouse gas emissions in Switzerland



Quellen: BAFU; Wüest Partner

In-depth insights into two selected valuation models



The GEAK is the official cantonal building energy certificate that is standardized throughout Switzerland. It shows the current energy status of a building in comparison to other certified buildings and serves as a valuable basis for renovation measures. It was created more than 10 years ago by the Conference of Cantonal Energy Directors. The idea was, and still is, to promote and further develop a uniform system for the energy evaluation of buildings throughout Switzerland and to perform quality assurance functions. The certificate itself is comparable in appearance and logic to an energy label for household and electrical appliances. It evaluates and declares the energy quality in several categories with a classification between A (very energy efficient) and G (low energy efficient). For an individual building, there are three categories: envelope efficiency, total energy efficiency, and local CO₂ emissions.

Although the public sector is strongly committed to the GEAK, such a certificate is usually voluntary. To date, municipalities or individual cantons have only required a GEAK prior to the renovation of small or large residential buildings when applying for subsidies. The certificate may also be required by public authorities in the event of a change of ownership. The financial sector is also jumping on the bandwagon: Several cantonal banks and private banks are offering preferential mortgage conditions if a valid GEAK document is available for the property in question.

The assessment takes into account heating, windows, insulation, lighting and building services and is summarized in a detailed report.



The PACTA (Paris Agreement Capital Transition Assessment) climate tests examine the alignment of the Swiss financial sector with the goals of the Paris Agreement and analyze progress in this regard. PACTA is an independent and open-source methodology that is available on the market in an unlicensed form.

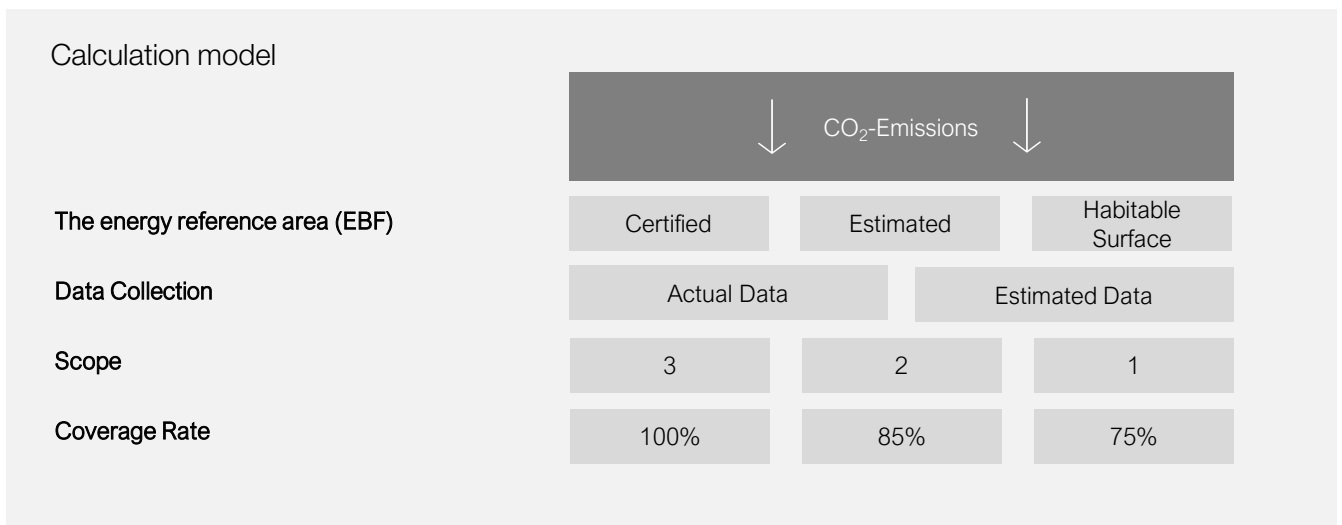
The methodology in the real estate sector is based on a first step of identifying the location of the building. The additional factors (e.g., heating source, energy consumption area, renovation details) for determining CO₂ emissions can be supplemented from the Swiss Building and Housing Register (GWR) of the Swiss Federal Statistical Office when using the real estate module. Optionally, the portfolio owner can supplement some of these factors if more recent or more accurate data is available. Based on SIA Standard 380/1 (2016) "Heating Demand", a simplified "virtual digital twin" is created for each submitted building and its energy demand is calculated. Using the CO₂ emission factors specified by the BAFU for the three energy sources "fuel oil", "natural gas" and "other", the annual CO₂ emissions generated by the heat production for heating and hot water of this building are calculated. For a correct calculation within the Real Estate module, the following information is required for each building:

Specification	Example	Type
Energy reference area (EBF) in m ²	500	Mandatory
Number of floors (heated)	3	Mandatory
Building year of construction	1995	Mandatory
Main use type building	Living EFH	Mandatory
Code of the assigned Temperature measure station	ABO	Mandatory
Energy sources for heating and hot water	oil/gas/other	Optional
Other energy source specification	WP, Wood, FW	Optional
Renovation year facade	2010	Optional
Renovation year roof	2010	Optional
Renovation year window	2000	Optional
Renovation year cellar	No specification	Optional
Consumption data	kWh	Optional

Customized sustainability: The challenges of non-standard calculations

In Switzerland, we face not only the challenge of achieving ambitious CO₂ neutrality targets, but also the problem of a lack of standardization in building calculation models. This lack of uniformity allows different actors to adjust calculations according to their own preferences in order to maintain the appearance of sustainability. This leads to ambiguity and inaccuracy in assessing the environmental impact of buildings.

In order to implement effective building retrofit and development measures, it is crucial to develop a consistent and transparent approach. This is the only way to ensure that our efforts to reduce greenhouse gas emissions are effective and achieve the desired results.



The energy reference area (EBF) can be certified by an independent third party (SIA standard 416) or determined based on the leased area (excluding heated common areas).

Data collection is based on actual data (annual measurements in the building) or on estimates (comparative method).

The coverage rate allows the exclusion of buildings whose energy efficiency has not been measured. Thus, certain buildings that are classified as poor can be excluded from the calculation scope.

During the operation and renovation of a property, CO₂ emissions are generated in **various ways**.

- Emissions from heating oil combustion at the property are Scope 1.
- Emissions from purchased electricity or district heating are Scope 2.
- Emissions from new components required for an energy retrofit, such as new windows, or disposal of old components, are Scope 3.

Interactive CO₂ calculator on the Swiss Confederation Geoportal

Since March 2023, the federal government has published a CO₂ intensity rating on its map portal. The A (green) to G (red) rating, known from refrigerators or GEAK, is used for each residential building.

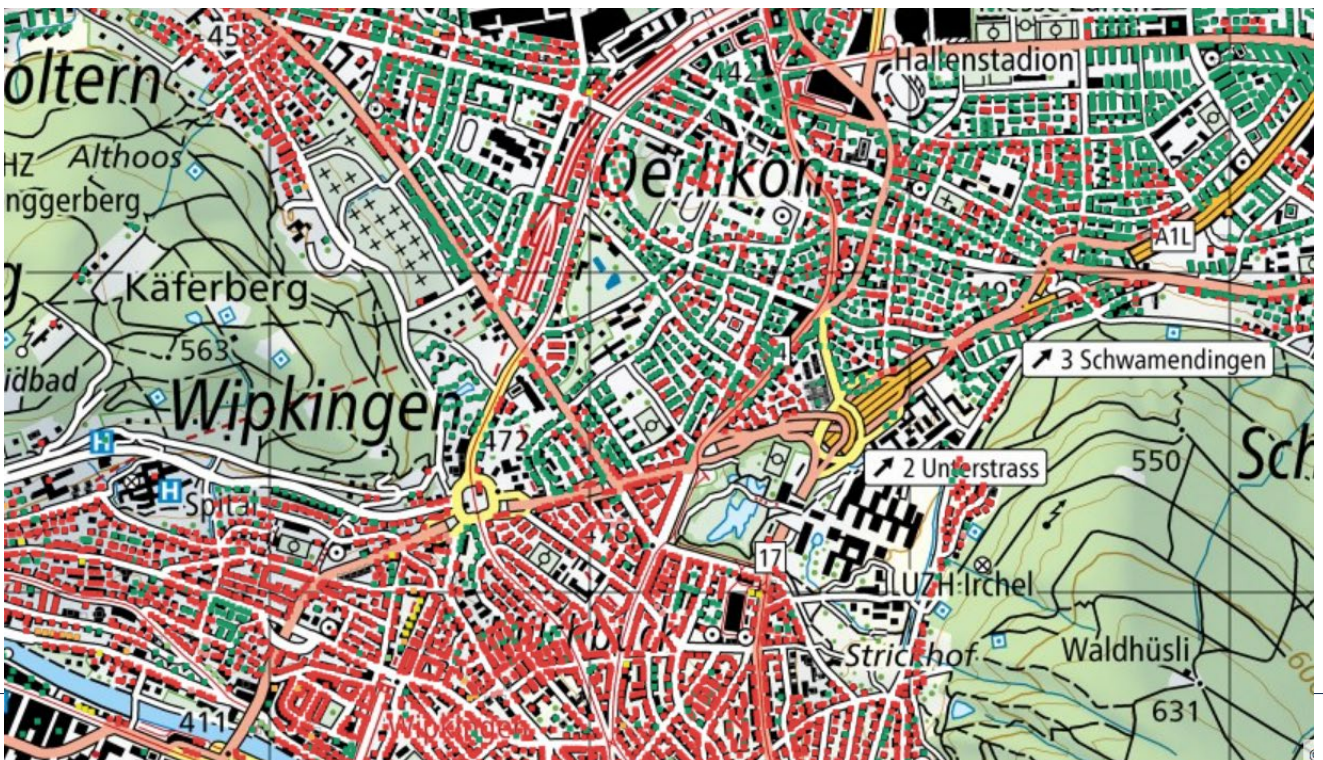
Anyone who has ever been in contact with a GEAK expert knows that the rating requires extensive expertise, a large number of documents (such as construction plans and utility bills) and a personal inspection of the property.

How can the Confederation make this energy labelling available for all 1.8 million Swiss residential buildings in such a short time?

The answer is simple: CO₂ emissions are calculated using the PACTA real estate model, which is well known from climate compatibility tests. The purpose of these tests is to determine the CO₂ intensity of real estate and mortgage portfolios. The decisive factor is the heating system of the building. Oil heating systems are the biggest climate polluters, and gas heating systems also emit CO₂ directly during the combustion process. All other heating systems, such as heat pumps, electric heating, district heating and even wood, are considered carbon neutral in this model. This includes a good 40 percent of buildings. All others are mostly in the worst class (see source BAFU).

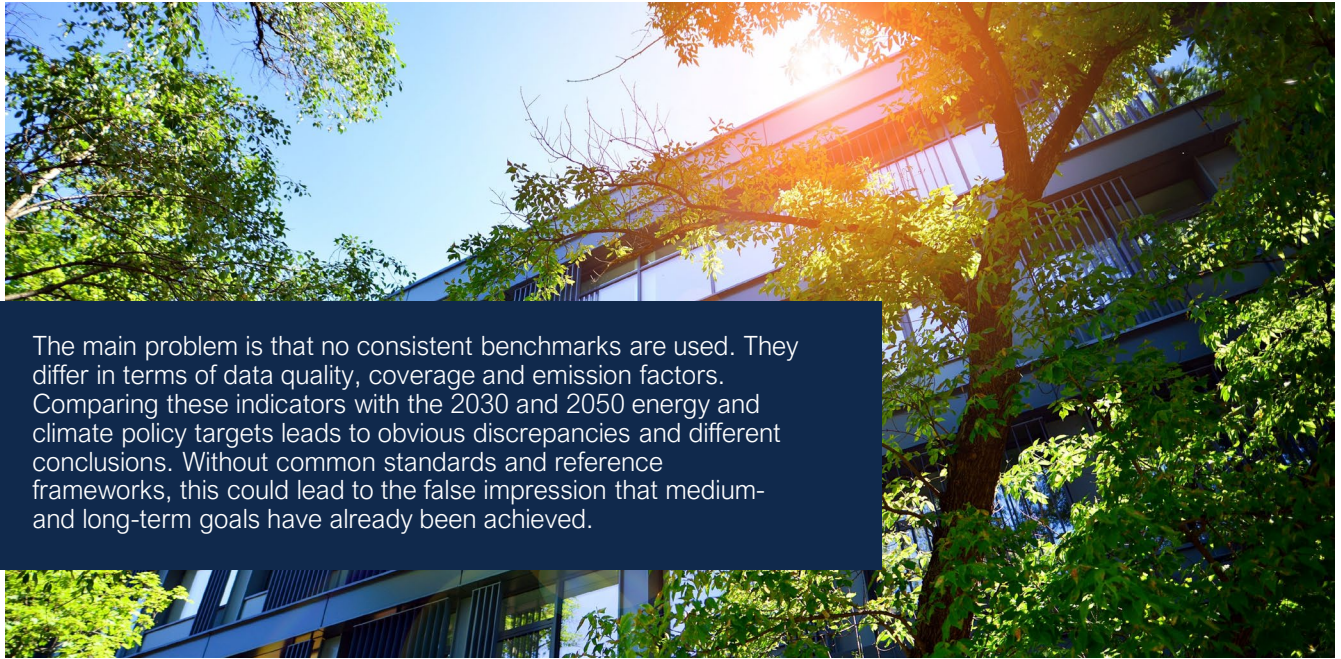


Estimated standard CO₂ emissions in kg/m² heated area/year (triangle: heating update date >20 years)



https://map.geo.admin.ch/mobile.html?lang=de&topic=ech&bgLayer=ch.swisstopo.pixelkarte-farbe&layers=ch.bafu.klima-co2_ausstoss_gebaeude&E=2650479.07&N=1191311.25&zoom=2

The danger of appearances: How inconsistent measures mask our progress



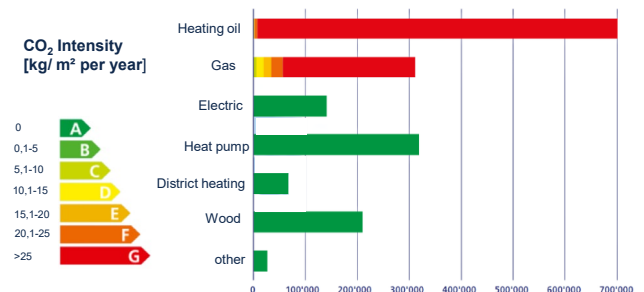
The main problem is that no consistent benchmarks are used. They differ in terms of data quality, coverage and emission factors. Comparing these indicators with the 2030 and 2050 energy and climate policy targets leads to obvious discrepancies and different conclusions. Without common standards and reference frameworks, this could lead to the false impression that medium- and long-term goals have already been achieved.

Partially outdated database

The basis for the assessment is the Buildings and Dwellings Register (GWR), which contains information such as the heat source, year of construction, living space, and number of floors of the buildings. The federal government has carefully built up this register over the past two decades and has continuously improved the quality of the data. Nevertheless, the information on the heating source, which is crucial for the assessment, is outdated for many buildings. In Switzerland, nearly half of the heating information still comes from the 2001 census, but in the canton of Zurich, the proportion of 20-year-old data has dropped from 80 to 60 percent over the past two years. The canton of Basel-Stadt, the leader in data timeliness, has conducted on-site inspections of nearly all residential heating systems over the past four years. Outside the city canton, given the average lifespan of a fossil fuel heating system of 20 to 25 years, it is reasonable to assume that some buildings that still have oil or gas heating on the GWR are now using environmentally friendly heating.

Renovations not considered

Basically, the type of building renovation plays a minor role compared to the type of heating. Although the building calculator could include such renovations in its calculations, and they would certainly have an emission-reducing effect on the results, the federal government does not include them in its calculations.





Effective Calculation

Example Realstone SA

Realstone approach: Actual carbon footprint

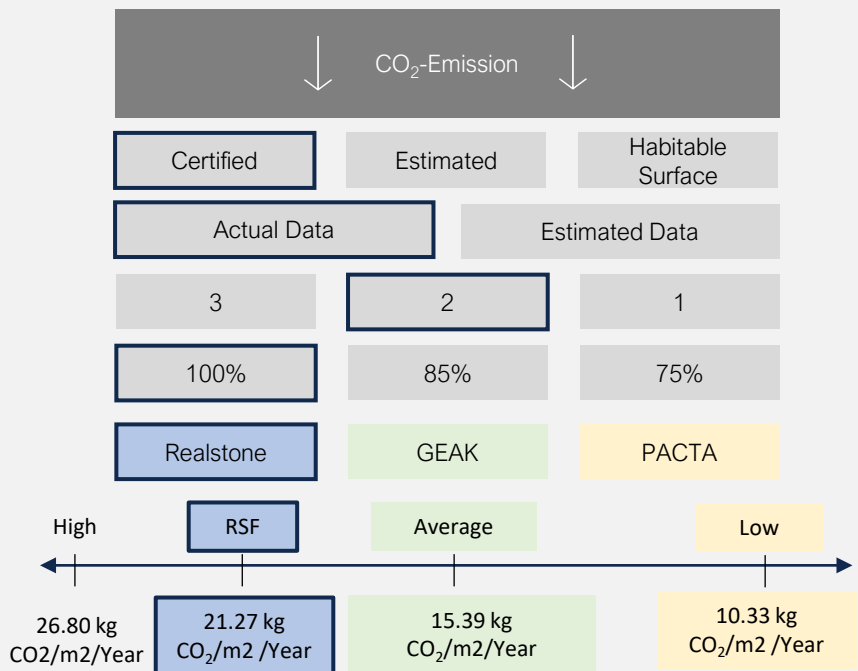
To ensure the transparency and accuracy of its energy data, Realstone relies on the environmental metrics published by the Asset Management Association Switzerland (AMAS). These metrics include coverage ratio, energy intensity, carbon intensity and energy mix, and are based on the Energy Reference area (EBF) of the properties.

Compared to the PACTA assessments described above, the main difference is that Realstone SA uses measured data rather than estimated data. The actual carbon footprint of the real estate stock is then weighted using recognized conversion factors and calculated according to SIA Standard 380:2015. This method takes into account direct and indirect emissions from heating and electricity consumption in common areas.

In order to provide their investors with a guaranteed achievement of sustainability goals, Realstone goes one step further. They have decided to include a cap on the carbon emissions of their portfolio in the contracts of two of their funds, Realstone RSF and Solvalor 61.

Realstone SA calculation model

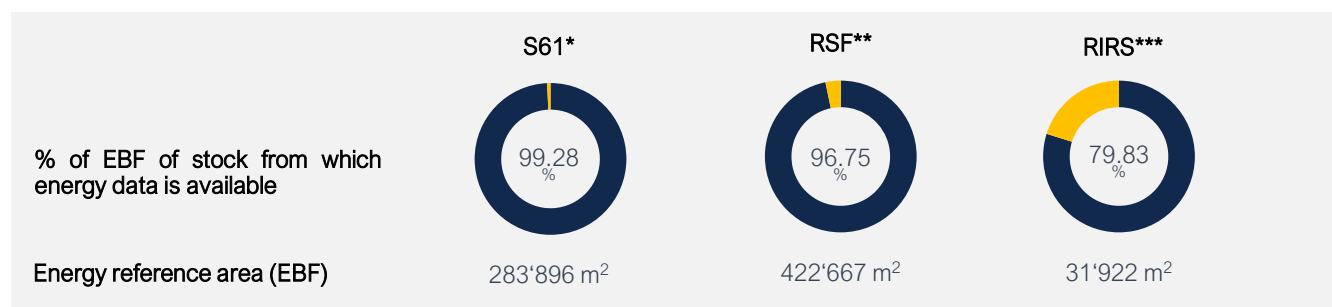
The final result of the calculations varies greatly and can ultimately range from 10.33 kg to 26.80 kg / m² / year.



Realstone environmental key figures

Coverage rate

The coverage rate defines the proportion of energy consumption data collected for all properties in a portfolio. In order to achieve 100% coverage in the long term, several processes have been put in place to gain access to missing items and high-quality data.



Energy intensity

Energy consumption includes heating and electricity for the common areas of all properties in the portfolio. This makes it possible to compare real estate funds and their progress.

	S61	RSF	RIRS
Consumption	122.3 kWh/m ²	119.4 kWh/m ²	170.4 kWh/m ²
Annual progress	-8.4%	-7.3%	-3.4%

Carbon intensity

As an indicator of the CO₂ emissions reported to the EBF, the CO₂ intensity is determined according to SIA Standard 380:2015 based on the energy calculation of buildings. The scope considered includes scopes 1 and 2, i.e. direct and indirect emissions from heating and electricity consumption of common areas.

	S61	RSF	RIRS
CO ₂ emissions	25.61 kg/m ² /Jahr	21.29 kg/m ² /Jahr	32.95 kg/m ² /Jahr
Annual progress	-16.8%	-20.1%	-11.7%

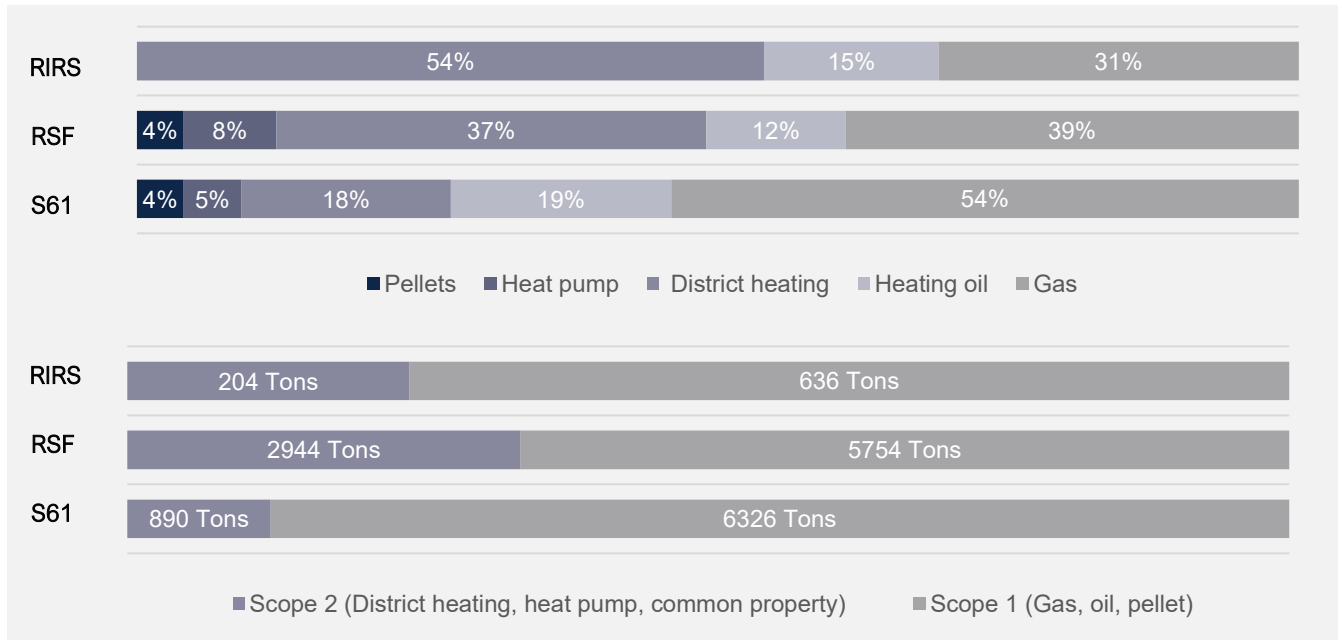
* Fund Solvalor 61

**Residential Swiss Fund

***Investment Foundation Realstone Immobilier Résidentiel Suisse

Energy mix

The energy mix, which includes both fossil and non-fossil energy sources, indicates the share of each heat source within the portfolio (calculated as a % of the EBF). This makes it possible to measure how far we are from our goal of heating 80% of the EBF without fossil fuels by 2031.



Water consumption

The Water Consumption Index makes it possible to measure the effort required to maintain properties.

	S61	RSF	RIRS
Consumption	1.12 m ³ /m ²	0.81 m ³ /m ²	1.37 m ³ /m ²
Annual progress	-9.6%	+0.2%	-0.5%

Photovoltaic power

Photovoltaic generation meets several sustainability goals related to renewable energy. It also allows tenants to benefit from decarbonized and local electricity at preferential rates. The installation of new rooftop photovoltaic systems will increase this production.

	S61	RSF	RIRS
Power	514 kW	1376 kW	121 kW
Annual progress	+606%	+211%	-

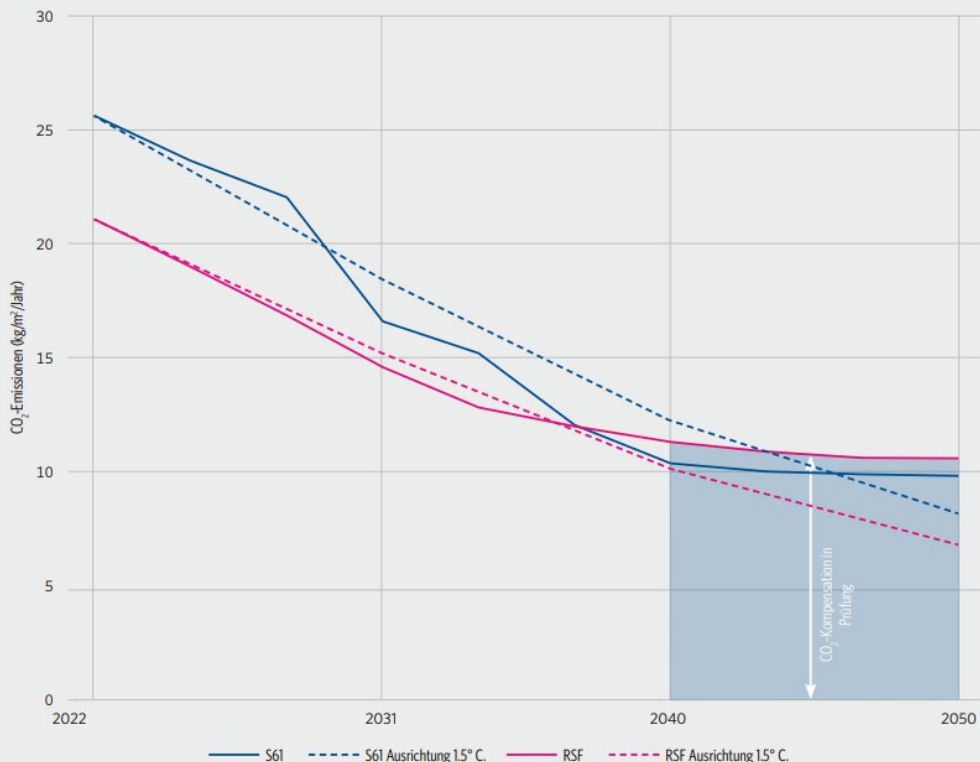


CO₂ compensation

Here we present the projected CO₂ trajectories for the Realstone RSF and Solvalor 61 funds. These trajectories take into account the planned renovation of the thermal envelope of the buildings and the planned replacement of the heating systems by their teams. Despite the measures taken, non-reducible CO₂ emissions remain, which could potentially be offset. Research and analysis is underway in its operations to integrate the concept

of carbon offsetting into its trajectories and accounting. CO₂ emissions for 2023 are being analyzed to bring them in line with the decarbonization path set out in the Paris Agreement, with a target of 1.5°C of global warming.

Path to reduce CO₂ emissions



Source: Realstone



Case Study: Renovation and expansion of a property

"Changes in the real estate market: Are your current experience, resources and skills up to the challenge?"

Renovation and addition of two floors

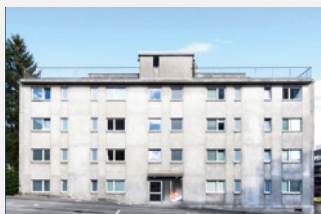
Completed on June 1, 2021, the Realstone building now presents itself in its new splendor with a total of 13 brand new apartments. But this is just the beginning of an exciting transformation. Realstone has not only invested in modern living space, but also in the future of energy supply. Thanks to photovoltaic panels installed on the facades and roof, the company is proud to say that a whopping 80% of its electricity needs (40 kWh/day in total) are now generated from renewable energy sources.

The renovations and additions have not only improved the building's appearance, but also significantly increased its rental value. Tenants now enjoy modern comfort and innovative energy efficiency.

To offset the cost of the energy retrofit, the building was cleverly repositioned. Realstone now offers furnished short-term accommodation, which is in high demand. This move has proven to be not only economically beneficial, but also an environmentally friendly alternative.

The rapid increase in the market value of the building was gratifying and was based on the various renovation measures described above. The CHF 5.5 million investment has proven to be extremely profitable, and the margin has improved significantly despite this investment.

Renovation project before / after



Year of Manufacture / Rebuild	1972	2021
Number of apartments	41	54
Heating	Heating Oil	Gas, Heat pump
Market value	7'660 CHF	17'863 CHF (+133%)
CO ₂ -emission	19.24 (Kg /m ² /Jahr)	12.00 (Kg/m ² /Jahr) (-38%)
Heat Expense Index	414 (MJ /m ²)	308 (MJ/m ²) (-26%)
Photovoltaic power	-	41.36kW
Rental income	377 KCHF	1'038 KCHF (+178%)
Ratio Rental / Market Value	4.92%	5.81%
Margin Market value/ Investment cost	106.2%	118.4%



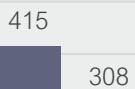
Value creation through energy efficient renovation: Key figures

In Lausanne, Rte de Berne 2, environmental performance has been significantly improved. Sustainable practices and modern technologies have reduced emissions and made more efficient use of resources. An inspiring example of a greener and more livable city.



Heat Consumption Index (MJ / m²)

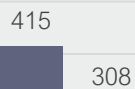
-26%



■ 2020 ■ 2022

CO₂ (kg / m² / year)

-38%

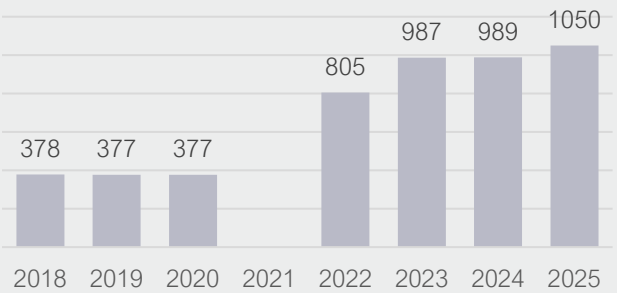


■ 2020 ■ 2022

Theoretical rental income

+0%

+30%



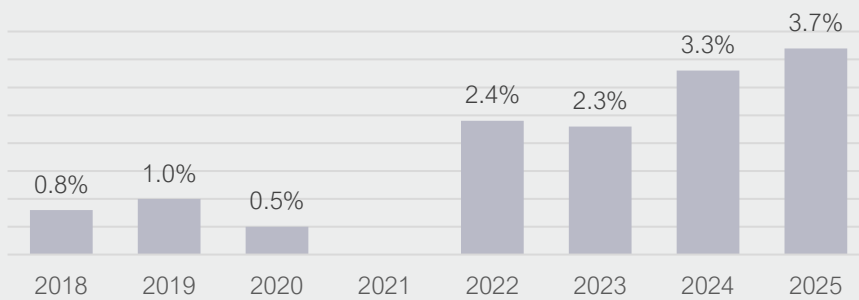
Installation of photovoltaic modules on the facades of the extension and on the roof. The system covers 80% of the building's electricity needs.
Total power: 40 kWh/day.

The renovation of the building, including the addition of a second floor, will result in significantly higher cash flow and net income. In addition, the property has experienced a significant increase in rents following the renovation, indicating increased attractiveness.

Quelle: Realstone

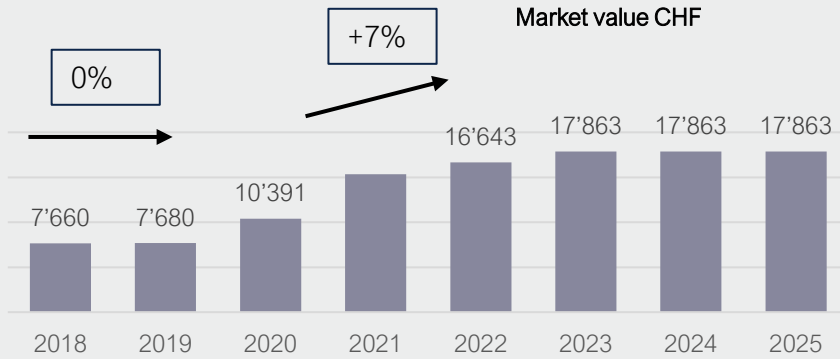


Net income at cost %.



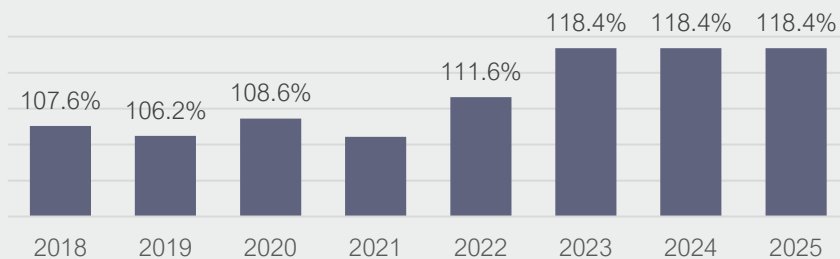
The repositioning of the building (furnished short-term housing) offset the impact of energy retrofit costs.

Market value CHF



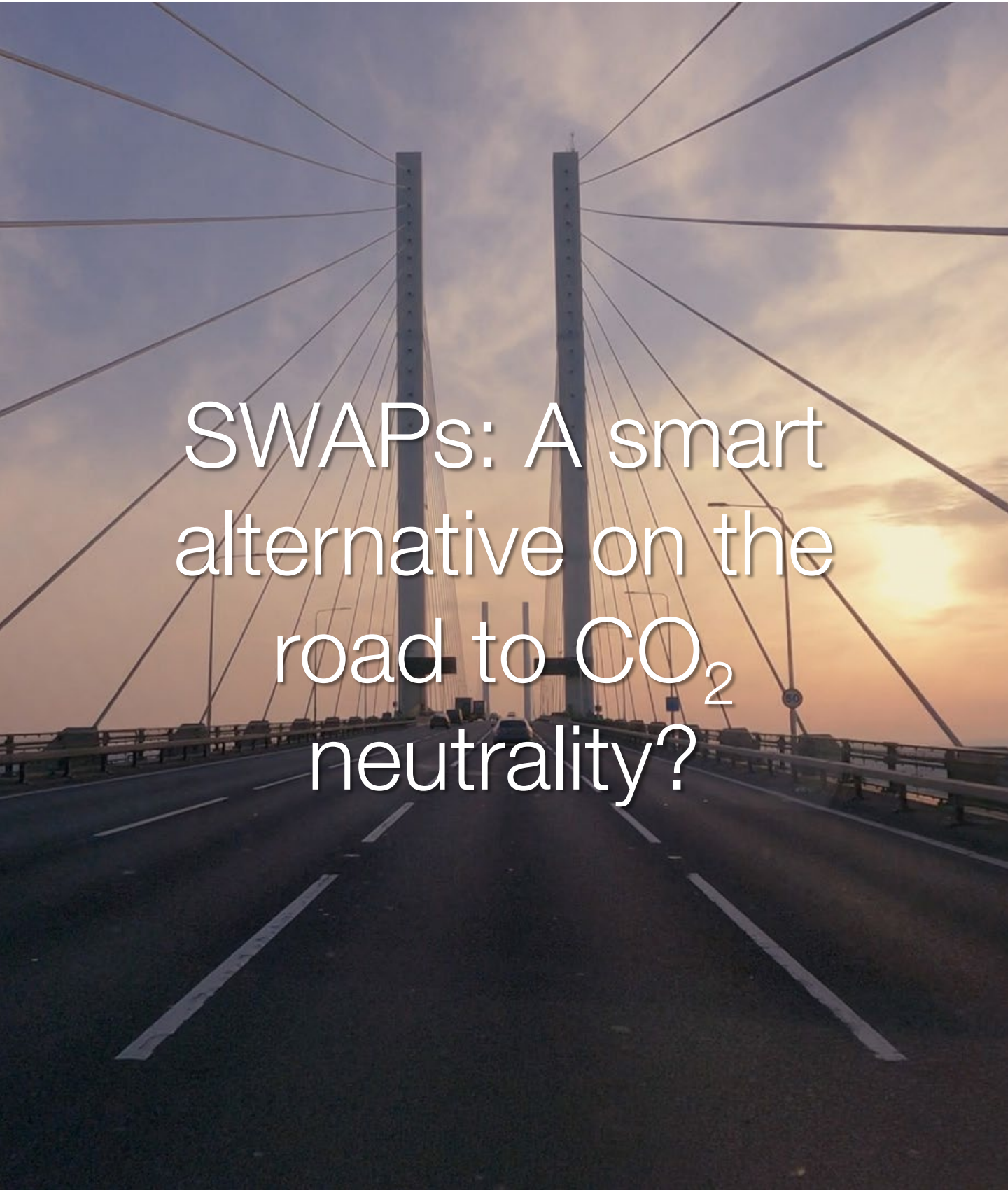
Faster increase in the market value of the renovated building (2020 Valuation already includes account extension.)

Margin Market Value / Cost



Improvement of the margin of the building considering an investment of CHF 5.5 million.

Source: Realstone



SWAPs: A smart
alternative on the
road to CO₂
neutrality?

SWAP as a solution for CO₂ neutrality?



The challenges of achieving carbon neutrality are many, especially in regions such as Western Switzerland where resources and expertise are not always available locally. Overcoming these challenges requires not only strategic thinking, but also a willingness to invest in expertise and resources to achieve long-term sustainability goals.

Does my team have the resources?

Assess existing skills, expertise and capacity to address the challenges and risks of direct investment.

Legal risks

These include landlord-tenant litigation risks and risks associated with planned building improvements, including permitting and appeal processes.

Risks related to CO₂ levies and remediation obligations

Financial challenges in completing the required retrofits to meet the carbon neutrality requirement.

Building renovation progress

Renovating buildings, converting oil and gas heating systems to heat pumps, and installing district heating systems have helped reduce GHG emissions from buildings.



Illustrative example of a CHF 30 million property with a 25% loan-to-value (LTV) ratio and expected cash flows over a 10-year period.

SWAP - Investment case

Building in direct ownership

- Value of the building: CHF 30 million at 25% LTV
- Increase in market value: +10% in 10 years
- Volatile cash flows
- Higher maintenance costs

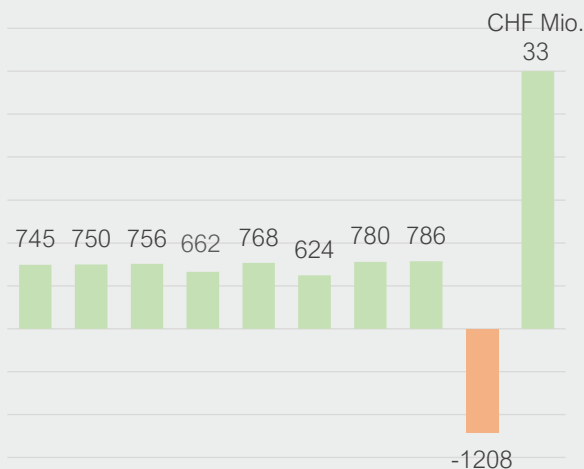
SWAP and ownership of RIRS shares

- Swap of a property in RIRS
- Increase in market value: +15% in 10 years
- Stable cash flow fixed at 3.0% (ROE target RIRS)
- Economies of scale for maintenance and energy upgrades

Internal Rate of Return (IRR): **2.76%**

Market value after 10 years: 33'000'000 CHF

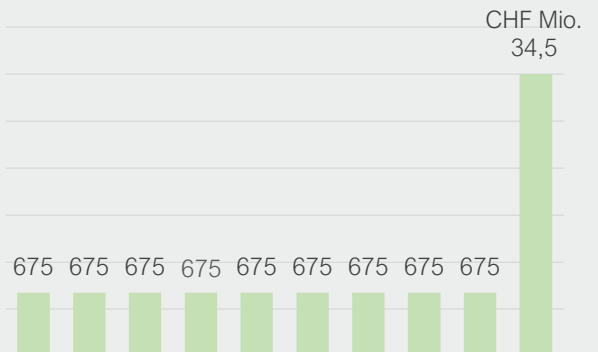
Renovation CHF 100k
Heating change CHF150k
Energy renovation



Internal Rate of Return (IRR): **3.53%**

Market value after 10 years: CHF 34,500,000 (achieved through revenue growth and cost optimization)

Stable and consistent compensation over time



Quelle: Realstone

SWAP optimization vs. direct investment

Vacancy management

Realstone's knowledge of the local market and strong relationships with property managers allow us to optimize rents and minimize vacancies.

Effects of increases in the reference interest rate on the rental index

Realstone's experts know the processes that help minimize appeals and increase revenue.

Rental Law: Disputes

The members of Realstone's in-house team have extensive experience in residential and commercial property management, so they are familiar with all aspects of the business.

Social and sustainable building aspects

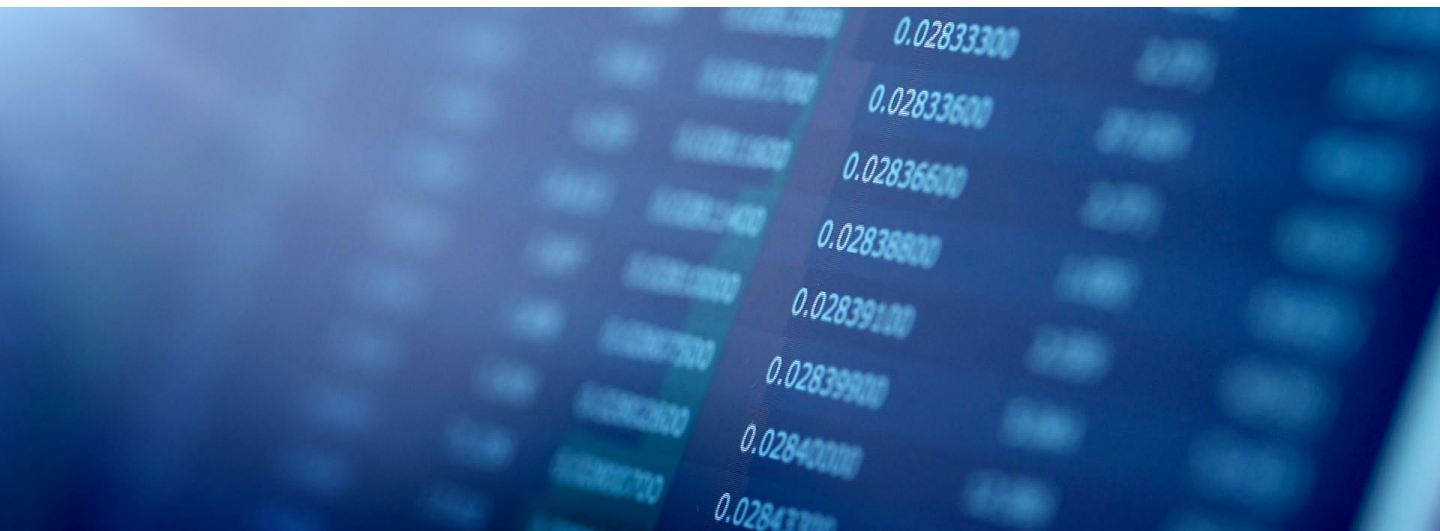
Realstone's sustainability department has developed a ten-year plan to retrofit all of its buildings for energy efficiency and actively promotes tenant comfort. This includes installing electric charging stations, bicycle pumps, community gardens, and hosting holiday parties.

Optimize operations and maintenance costs

Through managed volume, Realstone achieves significant discounts on contracts such as janitorial services, insurance, maintenance of ventilation systems, elevators, heating systems, roofs, plumbing and glazing.

Renovate, develop and densify

The Realstone Group has many years of experience in real estate development, especially in renovation projects with additions to increase the sustainability and profitability of buildings.





Summary

Partnerships for success: How Realstone is shaping the future of real estate investing

Transparency in CO₂ emissions is an important step in the fight against climate change. However, current federal calculation methods are limited. Smaller pension funds could benefit significantly from partnerships and expertise such as that offered by Realstone. These partnerships could help not only to determine CO₂ emissions more accurately, but also to advance the cause of sustainability.

Managing income-producing real estate is becoming increasingly complex as more regulations and requirements come into effect. Comprehensive operational, financial, legal and environmental knowledge is essential to achieve stable returns over the long term. This underscores the importance of a professional approach to real estate investment.

The challenges associated with the energy transition, such as replacing heating systems and energy-efficient renovations, require careful budget planning. SWAP options offer small pension funds the opportunity to increase returns through real estate investments and overcome financial barriers. By working with partners such as Realstone Investment Foundation, it is possible to benefit from economies of scale and achieve a stable cash flow of 3.0%.

The real estate asset swap is gaining momentum as it allows real estate to be transferred to tax-exempt investment foundations. This approach provides tax benefits and optimizes performance. Overall, real estate investments remain highly attractive to investors and pension funds seeking long-term stability and profitable solutions.





Realstone

Key Figures

Realstone

AUM

CHF 4.3 bn



No. of buildings in
Switzerland



70% Residential

4

Investment Solutions



38

Employees (FTE)
as of 31.12.2022



Realstone Immobilier Résidentiel Suisse (RIRS)

AUM

CHF 320 million



83% West Switzerland



84% Residential



3.00%
Target return on equity



25%
Target debt factor



20 kg CO₂ /m² /year
Sustainability Goal



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