REDUCING
HOUSING
INEQUALITIES

National report on the regulatory system of environmental and energy policies: Switzerland

An extract from Deliverable 3.2, *'National reports on the regulatory system of environmental and energy policies'*, of the ReHousIn project

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FOREWORD

This report is an extract from Deliverable 3.2, National report on the regulatory system of environmental and energy policies', of the ReHousIn project, which examines the economic mechanisms, norms, and institutional and contextual factors that shape the Environmental and Energy Policies (EEPs) in nine European countries.

The full version of the deliverable is available here.

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The ReHousIn project aims to spark innovative policy solutions towards inclusionary and quality housing. To achieve this, it investigates the complex relationship between green transition initiatives and housing inequalities in European urban and rural contexts, and develops innovative policy recommendations for better and context-sensitive integration between environmentally sustainable interventions and socially inclusive housing.

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NATIONAL REPORT ON THE REGULATORY SYTEM OF EEPs IN SWITZERLAND

1 Executive Summary

This report aims at providing an analysis of Switzerland's environmental and energy policies, with a focus on energy renovations of residential housing, densification and nature-based solutions (NBS). It is primarily based on an in-depth review of policies and regulations, which are analysed through a multi-level governance lens. In addition, interviews were conducted with state ministry representatives, with experts from national and cantonal organisations, the private sector, and academia. The report also includes some preliminary reflections on their implications on housing inequality.

Chapter 1 provides a general introduction. It is followed by chapter 2, which focuses on Switzerland, a small and wealthy country with a population of only about nine million. Historically, the favourable economic situation and employment opportunities have attracted large numbers of migrants, leading to a steady population growth. The country is governed under a federal system at three levels: the Confederation, the 26 cantons and the 2,172 municipalities. Being characterised by a direct democracy, Switzerland provides extensive opportunities for political participation. Over the last decades there have been dozens of popular initiatives and referenda related to housing, energy and the environment, clearly reflecting the importance of these topics in public debates.

Switzerland is a country of tenants with the lowest homeownership rate in Europe. Only 35.9% of dwellings are owner-occupied. High housing prices and the liberal rental housing market that contribute to making investments in the rental sector profitable are among the reason given for this situation. Apartment buildings constitute the majority of the rental housing stock. They are primarily owned by private individuals, private companies and pension funds. Public- and non-profit cooperative housing play an important role in some cities, but a relatively marginal one at national level.

Chapter 3 focuses on Switzerland's energy policy with particular focus on energy retrofitting of residential buildings. The Swiss government's commitment to the 1992 Climate Change Convention, the Kyoto Protocol and the Paris Agreement resulted in the passing of the CO2 Act in 2000. This Act mandated a 10% reduction in CO2 emissions by 2010. It also includes a provision for a CO2 levy on fossil fuels used for heating, lighting, or electricity generation that was introduced in 2008. In 2010 Switzerland launched the Buildings Programme, which provides financial incentives for energy-efficient renovations. The programme is being implemented and is co-financed by the cantons. Concerns that energy refurbishments are contributing to the loss of affordable housing have started to emerge as costs related to property improvements—such as energy refurbishments—can be passed on to tenants in the form of rent increases.

Chapter 4 focuses on nature-based solutions (NBS). Until recently Switzerland did not use the term NBS and related policies are integrated in those focusing on biodiversity conservation,

climate change adaptation, and river restoration. In 2012 the Federal Council released the first part of its Climate Change Adaptation Strategy, which proposes enhancing green infrastructure, promoting open spaces, preventing soil sealing, and using green and shaded areas to mitigate heatwave impacts and river restoration. The 2014 Action Plan emphasized the importance of spatial planning in adapting urban areas to increasing heat stress. Municipalities, supported by cantons and federal offices, were tasked with implementing climate change adaptation and mitigation measures, with limited funding coming from the federal government. As a result, only few cities are currently programmatically implementing NBS, while smaller towns often lack a clear strategy.

Chapter 5 focuses on densification, which has been a key policy goal in Switzerland since the 2014 revision of the Spatial Planning Act, when densification became legally binding. However, the implementation of densification objectives has been rather slow as the principle of subsidiarity grants significant authority to local governments. In fact, a significant portion of new housing continues to be built on undeveloped land, particularly in rural and peri-urban areas. This trend is gradually shifting, especially in cities and tourist regions, where the combination of restrictive building zones and low interest rates has sparked a construction boom and driven up land prices. One of the key challenges of densification is its impact on housing affordability. In fact, between 2000 and 2021, the price of single-family houses increased by 80%, while rents rose by 30%. Currently, no policies specifically address the social impacts of densification. Most strategies focus on spatial issues, while socioeconomic consequences like displacement and unequal housing conditions are largely overlooked.

2 Introduction and methodology

This report aims at providing a qualitative analysis of Switzerland's environmental and energy policies, with some preliminary reflections on their implications on housing inequality. The report is based on an in-depth review of policies and regulations and eight interviews, which are analysed through a multi-level governance lens. Switzerland is not part of the EU but shares the same climate goals. The strategies towards these goals, however, are defined by national and cantonal policies, with cantons and municipalities enjoying a high degree of autonomy. Switzerland is characterised by a direct democracy; its citizens can and do exercise a strong influence on environmental and energy policies through popular initiatives or referenda. While there is an overall consensus on climate goals, the strategies towards attaining them are constantly being challenged as reflected by numerous popular initiatives, often followed by federal government's counter proposals.

The report focuses on three specific domains that are expected to play a key role in the adaptation and mitigation of climate change: energy renovations of residential buildings, densification, and nature-based solutions (NBS).

Energy efficient retrofitting includes the building envelop and the engineering system, including the replacement of windows and heating systems. In Switzerland, these measures are strongly incentivized and subsidized through the Buildings Programme (*Gebäudeprogramm*).

Densification emerged as a concept at a global level in response to the environmental debates of the 1960s and 1970s (Burgess, 2000). Advocacy for 'compact cities' aimed at transforming

urban settlements to enhance their environmental sustainability by reducing land consumption, limit commuting, and slow down urban sprawl. In Switzerland, a small and mountainous country characterised by the scarcity of buildable land and the desire for a high degree of self-sufficiency in food production, a parsimonious land use has been the main concern of spatial planning for several decades. But only since 2014 densification has become a legally binding objective for the whole country.

NBS is a term increasingly used in policy and academic circles to refer to actions that are inspired by, supported by, or copied from nature with the aim to increase urban sustainability and to improve the resilience for humans and biodiversity (European Commission: Directorate-General for Research and Innovation, 2015). NBS often aim to address climate change mitigation and/or adaptation and to combat biodiversity loss. This implies the protection, restoration, and/or management of natural and semi-natural ecosystems, management of productive land and coastal areas, and the creation of new “green” or “blue” infrastructures. In Switzerland, the concept of NBS appeared in policy documents only recently, but public concerns, political debates, popular initiatives, and local-level projects that may be labelled as NBS are not new. However, national level policies to promote NBS are rather weak with initiatives depending entirely on municipal governance. Moreover, while public debates, political concerns, and scientific literature over the negative impact of energy refurbishments and densification on an equitable and affordable access to housing in Switzerland are not new, so far links between NBS and housing inequality trends have not been explored and debated yet.

This report is based on the review of secondary data, such as information, data, thematic studies, and evaluation reports available on the website of relevant governmental agencies (e.g. those of the Federal Office of Housing, the Federal Office of Spatial Development, the Federal Office of Energy) and those related to specific programmes such SwissEnergy (*EnergieSchweiz*) and the Buildings Programme. In addition, interviews with experts from the public and private sector and academia provided insights into legislation, multi-level governance processes and the implementation of regulations. To this aim, we spoke with representatives of the SFOE, the SFOSD, the FOEN, the EnDK, EspaceSuisse, ETH SPUR, Grünstadt Schweiz and LemonConsult (see appendix). Moreover, the subjects were discussed at a PolicyLab attended by 28 participants, resulting in the provision of additional information (see appendix). Longitudinal Information on popular initiatives, direct and indirect counter-proposal and legal frameworks related to environmental and energy policies could be found on the official website of the Federal Council. As will be discussed in the following chapters, Switzerland is a federal state with its 26 cantons and 2’172 municipalities, which enjoy a high degree of autonomy, with considerable implications on the specific modalities and progress in the implementation of environmental and energy policies. These are affected by several factors, such as context specific concerns and interests, the economic situation and the overall political orientation.

The report aims at providing an overview of national policies and the system through which they are being implemented. However, it was beyond its scope to analyse the specific environmental and energy policies of each canton and municipality. Finally, the report is also based on a review of scientific literature, in particular related the impact of environmental and energy policies on housing inequality. Such literature remains relatively limited and focuses

primarily on the impact of densification in and around Switzerland's main cities (Zurich, Basel and Geneva), with only limited studies on other regions and cities. Publications on the impact of energy refurbishments on housing equity, with few exceptions, is almost exclusively limited to some research projects commissioned by Federal Office of Housing, while we could not find any scientific publication focusing on NBS and its interlinkage with sustainable and inclusive housing in Switzerland.

3 Switzerland: main socio-economic characteristics and governance system

3.1 Switzerland's socioeconomic profile

Switzerland is a small country with a size of only 41,285 km^2 and a population of approximately 9 million people. With the Alps occupying two thirds of its territory, but housing only 10% of the population, the country is facing a considerable pressure on its scarce land resources (EDA, 2024). Indeed, about 2/3 of Switzerland's population live in the Swiss Plateau region, which covers only 30% of its surface. 84.8% of the country's inhabitants live in areas classified as urban (BFS, 2024d).

With an annual GDP per capita of USD 92'000 in 2022 Switzerland ranks as one of the top 10 economies worldwide. Approximately 74% of Swiss GDP is generated by the services sector, 25% by industry and less than 1% by the agricultural sector (FDFA, 2024a).

Switzerland has one of the lowest unemployment rates in Europe (2.0% in 2023; Staatssekretariat für Wirtschaft SECO, 2024) and is actually experiencing a labour shortage in many sectors (Jaberg, 2024; O'Sullivan, 2024). The monthly median gross salary for full-time employees in 2020 amounted to CHF 6'665. However, there is a significant discrepancy between the salaries of lower- and higher paid jobs. In fact, the lowest-paid 10% of employees earned less than CHF 4,382 gross per month, compared with over CHF 11,996 gross per month for the highest-paid 10% (FDFA, 2024b).

The country's favourable economic situation and employment opportunities have historically attracted large numbers of migrants, in particular from surrounding European countries. As a result, Switzerland has seen a steady population growth in the last three decades, from close to seven million inhabitants in 1990 to slightly over nine million in 2024 (BFS, 2024e). 40% of Switzerland's permanent resident population have a migration background, defined by the Federal Statistical Office (FSO) as "all foreign nationals and naturalized Swiss citizens, except for those born in Switzerland and whose parents were both born in Switzerland (3^{rd} generation), as well as Swiss citizens at birth whose parents were both born abroad" (FSO, 2024).

Switzerland is not exempt of poverty; in 2022, 8.2% of the Swiss population i.e. approximately 702'000 people were affected by income poverty. Most severely affected were people living alone, single-parents with minor children, persons with no post-compulsory education, foreign nationals from Eastern Europe or non-European countries, and those living in households with no employed person. However, in 2022, also 3.8% of all employed persons in Switzerland

were affected by poverty, corresponding to 144’000 persons. Employed persons particularly affected by poverty are those who worked for only part of the year, self-employed persons, persons with a temporary contract and persons employed in small businesses (FSO, 2023).

On average, Swiss households spend 13.8% of their gross income on housing and electricity, 7.7% on transport, 6.3% on food and non-alcoholic beverages and 6.6% on compulsory health insurance (BFS, 2024c).

3.2 Switzerland’s governance system

Switzerland is governed under a federal system at three levels: the Confederation, the 26 cantons and the 2,172 municipalities. The country is governed by the Federal Council, a seven-member collegial body whose decisions are made by consensus. Accordingly, left, right, and centrist parties all share executive power. Members of the Federal Council are traditionally drawn from the ranks of the four parties with the largest share of popular votes: the (right conservative) Swiss People’s Party (SVP), the Social Democratic Party (SP), the Centre (an alliance of the Christian Democratic People's Party (CVP) and the Conservative Democratic Party (BDP)) and The Liberals (FDP). There are also parties, such as for example the Green Party and the Green Liberal Party, which are not represented on the Federal Council but have representatives in the Swiss Parliament (FDFA, n.d.). Federal councillors are elected by the national parliament, the Federal Assembly.

Each federal councillor (sometimes also referred to as minister) is assigned a department, which is further divided into several federal offices. Particularly relevant to our project is the Federal Department of the Environment, Transport, Energy and Communication (DETEC), which includes, among others, the Swiss Federal Office of Energy (SFOE) and the Federal Office for the Environment (FOEN). Equally relevant to our project is the Federal Office for Housing (FOH), under the Federal Department of Economic Affairs, Education and Research (EAER).

The Federal Assembly consists of an upper and a lower chamber. The National Council (200 members) is the lower house and represents the people. The Council of States (46 members) is the upper house and represents the cantons. Delegates from eleven different parties set forward their views in the current parliament. Switzerland has several more political parties, but some are only active at the regional level. Members of the parliament (both chambers) are elected every four years.

3.3 Switzerland’s direct democracy and its impact on housing, energy and environmental policies

Since becoming a federal state in 1848, Switzerland has been characterised by a direct democracy providing expanded opportunities for democratic participation. Along the usual voting rights accorded in democracies, the Swiss people also have the right to launch and vote on referenda and popular initiatives. Popular initiatives allow citizens to propose changes to the Swiss Federal Constitution. If an initiative gathers enough support, it is put to a nationwide vote. To launch a popular initiative, citizens must collect at least 100,000 valid signatures from

eligible voters within 18 months. Once the required signatures are collected and verified, the initiative is examined by the Federal Assembly, which may either accept the proposal, reject it, or put forward a counter-proposal. If the initiative proceeds to a nationwide vote, it requires a double majority to pass: the majority of voters across the whole country (the popular majority) and a majority of the cantons (the cantonal majority). Each canton, regardless of its population, has one vote, so even small cantons have an equal say in the final decision. If both conditions are met, the initiative becomes law.

A counter-proposal is an alternative proposal that either modifies the original initiative or offers a different solution to the issue at hand. A counter-proposal can be presented alongside the original initiative in a nationwide vote, giving the public the option to choose between the initiative, the counter-proposal, or reject both. If the counter-proposal is accepted but the original initiative is rejected, the counter-proposal may still become law if it also receives majority support from the voters and the cantons.

Referenda are another critical component of Switzerland's system of direct democracy. Through a referendum, citizens can challenge laws or legal provisions that have already been passed by Parliament. This allows people to stop or amend legislation they disagree with. To call for a referendum, 50,000 valid signatures must be collected within 100 days after the law is passed. If enough signatures are gathered, a national vote is held, and the citizens decide whether the law should stand or be repealed. Like the popular initiative, a referendum also requires a double majority: the majority of voters and the majority of the cantons must approve the decision for it to be valid. The voting system in Switzerland ensures that both the majority of the population and the majority of cantons are involved in decision-making. This dual majority aims at protecting the interests of both larger urban areas and smaller rural regions.

Overall, Switzerland's system of direct democracy empowers citizens to influence the country's laws, ensuring that government decisions reflect the will of the people. Whether it is through a popular initiative to amend the constitution, a referendum to challenge a law, or a counter-proposal to offer an alternative solution, these mechanisms give Swiss citizens a substantial role in shaping their nation's future.

Over the last few decades issues related to housing, energy and the environment have been subject to several popular initiatives, clearly reflecting the importance of these topics in public debates. For example, in 2015, the popular initiative "More Affordable Housing" (*Mehr bezahlbare Wohnungen*) was launched. It aimed at making housing more affordable by promoting the construction of affordable housing, improving tenants' rights and limiting speculative practices in the housing market by introducing a right of first refusal for public authorities. The initiative was supported by the Swiss tenants' association and several progressive political groups. However, it was rejected by the majority of voters in a popular vote held in 2020.

Also launched in 2015, the popular initiative "Stopping urban sprawl - for sustainable settlement development" (*Zersiedlung stoppen – für eine nachhaltige Siedlungsentwicklung (Zersiedlungsinitiative)*) raised concerns about the environmental consequences of urban sprawl and demanded to further limit building zones. Due to the recent revision of the Spatial Planning Act (SPA, *Raumplanungsgesetz,* revised in 2014), the issue was not considered

urgent enough to convince a majority of the voters and was accordingly rejected in 2019. The partial revision of the SPA in 2014 proposed by the Federal Council had itself been triggered by the popular initiative “Space for Human and Nature” *(Raum für Mensch und Natur (Landschaftsinitiative)*) in 2013. The original motion sought to freeze the spreading of building zones, aiming to curb urban sprawl.

In 2003, the popular initiative “Yes to fair rents” (*Ja zu fairen Mieten*) aimed to tighten the regulation and contestability of rents and to improve tenants' rights. It was rejected by the electorate.

The years before the 2000s saw a number of initiatives raising demands on stricter rent control, more affordable housing, land use regulations, and measures against speculation in the housing market. For example, in 1986, the Swiss population called for an improvement of the tenant’s rights with a popular initiative titled “For the legal protection of tenants” (*Für den Mieterschutz*), causing a counter-proposal by the federation, which was accepted in 1987. It was followed by the “Urban-rural Initiative against land speculation” (*Stadt-Land-Initiative gegen die Bodenspekulation*) in 1988, which addressed rising land prices, but was rejected by the voting majority.

Switzerland is a liberal-conservative country. Accordingly, progressive initiatives are typically rejected by voters. However, in some cases led to accepted counter-proposals by the government, thus nevertheless leading to some policy changes. However, because of Switzerland's system of subsidiarity, in which the responsibility for implementing federal spatial planning decisions lies with cantons and municipalities, many initiatives address issues at the local level. Housing initiatives, targets for a minimum proportion of affordable housing, and land conservation initiatives, have attempted to secure affordable housing in many municipalities. Likewise, active spatial policies are also implemented locally.

Over the years, Switzerland has also seen a significant number of popular initiatives related to a wide range of environmental issues, including climate change, conservation of natural resources, biodiversity, and pollution control. For example, the recently withdrawn “Glacier Initiative” (*Für ein gesundes Klima (Gletscherinitiative)*) sought to achieve net-zero carbon emissions in Switzerland by 2050, aligning the country’s policies with the goals of the Paris Agreement. The Federal Council decided on an indirect counter-proposal for a new climate law (*Klimagesetz*), which was accepted by almost 60% of the population in a referendum in 2023. This law sets a net-zero carbon target for 2050 and mobilises subsidies for climate-neutral energy sources.

The popular initiative “For a sustainable and resource-efficient economy” (*Für eine nachhaltige und ressourceneffiziente Wirtschaft (Grüne Wirtschaft)*) focused on sustainable production, waste reduction, and the efficient use of resources and aimed at a better regulation of the economy on these issues. It proposed new measures to integrate environmental sustainability into economic decision-making, but was rejected by the voters in 2012.

As shown, also the initiatives aiming at a stronger climate protection, are generally rejected by the Swiss voters but have triggered fierce public debates around these topics and in some instances nevertheless had an influence on related policies, in particular in cases where public support for the cause was strong.

An overview of all popular initiative held in Switzerland between 1893 and today is provided online by the Swiss Federal Chancellery.

3.4 Switzerland's housing system

Switzerland is a country of tenants with the lowest homeownership rates in Europe. Currently only 35.9% of dwellings are owner-occupied (Bundesamt für Statistik, 2024b). Several reasons explain this low rate of homeownership such as the very high prices of residential real estate (Bourassa & Hoesli, 2010), a relatively liberal rental housing market with a relatively weak protection of tenants (Debrunner, Kolocek, et al., 2024). These factors contribute to making investments in the rental sector profitable, even though rents can only be increased in case of a proven increase of operation and maintenance costs or interest rates (Bourassa et al., 2010, p. 270). This leads to higher investments in the construction and maintenance of rental units than in other countries, with the result that these have a quality comparable to owner-occupied housing (BWO, 2005). Furthermore, as pointed out by Bourassa et al. (2010, p. 269), income tax rules in Switzerland are not particularly favourable to home ownership due to the imputed rent system. However, the tax value of a property for wealth taxation purposes is generally significantly below its market value.

Another factor that may have contributed to the low share of homeownership is related to the fact that a legal framework for condominium ownership was introduced in Switzerland only in 1965. As a result, in urban areas characterised by a relatively old multifamily housing stock, homeownership rates remain very low (BWO, 2005).

There are significant differences in the homeownership rates between urban and rural areas. In several predominantly rural cantons more than 50% of the households own their dwelling, but the highly urbanised cantons of Geneva and Basel-City, for example, have homeownership rates of only 18.9% and 15.5% respectively. In the city of Zurich, over 90% of the households do not own the dwelling in which they reside (BFS, 2024a).

Currently, Switzerland counts close to 1.8 million residential buildings and 4.8 million dwellings (Bundesamt für Statistik, 2024c). Each year between 30'000 and 50'000 new dwellings are being built to meet the demand of a growing population and a shrinking average household size. On average each dwelling is inhabited by approximately 1.9 persons. While the per capita consumption of space in 1980 was 34 m^2 in 1980, it increased to an average of 46.5 m^2 in 2023 (BFS, 2024b).

About 18.7% of Switzerland's dwellings were built before 1919, 42.1% between 1913 and 1980 and 39% in the past 44 years, i.e. after 1980. Detached single family privately-owned houses prevail in sub-urban and rural areas. At national level, 23% of Switzerland's inhabitants live in this housing typology and another 11.2% in semi-detached or terraced houses. The majority of the rental housing stock in cities consists of apartment buildings. 37% of the country's inhabitants live in apartments buildings with less than 10 dwellings, and 25% in larger ones. Apartment buildings are primarily owned by private individuals and to a lower degree by private companies and pension funds. Public rental housing and non-profit housing owned either by cooperatives or by public and private foundations constitute a significant category of owners in some cities but play a relatively marginal role at national level. Public housing is generally subsidized and targeting socioeconomically disadvantaged households, while housing

cooperatives are committed towards non-profit and non-commodifiable housing for their members, regardless of their socioeconomic status.

Whereas most European countries define housing costs as burden when they exceed 30% of the gross income, in Switzerland a housing costs are considered a burden for lower income people when they exceed 25% of their disposable income. On average, households in Switzerland spend an average of 20% of their disposable income on housing, but for large share of lower-income people, single parents, and foreign-born households they often exceed 30% of their disposable income[1].

	Housing	**Housing Retrofitting**	**NBS**	**Densification**
National level	*Responsible for the promotion of adequate and affordable housing for all* Federal Office for Housing (FOH) - Financial tools for non-profit sector - Federal tenancy law	*Responsible for reduction of Co2 emissions and decarbonisation* Swiss Federal Office of Energy (SFOE) - Financial tools - Support and initiative for Innovation - Objectives for energy efficiency and decarbonisation	*Responsible for the protection of ecologically valuable landscapes and strategies in climate adaption and biodiversity* Federal Office for the Environment (FOEN) - Financial tools for pilot-projects - Objectives for biodiversity and climate adaptation	*Responsible for sustainable land use and the differentiation of building- and non-building zones* Federal Office for Spatial Development (SFOSD) - Laws - Objectives sustainable land take - Technical guidelines
Cantonal level	*Responsible for the regulations, implementation and subsidy schemes* - Cantonal tenancy law - Cantonal housing policy[2]: e.g. Subsidy programmes, promotion and consultancy, rent control)	*Responsible for the regulations, implementation and subsidy schemes* - Cantonal regulations and objectives - Cantonal financial tools[3]: e.g. Subsidy programmes, promotion and consultancy	*Responsible for the implementation of national policy* - Cantonal objectives - Structure planning - Ecological compensation	*Responsible for the implementation of national policy* - Cantonal spatial planning (regulation of building zones) - Building law (PBG)

[1] For details see Widmer, Hannah et al. 2024. National report on housing inequality: Switzerland ReHouIn Deliverable D2.1.
[2] Housing is a cantonal competence, however only 9 out of 26 cantons have local instruments for housing promotion. These tasks and policies can therefore be considered voluntary. The same goes for municipal housing policy.
[3] The cantons can decide whether to promote energy retrofitting. However, they need a cantonal subsidy programme to access federal contributions. Also, municipal programmes are voluntary

Municipal level	*Responsible for the implementation of cantonal policy and additional local policy* - Local housing policy: local regulations, local subsidy programmes, promotion and protection of affordable housing (e.g. non-profit housing, quotas for non profit housing, special land use plans, utilisation planning)	*Responsible for the implementation of cantonal policy* - Local energy policy: local regulations, local subsidy programmes, construction permits	*Responsible for the implementation of cantonal policy and additional local policy* - Municipal utilisation plan - Local subsidy programmes[4]	*Responsible for the implementation of cantonal policy* - Municipal utilisation plan - Municipal zoning- and building regulation (BZO) - Re-zoning and compensation - Adaption of infrastructure

Table CH1. The organisation of competences for ecological transitions and housing policies at different governance levels.

4 Housing retrofitting

4.1 The policy cycle: emergence of the issue and policy decisions

The public promotion of housing retrofitting in Switzerland has a long history dating back to the 1973 oil crisis to which the Swiss Federal Council and the parliament responded by comprehensively reorganising the country's energy policy. For the first time the issue was raised that houses should be better insulated and not excessively heated. The oil crisis, compounded by the first public discussions triggered by the publication of 'Limits to Growth' by the Club of Rome (Meadows et al., 1972), led to a gradual rethinking on the way energy was used. It further enhanced awareness on the dependence on imported energy sources (Gisler, 2022).

Perhaps the most important measure taken by the Federal Council in 1974 was to set up the 'Federal Commission for an Overall Energy Concept'. This commission was tasked with identifying the direction of Switzerland's energy policy and investigating whether it might be necessary to extend federal competences in this domain. The report presented by the commission in 1978 formulated three goals for a future energy policy: an adequate and secure energy supply, the guarantee of economically optimal energy prices, and the protection of people and their environment. It further recommended that the federal government should incorporate an energy article into the Constitution with the aim of creating the foundations for a more active federal energy policy. After prolonged debates, Article 89 (Energy Article/*Energieartikel*) was finally added to the Swiss Constitution in 1990. It stipulates that, within the framework of their responsibilities, the federal government and the cantons must

[4] Municipalities have the discretion to implement support for NBS measures. However, such programs remain voluntary at the municipal level.

establish the necessary prerequisites for securing an adequate, comprehensive, safe, economic, and ecological energy supply, and ensure an efficient and parsimonious energy use. The article also states that measures related to the energy use of buildings are mainly the responsibility of the cantons, even though the national government is strongly involved in the promotion of energy refurbishments. The next sub-section will therefore trace the development of energy efficiency policies at the federal level, and in the subsequent sub-section, we focus on the Buildings Programme (*Gebäudeprogramm*), i.e. on the most important instrument through which Switzerland is promoting energy refurbishments of its housing stock.

Switzerland's energy efficiency policies

Following the addition of the Energy Article to the Swiss Constitution in 1990, the Federal Council launched Switzerland's first energy policy in 1991. The programme "Energy 2000" (*Energie 2000*) aimed to promote a rational use of energy and renewable energies through voluntary measures. This programme was followed by the SwissEnergy (*EnergieSchweiz*) programme in 2001, which specifically focuses on energy efficiency of buildings. Up to date SwissEnergy remains Switzerland's central platform for information on energy efficiency, renewable energies and refurbishment (BFE, 2024b).

After the Energy Article passed, the Federal Assembly also began working on the Energy Act (*Energiegesetz*). Related debates were heated and continued for years, with the result that the Energy Act only came into force in 1999 (Zünd, 2019). The Act is legally binding and requires cantons to regulate energy use and renewable energy sources, for both new and existing buildings (Bundesversammlung, 1998).

Switzerland's energy policy does not only reflect awareness of energy being a scarce resource but also its commitment towards the Climate Change Convention which was approved at the 1992 Earth Summit in Rio de Janeiro and came into force on 21 March 1994 (United Nations, 1992). However, it soon became clear that the provisions of the Convention were insufficient and as a response, the Kyoto Protocol was passed in 1997. In the Protocol, the participating industrialised countries committed to reduce their greenhouse gas emissions between 2008 and 2012 by an average of 5.2% in comparison to 1990. Switzerland made the same formal commitment as the European Union to reduce greenhouse gas emissions by an average of 8% between 2008 and 2012 (BAFU, 2023c).

In response to its commitments made to the Kyoto Protocol, the Swiss government passed the CO2 Act (*CO2-Gesetz*), which came into effect in 2000 and is legally binding. The law mandates a 10% reduction in CO2 emissions by 2010, relative to the 1990 levels (BAFU, 2000). It also includes a provision for a CO2 levy on fossil fuels used for heating, lighting, or electricity generation (excluding gasoline and diesel), to be introduced after 2004, should other reduction measures fail to meet the targets. The CO2 levy was ultimately introduced in 2008 and has been increased several times due to the shortfall in achieving the reduction goals (BAFU, 2020).

In 2010, the launch of the Buildings Programme (*Gebäudeprogramm*) marked a significant step in Switzerland's energy and climate policies by offering financial incentives for energy-efficient renovations. This federal-cantonal partnership, partially financed through the CO2

levy, aims to reduce heating energy consumption and to improve insulation standards across the country (BFE, 2023)[5].

Following the nuclear catastrophe of Fukushima, the Federal Council introduced the Energy Strategy 2050 (*Energiestrategie 2050*), a long-term vision focused on phasing out nuclear power and increasing renewable sources, such as solar and wind energy. Retrofitting buildings became a key component of the strategy to curb energy consumption and emissions within the housing sector. As part of the new Energy Strategy 2050, the Energy Perspectives 2050 were developed as political guidelines and the revision of the Energy Act (see below) was advanced (BFE, 2013, 2018).

On the international front, the 2015 Paris climate conference led to an agreement for the post-2020 era that committed all states to reducing their greenhouse gas emissions and largely eliminated the previous distinction between industrialised and developing countries. Switzerland ratified the Paris Agreement in October 2017, thereby committing to halve its emissions to 1990 levels by 2030, partially through international emissions reductions.

In 2016, the 1999 Energy Act dating was revised. The updated law, which came into force in 2018, sets clear targets for expanding electricity generation from renewable sources. It also includes an interim target of reducing per capita energy consumption by 43% by 2035. (Federal Assembly, 2018). With this revision, the Federal Assembly also decided to extend the Buildings Programme (Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation UVEK, n.d.).

In 2021, Switzerland enacted its “Long-Term Climate Strategy 2050” (*Langfristige Klimastrategie* 2050), a comprehensive and binding roadmap to achieve net-zero greenhouse gas emissions by 2050 (FOEN, 2023). A major focus of this strategy is the buildings sector, aiming at reducing greenhouse gas emissions from the existing building stock to zero by 2050. This will require a swift change in energy refurbishment practices, as many existing oil and gas heating systems continue to be replaced with new fossil-based systems, undermining the long-term goals of the Climate Strategy (Federal Council, 2021).

The Energy Perspectives 2050+ (*Energieperspektiven 2050+*), adopted in 2021, outlines Switzerland's long-term energy policy and serves as basis for decision making. The report presents two main scenarios: ZERO and BAU (business as usual), with the ZERO scenario further divided into several subvariants. All ZERO scenarios aim to achieve net-zero greenhouse gas emissions by 2050, in line with Switzerland's climate goals, while ensuring a secure and stable energy supply. The overarching strategy calls for a reduction in energy consumption across all sectors, along with the replacement of carbon-intensive energy sources with renewable alternatives. The strategy highlights significant reductions in energy consumption for space heating despite an increase in the energy reference area for housing. The goal is that 95% of Switzerland’s households will be heated with heat pumps or district heating by 2050 (BFE, 2021).

A proposed revision of the CO2 Act sought to establish more ambitious climate targets, including stricter regulations for buildings. This included additional taxes on fossil fuel heating

[5] Further details on the Buildings Programme are provided in Section 0.

systems, the creation of a climate fund, and further incentives for renewable energy retrofitting. However, the revision was rejected in a popular vote in June 2021, largely due to concerns about increased costs for households and businesses. This vote marked a setback for Switzerland's climate policy, in particular in the relation to the effort to accelerate retrofitting in the building sector (BAFU, 2021).

In 2019, a popular initiative "For a healthy climate (Glacier Initiative)" (*Für ein gesundes Klima - Gletscher-Initiative)* called for a ban on the use of fossil fuel by 2050. In response, the Federal Assembly and the Federal Council developed an indirect counterproposal, the "Climate and Innovation Act" (*Klima- und Innovationsgesetz*) which was passed in 2023 and came into force in January 2025. This Act legally enshrines Switzerland's commitment to reaching net-zero greenhouse gas emissions by 2050. In the buildings sector, it sets a target for an 82% reduction of emissions by 2040, with a complete decarbonization by 2050. The Act also introduces a Stimulus Programme (*Impulsprogramm*) that complements the Buildings Programme with additional subsidies. The specific measures and subsidies to support this transition are outlined in the Climate Protection Ordinance (*Klimaschutzverordnung*) and in the Energy Ordinance (*Energieverordnung*) which are both legally binding (BFE, 2023; Bundesversammlung, 2022).

The Swiss Engineers and Architects Association (*SIA*) set a new building standard called Climate Path (*Klimapfad, SIA 390/1*) in 2025 to limit CO2 emissions in the building sector. As a holistic consideration of construction, operation and induced mobility over the entire life cycle of buildings, it allows to evaluate and compare new developments and retrofits. The SIA's standards are highly influential in the construction industry, and the association plays an important role in political decision-making (Ménard, 2025).

In addition to national policies and initiatives, certifications with national and international labels have a growing impact on energy efficient refurbishments. Especially for international investors, green labels are important cachets to persist with a portfolio in an EU wide market. In Switzerland, the most important certification for sustainability is the Sustainable Building Standard Switzerland SNBS (*Standard Nachhaltiges Bauen Schweiz) which was originally developed for new buildings but is increasingly applied also to refurbishments.* The SNBS covers social, economic, and ecological sustainability. Labels are voluntary instruments that can also be applied only partially. They entail benefits like increased density (Representative of Lemon Consult AG, personal communication, May 7, 2025).

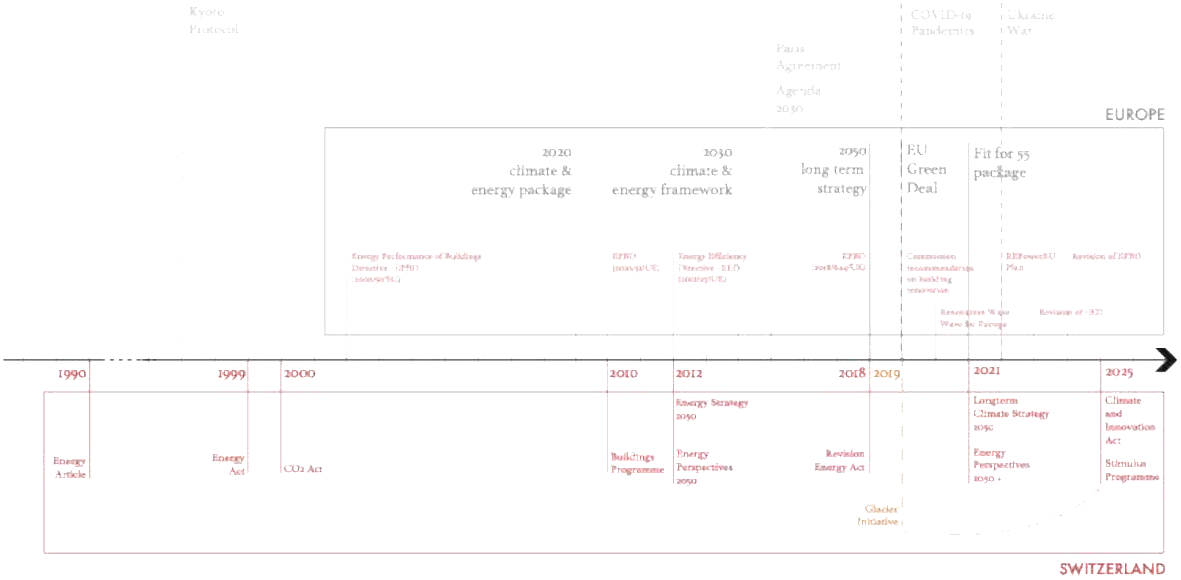

Figure CH1. Timeline of policies, initiatives and strategies regarding energy refurbishments in Switzerland

The Buildings Programme

In Switzerland, buildings are responsible for over 40% of energy consumption and around a third of the CO2 emissions. It is estimated that currently more than one million houses have little or no insulation and are therefore in urgent need of energy-efficient refurbishment. In addition, more than 60% of all residential buildings are still heated with fossil fuels or conventional electricity (Bundesamt für Statistik, 2024a). According to official estimates, in a significant portion of buildings better insulation can reduce heating requirements by more than half. Furthermore, by switching from fossil-fuelled heating to renewable energies, CO2 emissions during operation can be reduced to almost zero (EnDK & Bundesamt für Energie BFE, 2024).

The Buildings Programme was launched in 2010 with the aim to reduce the energy consumption of the building stock and to cut CO2 emissions. It provides financial subsidies to the owners of any type of building for energy refurbishments (e.g. replacement of windows, replacement of the heating system, and insulation of walls and roofs). The current Buildings Programme builds upon a previous building programme that was implemented until 2009 with public support by the Stiftung Klimarappen (Interface Politikstudien Forschung Beratung & Ernst Basler + Partner AG, 2010). With the revision of the Energy Act 2018, the Federal Assembly decided to continue the Buildings Programme (Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation UVEK, n.d.).

The federal subsidies provided through the Buildings Programme only apply if the respective canton also has a financing program for energy refurbishments. Details of the subsidy schemes' implementation are explained in section 3.2. As previously mentioned, the Buildings

Programme is complemented by the Stimulus Programme that was introduced under the Climate and Innovation Act. This temporary subsidy programme is designed to address areas where existing subsidies are insufficient and will run for ten years. It primarily aims at fostering the replacement of fossil fuel heating in multi-family buildings and electric heating systems with renewable alternatives. In total, a credit of 2 billion CHF were allocated to the Stimulus Programme (Das Gebäudeprogramm, 2024b).

4.2 The implementation process

As mentioned in the previous sections, housing retrofitting in Switzerland is primarily taking place with the support of the Buildings Programme, which is a joint initiative of the confederation and the cantons. Funding is provided through a partial earmarking of the CO2 levy at the federal level, as well as contributions from the cantons. Since 2010, one third of the revenue from the CO2 levy has been invested in measures to reduce CO2 emissions from buildings. This funding is capped at CHF 450 million per year and is distributed to the cantons as an overall federal contribution. To receive this contribution, a canton must have a programme in place that promotes energy-efficient building renovations, including improvements to building envelopes and building technology, as well as the replacement of electric and oil heating systems.

The federal contribution is divided into two components: a basic contribution per inhabitant and a supplementary contribution. The basic contribution can account for up to 30% of the available funds. The supplementary contribution is limited to twice the amount the canton has approved for its own programme. The funds provided by both the Confederation and the cantons support a variety of energy-related measures, including the insulation of roofs and façades, the utilisation of waste heat and the use of renewable energies (BFE, 2024c). According to a representative of the BFE, the buildings programme primarily aims to promote energy efficiency and, secondarily, decarbonisation, as related measures create greater deadweight effects (Representative of SFOE, personal communication, May 8, 2025).

While cantons are free to determine which measures to support and under what conditions, the Conference of the Cantonal Energy Directors (*Konferenz der Kantonalen Energiedirektoren*, EnDK) has developed the “Harmonised Promotion Model of the Cantons” (*Harmonisiertes Fördermodell der Kantone*, HFM), which offers a standardized framework for developing cantonal subsidy schemes. Nevertheless, each canton is entitled to customise its programme based on regional needs and available financial resources. The first version of the HFM of 2003 was revised in 2007, 2009 and again in 2015 to reflect new policies, developments and evaluations of the Buildings Programme (BFE & EnFK, 2016). In some cantons, regulatory tools have been introduced, like the forbidding of the replacement of obsolete heating systems with fossil fuel heating systems (Zurich, Basel Stadt, Geneva, Neuenburg).

Additionally, the cantons have jointly developed the “Cantons’ Model Regulations in the Energy Sector” (*Mustervorschriften der Kantone im Energiebereich*, MuKEn) which set guidelines for energy use for both new and existing buildings. These regulations have been periodically updated since 1992, with the most recent version dating from 2014. Also the MuKEn can be adapted by the cantons to their specific needs and incorporated accordingly into their canton-

specific legislation (Konferenz Kantonaler Energiedirektoren, 2018). However, according to EnDK, the requirements of most of the 26 cantonal energy laws are practically identical, which explains why the Swiss building stock is relatively homogeneous in terms of energy efficiency. (Representative of EnDK, personal communication, May 8, 2025).

An evaluation of the Buildings Programme for the phase from 2010 to 2014 revealed that its impact was below expectations, suggesting that meeting targets in the buildings sector will be challenging. Data collected by the BFE suggests that funds are actively used by larger, more affluent real estate owners (Representative of SFOE, personal communication, May 8, 2025). Some cantons reduced their budgets, which affected the federal contributions, while in others, demand for subsidies was lower than anticipated (Bundesrat, 2016). However, since 2016, the federal funding for the Buildings Programme has increased significantly, from slightly over CHF 150 million to CHF 425 million in 2022, hinting at a growing momentum for energy refurbishments. Indeed, energy renewal rates between 2011 and 2020 were around 40% to 50% higher than in the previous decade (BFE, 2024a). However, even though representatives of several administrative levels emphasize the importance of the Buildings Programme to attain climate goals, a drastic reduction of its funding is currently under discussion (Representative of EnDK, personal communication, May 8, 2025), (Representative of SFOE, personal communication, May 8, 2025).

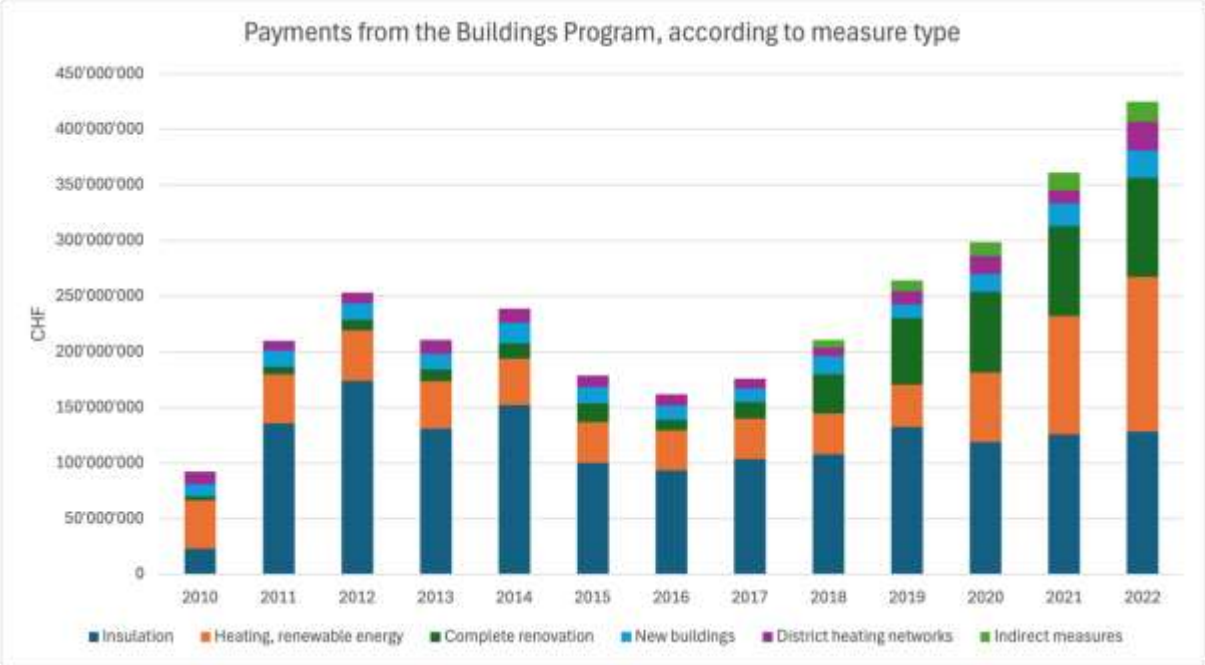

Figure CH2. Federal payments for the Buildings Programme by measure type, in CHF. Source: MURE Database (2023).

4.3 Size and role of the market

The energy refurbishments benefit from significant public support; over 3.6 billion francs in subsidies have been disbursed under the Buildings Programme between 2010 and 2023 (Das

Gebäudeprogramm, 2024a). Subsidy payments in 2023 alone totalled CHF 528 million. Private market actors (specialized consultants and the building industry) play a key role in the implementation of energy refurbishments. The building sector also supports SwissEnergy financially and has a strong lobby for maintaining the Buildings Programme (Representative of SFOE, personal communication, May 8, 2025). Indeed, according to a recent official publication, so far the Building Programme had an employment effect of 3025 man-years (EnDK & Bundesamt für Energie BFE, 2024). Accordingly, it may be said that the Buildings Programme has been quite successful in the creation of green jobs, in line with the objectives of the European Green Deal.

However, apart from incentives and funding, there are also market-related factors that affect real estate owners' decision-making about energy retrofitting. For example, the currently unpredictable energy prices strongly building owners' attitudes towards refurbishments. Fluctuating energy pricing undermine a reliable planning of renewable energy systems, leading to a slowdown of retrofitting (Representative of EnDK, personal communication, May 8, 2025).

As subsidies only cover a fraction of the refurbishment costs, homeowners typically rely on private financing mechanisms such as mortgages or construction loans for retrofitting projects. Banks set a credit limit based on available equity, generally applying an 80/20 equity-to-loan ratio (hausinfo, 2024). Financing depends on the potential to increase the value of a property or to achieve energy savings. The public sector plays a crucial role through subsidies in supporting retrofitting projects that align with sustainability goals, but that are not immediately economically viable because, for example, the initial investment is high, or not all external costs are calculated correctly. Ideally, these public funds enhance market-based financing, incentivizing homeowners to pursue energy-efficient renovations (BFE, 2024b).

4.4 The multilevel governance process

Switzerland's direct democracy and federal system plays an important role in the climate debate, as shown once again when the revision of the CO2 Act was rejected by the majority of the voters in 2021. The governance of housing retrofitting policies is based on a multilevel system. The cantons are primarily responsible for reducing the energy consumption in buildings and hence for the implementation of the Buildings Programme and are also in charge of processing and approving the funding applications.

As mentioned earlier and illustrated in Figure 3, the funds for the Buildings Programme come from federal as well as cantonal sources: a share of the CO2 levy (federal contribution) and cantonal contributions. Cantonal contributions range from CHF 130 to 200 million annually, while federal contributions from the CO2 levy total up to CHF 450 million annually, with an average of CHF 400 million (BFE, 2023). The federal support consists of a basic contribution and a supplementary contribution which can be twice as high as the funds approved by the respective canton. This structure incentivizes cantons to allocate higher budgets, as larger cantonal contributions result in higher federal funding. Additional cantonal funding programs beyond the Buildings Programme are also possible (BFE, 2024c).

As argued by an energy expert, there is a fundamental social equity problem with the programme as it provides public funding in the form of subsidies to private landlords that enhance the value of their property, which in turn enable them to increase rents. However,

social problems that such refurbishments may cause, such as evictions and unaffordable rents for the most vulnerable people have to be absorbed by the state (Representative of SFOE, personal communication, May 8, 2025). Furthermore, the Buildings Programme does not include any social criteria in defining subsidy entitlements, thus externalising its eventual negative social impacts.

Additional subsidy programmes, complementing the federal and cantonal programmes, can also be put in place at the municipal level. Predominantly larger municipalities and cities have launched their own subsidy programmes for energy refurbishments. For example, the city of Zurich provides additional subsidies for the replacement of heating systems, photovoltaic systems, and building renovations (Stadt Zürich, 2024a). But also smaller municipalities such as for example Amriswil in the canton of Thurgau with a population of 14,300 in 2023 (Kanton Thurgau, 2024) have their own local funding for EEP programmes. In addition to building renovations, they support for example battery storage, charging infrastructure, cargo bikes, bike trailers, and greening of roofs and facades (Stadt Amriswil, 2024). The online platform Energy Franc (*Energiefranken*), supported by the Electricity Provider of the Canton of Zurich (*Elektrizitätswerke des Kantons Zürich*, EKZ), provides a comprehensive overview of subsidy schemes at different levels of government.

Besides federal, cantonal, and municipal offices for energy, other important actors in the energy refurbishment sector are the “Conference of the Cantonal Energy Directors” (EnDK – Konferenz der Kantonalen Energiedirektoren), which assembles the cantons in in the energy and climate sector at government level, the specialist level Conference of Energy Agencies (EnFK – Energiefachstelle Konferenz), and the “Conference of Heads of Environmental Protection” (*KVU – Konferenz der Umweltämter*). These bodies jointly develop and coordinate the cantons’ energy and climate policy activities, such as for example the HFM and the MuKEn (EnDK & Bundesamt für Energie BFE, 2024). They are important because, as was mentioned, energy policy, building policy and the specifications for energy standards in the construction industry are cantonal competences.

In most cantons, strategies, concepts, guidelines or planning reports on the canton's energy and climate policy with concrete objectives and action plans – including rules on which measures are subsidised by the Buildings Programme – have been developed only in recent years, based on the MuKEn. Targets are defined based on the objectives of federal legislations in the energy and CO2 domain, among others. Despite extensive guidelines, a study commissioned by WWF Schweiz found that the implementation of energy and climate policies in the building sector varies significantly across cantons. While the canton of Basel-City has adopted exemplary policies (fulfilling 4 out of 5 points), 11 cantons only fulfil 2 out of 5 points, while none of the cantons is implemented a policy fully in line with the Paris Agreement (EBP Schweiz AG, 2019).

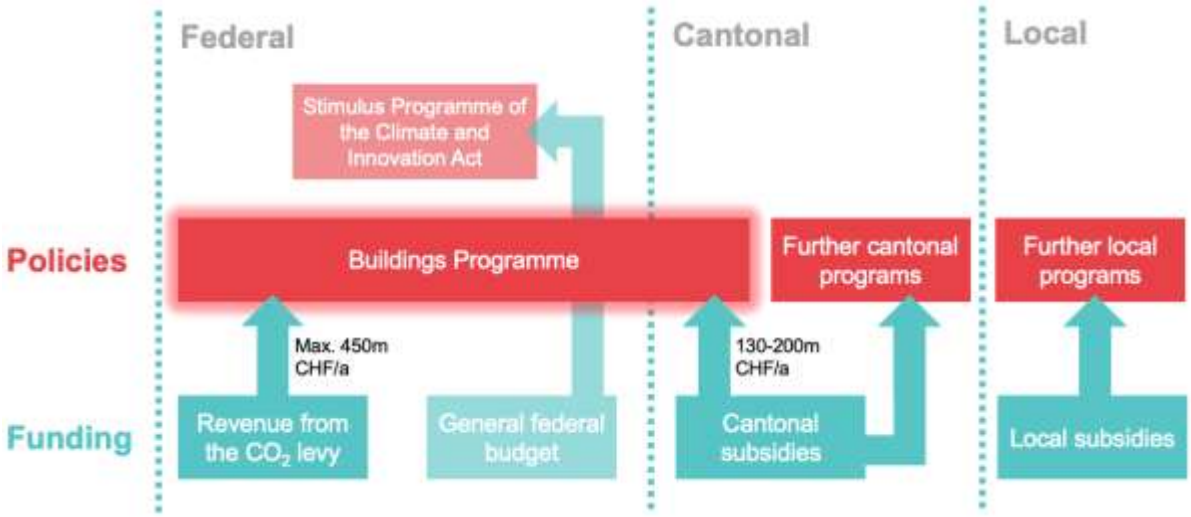

Figure CH3. Multilevel governance process of the Buildings Programme. Source: authors' own

Sector	Level of governance	Name	Role	Date of appearence
Public	National	Federal Office of Energy (SFOE)	Implementation of federal energy policies	1907
Public	National	Federal Office for the Environment (FOEN)	Implementation of federal climate policies	1971
Public	Cantonal	Cantonal offices of energy	Implementing their canton's energy policies	late 1970s-early 1980s, depending on Canton
Public	National	Conference of Heads of Environmental Protection (KVU – *Konferenz der Umweltämter*).	Promotion of sustainable development, including energy efficiency initiatives. Coordination of environmental policies across cantons; fostering collaborations between cantons and other stakeholders.	1976
Public	National	Conference of the Cantonal Energy Directors (EnDK – *Konferenz der Kantonalen Energiedirektoren*), EnDK	Development of common guidelines for cantonal energy policies and frameworks for regulating energy use in existing and new-built buildings	1988
Public	National	Conference of Energy Agencies (EnFK –	Connect energy experts across the country, provide support to energy offices, ensure that local and	1997

		Energiefachstelle Konferenz	regional energy initiatives align with national goals.	
Public	Cantonal	EKZ (Energieversorgung Zürich/Energy supply Zurich)	Provides consulting services to optimise energy use, including energy refurbishments and offers financial incentives for renovations. Collaborates with other actors to foster large-scale energy refurbishments, including residential buildings. Overall responsibility for the Platform “Energie Franken”	1997
Private		Faktor Journalisten AG	Collaborations with energy companies, NGOs, government agencies, and other stakeholders in communication on energy transition, environmental protection, climate change, and sustainable development. Responsible for data collection on available subsidies by commune for Energie Franken	2001
NGO	National	Stiftung Klimarappen	Was responsible for the implementation of the energy refurbishment programme that preceded the Buildings Programme	2008
Public	National	Energiehub Gebäude	**Platform for building owners**, planners, and energy consultants to access information and resources about energy efficiency measures for buildings. It helps stakeholders identify, plan, and implement strategies that reduce energy consumption in buildings, optimize heating, cooling, and lighting systems, and ensure better insulation and overall energy performance.	2014
Public	Municipal	Municipal offices of energy	Implementing local energy policies	Depending on municipality
Private	National/local	Consulting firms and networks of certified consultants on energy efficiency (e.g.	Advisory services to improve energy efficiency in homes and businesses. Support for energy-efficient renovations,	

		SuisseEnergie, Energieberater Schweiz, Enco AG, Green Tech AG, Minergie, Swiss Energy and Environmental Engineering (ESE)	including insulation, heating systems, and renewable energy solutions	
Private	National/local	Building industry, building technology companies (e.g Losinger Marazzi, HRS Real Estate AG, Baumer Group, Züblin Schweiz AG, Walo Bertschinger AG	Implementation of energy refurbishments, including thermal insulation, windows, and renewable energy installation	

Table CH2. Actors involved in the policy cycle of energy retrofitting

4.5 Assessments, achievements, and challenges

As mentioned in Section 3.2, the volume of federal contributions to the Buildings Programme is the main aspect that is being monitored and regularly published, for example in its Annual Reports. However, it may be argued that the real impact of the programme should rather be assessed in terms of the reduction in energy consumption and CO2 emissions. Since its inception in 2010, the programme has resulted in a decrease of 3.8 billion kilowatt-hours (kWh) in energy consumption and a reduction of 1,064,000 tons in CO2 emissions (Das Gebäudeprogramm, 2024a). In its latest evaluation, the Buildings Programme was deemed effective, as the savings per Swiss Franc exceeded initial expectations (Bundesrat, 2016).

Nevertheless, several concerns and critiques have been raised regarding the programme, its funding structure, along with equity considerations. Concerns have also been raised with regard to its potential **deadweight effect** as property owners receive subsidies even if they would have undertaken energy refurbishment also without them. An evaluation from 2023 estimated that the deadweight effect accounts for approximately 47% (BFE & EFK, 2024). These numbers, however, were only based on cantonal and national experts' estimates (Representative of SFOE, personal communication, May 8, 2025) (Representative of EnDK, personal communication, May 8, 2025). Furthermore, an evaluation commissioned by the Stiftung Klimarappen confirms that households with higher gross incomes have disproportionately benefitted from the programme (Interface Politikstudien Forschung Beratung & Ernst Basler + Partner AG, 2010), suggesting that it could exacerbate social inequality. As an energy expert stated, there is a basic social problem with the funding: although it benefits from public funding, the subsidies are provided to private landlords. However, inequalities such as energy poverty and social problems caused by increasing housing affordability problems are absorbed by the state (Representative of SFOE, personal communication, May 8, 2025).

There is increasing concerns that energy refurbishments are substantively contributing to the loss of affordable housing with severe consequences on lower income people (e.g. Suppa et

al., 2019). In Switzerland, costs related to property improvements—such as energy refurbishments—can be passed on to tenants in the form of rent increases, provided these improvements increase the property's value (Burkhalter, 2014). Under current regulations, which date back to 1977, 50–70% of the investment in extensive renovations can be considered "value-enhancing" and subject to rent increases, minus the subsidies received. This rule was originally intended to incentivize landlords to renovate (King et al., 2019). However, the relatively weak tenant protections (Debrunner, Kolocek, et al., 2024) make **renovictions**—forced evictions due to renovations—a more appealing option for landlords. This enables them to carry out extensive renovations and subsequently charge significantly higher rents. A case study covering ten instances revealed that, even when accounting for lower utility costs, tenants experience an increase in financial burden following energy refurbishments, particularly when rental contracts are terminated (B,S,S & Basler & Hofmann AG, 2014).

To date, subsidies for retrofitting have been offered based exclusively on technical criteria, without any social equity consideration (Debrunner & Hartmann, 2020). The impacts of these policies are multifaceted, especially concerning housing quality and affordability, affecting in particular lower-income tenants in urban areas and agglomerations. **Renovictions** became a widely diffused practice in the 2010s and have remained high, particularly in urban centres (Vogel, 2019). In Zurich, for example, 30% of all housing renovations between 2021 and 2022 entailed renovictions, affecting over 1,000 individuals annually (Stadt Zürich, 2024d). Research with focus on the canton of Zurich indicates that renovations and replacement constructions contribute to the displacement of lower-income and vulnerable tenants, with new tenants in renovated or rebuilt buildings earning, on average, 3,000 Swiss Francs more than those they replace (Kaufmann et al., 2023). Nationwide data on renovictions remains difficult to obtain (Vogel, 2019)

While energy refurbishments themselves do not necessarily entail comprehensive renovations (BWO, 2016), the subsidies granted under the Buildings Programme make such renovations financially more attractive. This, in turn, increases the likelihood of renovictions and rent increases, potentially accelerating gentrification in certain areas.

In recent years, the federal government has explored ways to modify the subsidy structure to better align with housing policy objectives. A study commissioned by the Federal Office of Housing (BWO, 2016) outlines various options and their anticipated effects on energy policy, housing affordability, government spending, and enforcement (BWO, 2016). One recommendation is to link subsidies to additional criteria, such as vacancy rates, in order to prevent the deadweight effect in high-demand areas where renovations (and energy refurbishments) would be profitable even without subsidies. Another proposal is to make the obtainment of subsidies contingent on landlords' agreement not to evict tenants or to comply with rent control regulations. A stronger alignment of energy and housing policies could also entail amendments to tenancy laws, such as reducing the percentage of renovation costs that can be passed on to tenants through rent increases or enhance eviction protections.

While such measures could mitigate the risk of renovictions and excessive rent increases, they have been criticized for potentially reducing incentives to renovate, undermining Switzerland's energy policy goals. Furthermore, they are often seen as an infringement on property rights

(BWO, 2016), or are regarded as costly and difficult to enforce. Up to date, none of these measures have been adopted at national level. However, some cantons, for example Geneva and Basel Stadt, have introduced stricter rent controls and tenant protections to address the risks of renovictions, gentrification, and rising rents. For instance, under Basel's new housing protection laws, landlords must seek approval from a committee before raising rents following a renovation. These measures aim at reducing gentrification and renoviction risks, but have also been criticised for slowing down renovations, which harms smaller enterprises in the building sector (Hauser, 2023), (Künzle & Kenan, 2024).

Nevertheless, retrofitting also has the potential to reduce housing inequality. If rent increases resulting from energy refurbishments are controlled and do not outweigh the savings on utility costs, retrofitting could alleviate **energy poverty**, particularly for low-income households. Over time, the financial relief from reduced energy consumption could directly ease the burden on families in need.

Policy / Programme	Measured impacts on housing inequalities	Potential impacts on housing inequalities
Buildings Programme	-	**Inefficient Funding**: In 2023, 47% of recipients report they would have retrofitted without subsidies. **Unequal Benefits**: Only property owners and the building industry directly benefit from the Buildings Programme. Eligibility for subsidies exclusively based on technical criteria; socioeconomic factors are not considered **Negative Social Impacts**: Energy retrofits often trigger full renovations, leading to evictions, higher rents, displacement and gentrification
Stimulus Programme	-	**Inefficient Funding**: The Stimulus Programme focuses on measures, which would often be retrofitted without funding (e.g. decarbonisation of heating systems)
Swiss tenancy law: landlords can transfer 50–70% of renovation costs to tenants	Rent increases typically exceed energy cost savings (BWO, 2016) Cost transfers are often not controlled (only if tenants insist)	**Incentivized Rent Hikes**: Tenancy law encourages combining energy retrofits with value-adding renovations, allowing greater rent increases.

		Reduced Affordability: Retrofitted homes often become unaffordable for low-income tenants.

Table CH3. Summary table of measured and potential impacts of retrofitting policies on housing inequalities.

5 Nature-Based Solutions

5.1 The policy cycle: emergence of the issue and policy decisions

Currently, Switzerland lacks policies explicitly promoting nature-based solutions (NBS), as this concept is not yet used at national level. However, NBS are closely related and in some cases reflected into policies on biodiversity, climate change adaptation, and river restoration. Public awareness on climate change and environmental protection are playing an important role in advancing NBS in Switzerland. As a result, the number of policies instruments aiming at promoting NBS have grown rapidly over the past decade, a sharp contrast to the slower developments before 2010. The Swiss Spatial Planning Act only contained a planning principle stating that residential areas should include 'a lot of green and trees', which, although vague, was still legally useful wording. Furthermore, the Swiss Nature and Heritage Conservation Act (Natur- und Heimatschutzgesetz, NHG) assigned all cantons with “ecological compensation”[6] in intensively utilised areas in 1988 (SR 451 - Art.18 B2, 1966). However, already in 1996, WWF Switzerland (*WWF Schweiz*) criticized spatial planning practices that led to excessive land sealing without adequate compensation in the form of land or river restoration (Bernath et al., 2024). This triggered public debates on the need of actions that today we would refer to as NBS. The first popular initiative that promoted NBS (without using this term) was launched by the Swiss Fishing Federation (*Schweizerischer Fischerei-Verband, SFV*) in 2005. Named "Living Water (River Restoration Initiative)" (*Lebendiges Wasser (Renaturierungs-Initiative)*) it primarily aimed to address the extinction or near-extinction of native fish species by calling for an amendment to the Swiss constitution. It advocated for river restorations and the establishment of cantonal funds to protect biodiversity and improve aquatic habitats. The initiative prompted the Swiss Parliament to draft an indirect counterproposal in 2010, which addressed many of the initiative’s goals, but gave more weight to the interests of the water energy industry. It proposed alternative financing mechanisms for river restoration and to incorporate these issues into amendments to the Water Protection Act (*Gewässerschutzgesetz*) rather than to the constitution. The initiative was eventually withdrawn, and in 2011, while the Water Protection Act amendments were enacted.

Nevertheless, these amendments have faced opposition, particularly from the right-wing party SVP, the Swiss Farmers’ Union, the electricity industry, and power plant operators, which objected to cantons’ requirement to designate watercourse areas that cannot be used for

[6] Collective term for measures that serve to preserve and promote habitats and their connectivity in intensively utilised or densely populated landscapes. According to the FOEN, ecological compensation measures mainly promote native biodiversity in resident areas.

intensive agriculture or construction. At the same time, the slow pace of river restorations has also drawn criticism in relation to the increasing number of floods and landslides caused by climate change. As a result, river restorations are increasingly advocated as a key NBS for the management of climate change-induced floods (Bernath et al., 2024).

At national level, the Federal Council began developing a Climate Change Adaptation Strategy (*Strategie Anpassung an den Klimawandel*) in relation to the 2011 revision of the CO2 Act (*CO2-Gesetz*), which requires the Federal Council to coordinate climate adaptation measures. In 2012, the Federal Council released the first part of this strategy, titled *"Objectives, Challenges, and Fields of Action"* (Schweizerische Eidgenossenschaft, 2012). While not explicitly mentioning NBS, it identified heatwaves and floods as growing natural hazards due to climate change and proposed mitigation strategies that align with NBS principles. Key measures included creating and enhancing green infrastructure, promoting open spaces, preventing soil sealing, and using green and shaded areas to mitigate heatwave impacts. River restoration was also highlighted as a measure for flood protection.

In 2014, the Federal Council published the Action Plan for the Period 2014-2019 as part of the Climate Change Adaptation Strategy (Schweizerische Eidgenossenschaft, 2014). This plan, while again not directly referring to NBS, emphasized the importance of spatial planning in adapting urban areas to increasing heat stress. It called on cantons and municipalities to take responsibility for urban climate adaptation, with the federal government providing guidelines and support, but it is not legally binding. A notable example is the guide “Heat in Cities: Principles for Climate-Adapted Urban Development**”** (BAFU, 2018), which offers best practices for urban planning.

Building upon the previous one, the Federal council published a second Action Plan in 2020 (Schweizerische Eidgenossenschaft, 2020). One of its main foci is the enhancement of urban green spaces and watercourse areas. It further aims to raise awareness about the ecosystem services provided by green and blue infrastructure. Municipalities, supported by cantons and federal offices, are encouraged to adopt these measures. As of 2020, the federal government funded 81 pilot projects addressing climate change adaptation and mitigation at municipal and regional levels.

While climate change adaptation is the main concern of the projects promoted by the Action Plans, initiatives that may be labelled as NBS are also being promoted with the aim of protecting biodiversity.

For example, already back in 2009, the Federal Council mandated the Federal Office for the Environment (FOEN) to develop a strategy on biodiversity, which was presented to Parliament in 2011. The strategy primarily entailed securing ecological infrastructure and providing and enhancing ecological spaces in urban areas. It gained support from the Social Democratic Party (SP) and the Christian Democratic People’s Party (CVP), but was criticised for its lack of concrete action, particularly from the Green Party (Grüne Schweiz), the Liberals (FDP), and the Swiss People’s Party (SVP), who feared excessive regulation and costs (Flückiger, Porcellana, Gerber, et al., 2024). Nevertheless, it was adopted in 2012, and a participatory process was launched to develop an Biodiversity Action Plan, which was finally adopted in 2017 for the period 2017-2023 (Bundesrat, 2017). Although the Action Plan does not use the

term NBS, it aimed to create a nationwide ecological infrastructure, integrating settlements into ecological networks. This infrastructure was expected to have additional benefits such as improving air quality, regulating microclimates, and reducing noise.

Despite criticism regarding delays, the lack of funding, and the non-binding nature of the plan, the Action Plan was extended into 2024 and the development of a second Action Plan (2025-2030) underway. However, in September 2024, three environmental organizations—Pro Natura, WWF, and BirdLife Schweiz—issued a joint statement criticizing the draft of the Action Plan for its insufficient funding and effectiveness (Pro Natura et al., 2024).

The second Action Plan, published in November 2024, reiterates the importance of promoting biodiversity in urban areas through the creation and enhancement of green spaces, integration into ecological networks, and land and river restoration. For the first time, the plan explicitly uses the term NBS (*naturbasierte Lösungen)* for one of the 15 measures under the FOEN's responsibility mentioned in the Action Plan (Bundesrat, 2024). This measure outlines plans for the Confederation to oversee NBS projects and support at least 30 regional and municipal NBS projects by 2030. Municipalities remain key players in the implementation of NBS. Following a recent revision of the CO2 Act, which came into force in January 2025, the federal government has launched the *adapt+* funding programme to promote measures to adapt to climate change, including NBS. Starting in August 2025, the program is planned to run until 2030 with an annual budget depending on submitted projects, mainly by cantons, regions, municipalities and organisations. This year, around 1.5 million has been allocated for the funding programme (BAFU, 2025).

Stronger commitments towards the biodiversity conservation were also sought by the popular initiative titled "For the Future of Our Nature and Landscape" (Biodiversity Initiative) (*Für die Zukunft unserer Natur und Landschaft (Biodiversitätsinitiative)*) of 2019, which was launched by environmental organizations, including, among others, the Swiss Fishing Federation. The initiative demanded increased funding for biodiversity, more protected areas, and greater responsibility for cantons in preserving landscapes. Critics argued that the initiative would negatively impact agriculture, energy production, and tourism and incur significant costs for both the Confederation and the cantons (Flückiger, Porcellana, & Ziehli, 2024). With these arguments they succeeded persuading 63% of the voters who rejected the initiative by popular vote in September 2024.

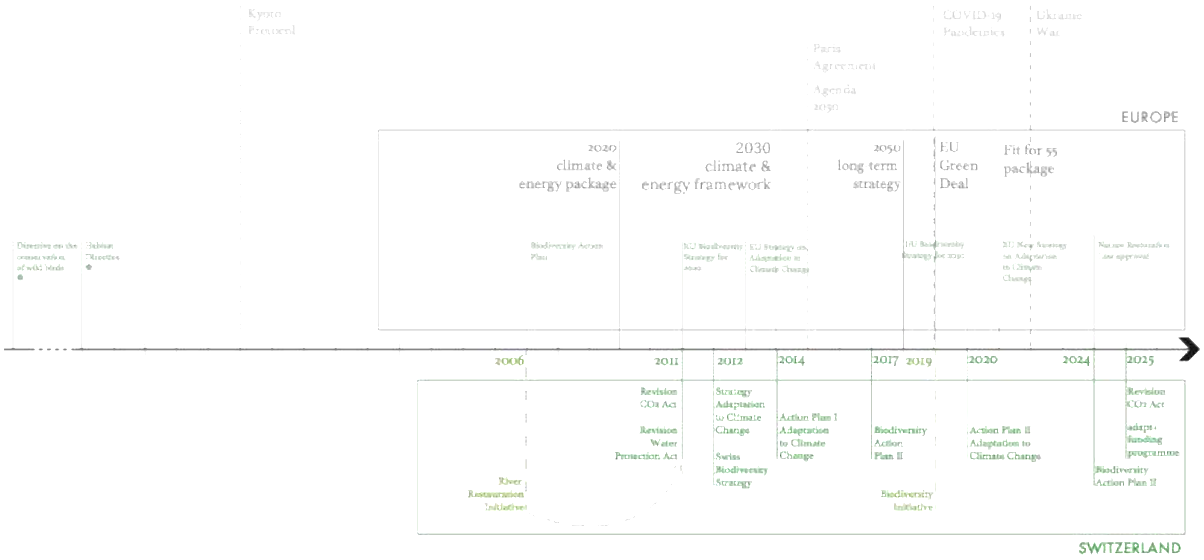

Figure CH4. Timeline of policies, initiatives and strategies affecting NBS goals in Switzerland

5.2 The implementation process

The implementation of NBS policies at cantonal or municipal level is not explicitly regulated or defined at the national level. While national strategies on biodiversity and climate change adaptation recognize cantons and municipalities as key partners in implementing related measures, they do not provide clear guidance on how this implementation should unfold at lower levels of governance. As a result, so far none of Switzerland's 26 cantons developed a strategy specifically focused on NBS. Since 2008, the Federal Office for the Environment (FOEN) started supporting the cantons with project-specific financial contributions for a period of up to 4 years through environmental sector programme agreements *(Programm-vereinbarungen im Umweltbereich*) (BAFU, 2008). However, it is the responsibility of the cantons to include measures for landscape politics and ecological compensation in their legislation. By early 2022, only 17 out of the 26 cantons adopted strategies for climate change adaptation, while in the remaining cantons, such strategies were still under preparation (BAFU, 2023a). Notably, the Climate Strategy of the Canton of Thurgau, published in December 2022, is the only one to explicitly mention NBS (*naturbasierte Ansätze*). This is likely related to the term's recent emergence, as NBS were introduced into national policies only in 2022 (Bundesrat, 2022). Cantons pursue different strategies. For example, Basel Stadt uses an added-value levy (*Mehrwertabgabe*), which has to be paid when a building permit is issued, to fund public green spaces. Even though the majority of the cantons are still without an operational strategy, it is argued that the need for climate adaptation is widely recognized at the cantonal level (BAFU, 2023a).

At the municipal level, there has been a notable increase in climate strategies and action plans since 2020. While early efforts focused on energy related issues, the first comprehensive

climate strategies began to appear in 2015. Since then, there has been a significant increase in the number of cities and towns developing climate-related policies (Schweizerischer Städteverband et al., 2024). However, currently, 97% of Swiss municipalities are addressing climate change to some extent, but only 31% adopted specific strategies or measures for climate adaptation. A recent study on the integration of climate change adaptation goals in Swiss municipalities concluded that local adaptation measures remain rare, largely depending on individual stakeholders' initiatives or the occurrence of extreme events (Braunschweiger & Pütz, 2021). Local governments have expressed frustration over the lack of clear directives on climate change adaptation at the cantonal and municipal levels, questioning whether direct national legislation would be politically feasible. Many municipalities have called for more guidance and stricter legal requirements from higher levels of government, particularly from cantons (Schweizerischer Städteverband et al., 2024). In response to this lack of support, the FOEN has issued model clauses for biodiversity and landscape quality in urban areas and the implementation of the ecological compensation, aimed at assisting cantons and municipalities (BAFU, 2023b, issued for the first time in 2022).

In the specific domain of heat adaptation in urban settings, a study focusing on Swiss cities' administrations' perspectives revealed that many local authorities would welcome greater support from both cantons and local legislative bodies (Fujara, 2022). A large majority of cities and towns recognize the increasing strain that heatwaves put on urban areas and deem it an urgent issue. However, only 17% of the cities (mainly large and medium-sized ones) have strategies dedicated specifically to heat adaptation. According to the FOEN, those are mainly cities with strong administrative structures under progressive political influence (Representative of FOEN, personal communication, April 17, 2025). These strategies include support tools or regulatory measures that aim to encourage the greening of private properties and climate adaptation of public spaces. About one-third of the cities lack a strategy altogether. The remaining municipalities have integrated heat adaptation into their broader climate strategies.

One of the earliest regulatory policies involving NBS at the municipal level is the requirement to green flat roofs on newly constructed buildings—sometimes extending this obligation to renovations. Zurich introduced this regulation in 1991, while Basel followed in 1999. The policies include guidelines on the height, mass and profile of the substratum, and on the species of plants. There are stricter demands for extensive roof greening in large projects, which have special building policies (Stadt Zürich, n.d.-b). Today, most municipalities in Switzerland have similar regulations requiring the greening of flat roofs (Wepf, 2016).

5.3 Size and role of the market

Rather than ushering the adoption of NBS, the market's lack of interest appears to hinder progress. This can be seen in the various examples where the implementation of nature-based measures was slowed down by other market interests.

One relevant market factor pertains to the obligation to green flat roofs. A recent study of Zurich's flat-roof greening initiative found that, in the 1990s, the percentage of green roofs increased from under 20% to over 25%. However, since the 2000s, this percentage has

steadily declined, with only slightly more than 10% of newly constructed flat roofs being green between 2011 and 2015 (Kübler, 2024). This decline is attributed to increasing competition for roof space, as many building owners use the upper floors for terraces or penthouse apartments, which add value to the property but reduce available space for greening.

Another example is the sponge city concept (*Schwammstadtkonzept)*, an urban planning principle that aims at rainwater retention instead of drainage, which is currently being tested in several pilot projects. As a NBS, it aims to improve urban climate and is even supported by some municipalities (e.g. Zurich) through incentives for unsealing private land. However, it is technically challenging to implement in existing residential areas and economically unattractive, as it tends to hinder rather than encourage construction. According to a FOEN representative, the lack of market appeal is one of the reasons why NBS do not have a strong lobby and are not prioritized politically (Representative of FOEN, personal communication, April 17, 2025).

Furthermore, the challenge with NBS for real estate investors lies in their limited measurability and quantifiability, which makes it difficult to incorporate their value into property pricing (Interview CM). If the costs of such investments cannot be recovered through higher rents, profit-oriented landlords have little incentives to adopt these 'soft factors', as stated by a real estate investor to FOEN: "For these (factors) to be considered serious criteria for developing a property portfolio, they must be more measurable" (Representative of FOEN, personal communication, April 17, 2025).

NBS Measure	Policy / Example
Greening of flat roofs	Mandatory in Zurich since 1991 and currently mandatory in most municipalities
Sponge City Principle	Pilot projects in several municipalities (Bern, Lucerne, Zurich…), Municipal subsidy programmes for unsealing private land
River Renaturation	Water Protection Act, National subsidy programme
Increase of Tree canopy area	Tree protection, Municipal subsidy programmes for heat reduction
Renaturation of large-scale infrastructure (grey to green)	Project-based public funding, e.g. Schwamendingen (Zurich): Enclosure of highway with park on top

Table CH4. Examples for NBS measures in Switzerland.

5.4 The multilevel governance process

Sections 4.1 and 4.2 have highlighted that the development of NBS-related policies are relatively recent that gained momentum only over the past decade. While environmental organizations, particularly in the area of biodiversity, have exerted significant pressure, movements like Fridays for Future, which started in Switzerland in December 2018, have contributed to increasing the pace of policy development related to climate change mitigation

and adaptation (Schweizerischer Städteverband et al., 2024). However, resources allocated at the national level remain limited (as criticised regarding the Actions Plans for biodiversity; Pro Natura et al., 2024), with implementation largely expected to occur at the municipal level. This means that the success of these initiatives depends primarily on local stakeholders—whether government officials, administrators, local parliamentarians, or civil society organisations (Braunschweiger & Pütz, 2021).

As a result, some cities are leading the way with innovative strategies and implementations, while smaller towns often lack a clear strategy altogether (Schweizerischer Städteverband et al., 2024). This disparity may also reflect political orientation, as progressive parties tend to support NBS and related strategies, whereas liberal-conservative parties often oppose them, citing concerns about high costs and negative impacts on sectors such as agriculture, energy, and tourism.

Municipalities can implement NBS on public land, for example by greening municipal buildings, planting trees along roads, or undertaking river restorations. However, expanding the presence of green roofs and facades mainly depends on the willingness of private property owners. To this aim, many cities offer incentives, such as subsidies and free consultations, and have incorporated the greening of flat roofs into building regulations (Wepf, 2016).

A notable example of a municipal program promoting both heat reduction and biodiversity is the *Stadtgrün* initiative by the City of Zurich, which began in 2024 and will run until 2035. The programme consists of four sub-programmes targeting different stakeholders: the first supports green measures in public spaces and streets; the second offers advice and subsidies to private property owners; the third promotes green measures on municipal properties; and the fourth funds research and pilot projects on heat reduction (Stadt Zürich, 2024b). The program has a total budget of 130 million Swiss Francs, with 28.2 million allocated to the second sub-programme for private property owners between 2024 and 2029 (Stadt Zürich, 2024c).

At the national level, the *Grünstadt Schweiz* (Green City Switzerland) label promotes urban greenery and sustainable management of green spaces. This label, founded and managed by the Association of Swiss Departments for Green Spaces since 2017 *(Verband Schweizerischer Stadtgärtnereien und Gartenbauämter*, VSSG) and partially funded by the FOEN, is awarded to cities committed to urban greening. Up to date, 20 cities have received the *Grünstadt* label, with 7 more in the certification process.

Sector	Level of governance	Name	Role/Responsibilities	Date of appearence
Public	National	Federal Office for the Environment (FOEN)	Elaboration of NBS strategies and action plans at national level	1971
Public	Cantonal	Cantonal offices for the environment	Elaboration of NBS strategies and action plans at cantonal level and implementation with cantonal boundaries	depending on Canton
Public	Cantonal	Cantonal offices for the spatial development/construction	Regulation of greening obligations and compensation areas through planning and building regulations	depending on Canton
Public	Municipal	Municipal offices for the environment	Elaboration of NBS strategies and action plans and their implementing at local level	depending on municipality
Public	Municipal	Municipal offices for the spatial development/construction	Regulation of greening obligations and compensation areas through planning and building regulations	depending on municipality
Non-governmental organisation	National	WWF Schweiz	Promotion of biodiversity through NBS	1961
Non-governmental organisation	National	BirdLife	Promotion of biodiversity through NBS	1922
Non-governmental organisation	National	Pro Natura	Promotion of biodiversity through NBS	1909
Non-governmental organisation	National	Swiss Fishing Federation	Promotion of biodiversity through NBS	1883
Non-governmental organisation	National	Swiss Farmers' Union	Opposition to NBS entailing transition from intensive land cultivation to extensive uses	1897
Non-governmental organisation	National	+ others		
Non-governmental organization	National	Grünstadt Schweiz (under the responsibility of the Association of Swiss Departments for Green Spaces (Verband Schweizerischer Stadtgärtnereien und Gartenbauämter VSSG, partially funded by the FOEN)	Certification of cities with formal commitment to urban greenery	2012
Private	Municipal	Private landowners	Implementation of NBS (greening of roofs/facades, de-sealing)	

Table CH5. Actors involved in the policy cycle of NBS.

5.5 Assessments, achievements and challenges

Given the lack of a policy specifically defining and promoting Nature-Based Solutions (NBS), there has been no targeted evaluation or research focusing on their implementation or overall impacts. According to FOEN and SFOE representatives, the national agenda focuses on climate adaptation strategies with measurable goals, such as achieving net zero by 2050 (Representative of FOEN, personal communication, April 17, 2025) (Representative of SFOE, personal communication, May 8, 2025). The focus on climate adaption rather than biodiversity measures was also reflected in the popular vote in 2024, when the Biodiversity Initiative was rejected. Switzerland's politicies are influenced by the powerful farmers' lobby that favours biodiversity measures concentrated in urban and residential areas. *As a result, no federal subsidy programme has been established.* In rural areas, biodiversity measures are rare and are usually implemented and subsidised by the cantonal authorities, since small municipalities often lack the resources and expertise to implement such complex concepts.

The varying degrees of progress in the greening of municipalities of different sizes are also reflected in the Greencity certification (Representative of Grünstadt Schweiz, personal communication, April 15, 2025). **Nature-based solutions (NBS) are not only complex and costly to implement, but their adoption is also hindered by political tensions—particularly between national strategic goals and the resistance from conservative governments**. To date, there has been no mandatory ecological planning at a municipal level, meaning that local legislation and subsidy programmes are highly diverse (Martinoli et al., 2025).

One notable aspect of the Swiss situation is the absence of public or academic discourse around issues of distributive justice related to green spaces and greening subsidies. There is little debate regarding the impact of creating or upgrading green spaces on property values and housing costs, nor is there significant discussion about where and for whom green spaces are developed. **The implementation of NBS varies significantly depending on whether the land is privately or publicly owned, particularly in terms of the stakeholders involved, funding mechanisms, and resulting impacts. In public spaces, green interventions tend to influence rent and property prices only after several years, making it difficult to establish a direct correlation. Moreover, Swiss tenancy law has yet to clarify whether NBS can be legally considered value-enhancing measures that would allow rent increases. As a result, further research is needed to understand whether and how NBS affect housing affordability.** Additionally, the unequal effects of subsidies for greening private roofs, facades, or gardens—particularly on homeowners versus tenants—have not been addressed by public debates and research yet.

Policy / Programme	Measured impacts on housing inequalities	Potential impacts on housing inequalities
Municipal Subsidies for NBS (e.g. Stadtgrün ZH)	-	**Unequal Access**: Only Property owners benefit from subsidies.

		Green Gentrification: Large-scale greening projects can lead to rent increases and displace existing residents.
Certifications by Grünstadt Schweiz	-	Green Gentrification through location improvement
Green Building Policies (e.g. Greening of flat roofs)	-	Higher rents because increasing construction costs can be passed on to tenants

Table CH6. Summary table of measured and potential impacts of NBS policies on housing inequalities.

6 Densification

6.1 The policy cycle: emergence of the issue and policy decisions

Given Switzerland's scarcity of buildable land (see section 2.1), it is not surprising that land use regulations, directly or indirectly aiming at densification, already began emerging after the 1960s construction boom, focusing initially on controlling pressure on agricultural land and later on landscape protection and biodiversity conservation, as stipulated by the Federal Constitution (Art. 2 CSC). Areas like natural monuments and historic pathways are regulated by the Federal Act on the Protection of Nature and Cultural Heritage (*Bundesgesetz über den Natur- und Heimatschutz, NHG*), which was passed in 1966.

In 1979, a national vote led to the incorporation of spatial planning principles into the Federal Constitution. The first Spatial Planning Act (SPA; *Raumplanungsgesetz, RPG*) introduced dynamic structural and use planning by assigning spatial responsibilities and effective tasks to the regions and municipalities. It aimed at distinguishing building and non-building areas, without initially emphasizing densification. The Swiss Federal Office for Spatial Development (*Bundesamt für Raumentwicklung*, *ARE/* SFOSD), created in 2000, coordinates sustainable development, balancing compact settlement, landscape protection, and land use across the 26 cantons.

Despite these regulations, urban sprawl continued into the 2000s. With the spatial development report (*Raumentwicklungsbericht*), the SFOSD published a self-critical assessment which found that spatial development in Switzerland is unsustainable and asked for a holistic spatial development concept and a revision of the SPA (Represenative of SFOSD, personal communication, May 20, 2025). This prompted the 2008 Landscape Initiative (*Landschaftsinitiative*) which called for a 20-year freeze on building zones and the promotion of inner-city development by the federal government and the cantons (ARE, 2024b). In response, the Federal Council proposed a thorough revision of the SPA, introducing densification as a legally binding policy and restricting land hoarding. The revision was approved by a large majority of voters in 2013. The SPA I, which came into force in 2014, can

be seen as a turning point in Swiss spatial planning, with significant requirements for densification and land conservation through the strict regulation of building zones.

In parallel, the non-binding Swiss Spatial Concept (*Raumkonzept Schweiz*), launched in 2012, seeks to harmonise the objectives of the cantons and municipalities. It aims to guide development with a focus on sustainable urban planning, mobility and regional diversity. The Swiss Biodiversity Strategy, adopted in 2012, stresses integrating biodiversity into spatial planning and promoting biodiversity within settlement areas (Bundesrat, 2012). Additionally, the Second Home Law (*Zweitwohnungsgesetz, ZWG*), which was approved by Swiss voters in the same year, limits the construction of vacation residences to preserve land, protect the character of existing settlements and increase use density.

Despite these efforts, settlement areas expanded by 31% between 1985 and 2018, consuming large amounts of agricultural land (BFS, 2021). In response, the Green Party launched a popular initiative against urban sprawl (*Zersiedlungsinitiative*), demanded further limitations on building zones and emphasized small-scale settlement (ARE, n.d.). It was rejected by the Swiss voters in 2019. The second landscape initiative, which followed shortly afterwards, again called for measures against urban sprawl, the protection of building-free zones and the prevention of the conversion of agricultural buildings (ARE, 2024b). This prompted the Federal Council to counter-propose the second revision of the SPA, which focuses on regulating construction outside designated zones. It was approved by the Swiss parliament in 2023 and will soon be implemented.

In 2020, the Landscape Concept Switzerland (*Landschaftskonzept Schweiz*, LKS) was adopted to ensure the cultural quality in landscape development. Furthermore, the Swiss Soil Strategy (*Bodenstrategie Schweiz*) was introduced to limit construction activities and to protect land as a non-renewable resource. In line with the EU Soil Strategy 2030 aiming at ceasing land consumption by 2050 both are legally binding (BAFU, 2024). These recent initiatives highlight the growing urgency of densification and land preservation in Switzerland, marking a shift towards a more concrete implementation of these goals. Today the share of undeveloped building zones in Switzerland as a whole is 10 to 16%, with the largest part being urban areas at 46%, while peri-urban and rural areas have similar ratios at 29% and 25% respectively (ARE, 2022).

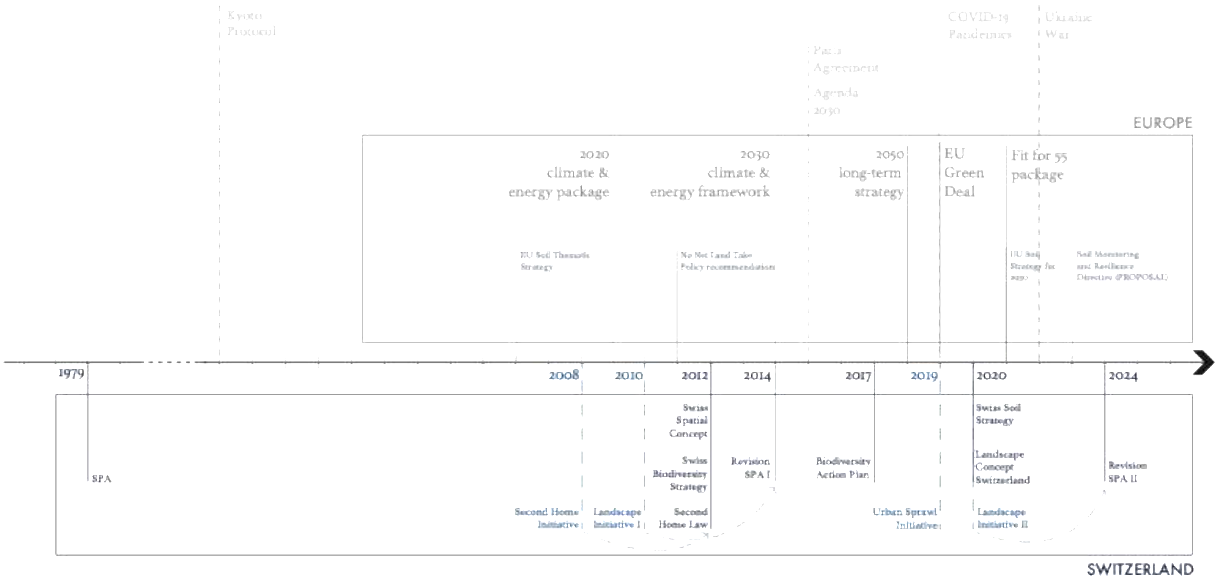

Figure CH4. Timeline of policies, initiatives and strategies affecting densification goals in Switzerland.

6.2 The implementation process

Due to Switzerland's federalist structure the implementation of densification objectives has been rather slow, with meaningful influence on local planning becoming visible only a decade after the introduction of the first revision of the SPA in 2014. In fact, the principle of subsidiarity grants significant authority in spatial planning and thus in the implementation of densification goals to local governments.

While the federal government sets legal frameworks, broad concepts and strategies (*Konzepte und Sachpläne*), such as the SPA and the Spatial Planning Concept, the cantons are required to align their regional structure plans (*Richtpläne*) with these national directives. These plans, typically spanning 20-25 years, focus on land use in urban areas, landscapes, transport, and infrastructure (ARE, 2024c). Cantons must allocate building land based on demographic forecasts, adjust building zones to protect agricultural land, and ensure that any increase or decrease in land value due to new zoning is compensated. Specifically, 20% of the added value from new building rights must be deducted (Art. 5 SPA). Zoning was only possible until all cantonal structure plans had been approved by the federal government, which is why there is an absolute freeze on building zones from 2019.

Municipalities play a key role in guiding and executing local densification efforts through utilization plans (*Nutzungspläne*). These plans often integrate various planning instruments, such as planning zones, which serve as a precursor to relocating and rezoning building land. Densification strategies target a range of sites, including brownfields, greenfields, underutilized building zones, gaps between structures, and urban wastelands in easily accessible locations.

Priority is given to fully utilizing these resources before implementing rezoning measures, which may involve transforming or replacing the existing housing stock (ARE, 2019).

Beyond issuing building permits, municipalities are now tasked with ensuring the realization of dense, high-quality settlements. In many cantons, municipalities must concretize structure plans by developing settlement concepts and establishing minimum density requirements for building zones. These new responsibilities require expertise in development and process management. Utilization plans must strategically address the impacts of densification on living quality, ensuring they are both practical and compelling.

Some municipalities have taken proactive steps to institutionalize densification as a planning objective. For instance, the city of Zurich adopted densification as a legally binding planning goal in 2016 to promote sustainable urban renewal. To this aim, the City Council introduced innovative planning tools, such as designated densification zones (*Verdichtungszonen*), which offer developers economic incentives like density bonuses (Zürich Amt für Städtebau, 2013).

The process of adapting local legislation to the national densification policy is not as advancing in municipalities at the same pace: while large cities have administrative power and political influence, smaller municipalities often lack the resources and expertise to implement federal policies. As a result, in 2024 only 43% of the municipalities completed their structure plan adaptation (UVEK & ARE, 2024). According to the head of EspaceSuisse, no general regional differences in the implementation of SPA I can be identified (Representative of EspaceSuisse, personal communication, March 24, 2025). Whereas larger cities feature complex urban fabrics and limited building land reserves, smaller towns often lack the political backing and strategic housing policies needed to implement densification projects. According to a representative of EspaceSuisse, the severity of the housing crisis in larger cities can be attributed to a slowdown in building activity due to the new conditions under the revised SPA, and by the heated housing markets driven by international investors.

Swiss citizens by and large support the SPA I, but local acceptance of densification projects can be challenging, particularly in existing neighbourhoods due to the NIMBY (Not In My Backyard) effect. For projects to gain public approval, they must demonstrate clear social and ecological benefits that enhance the quality of the affected neighbourhood (UVEK & ARE, 2024). Without such benefits, Swiss voters have the power and are likely to block essential planning tools for densification, such as special land-use plans (*Sondernutzungsplan*).

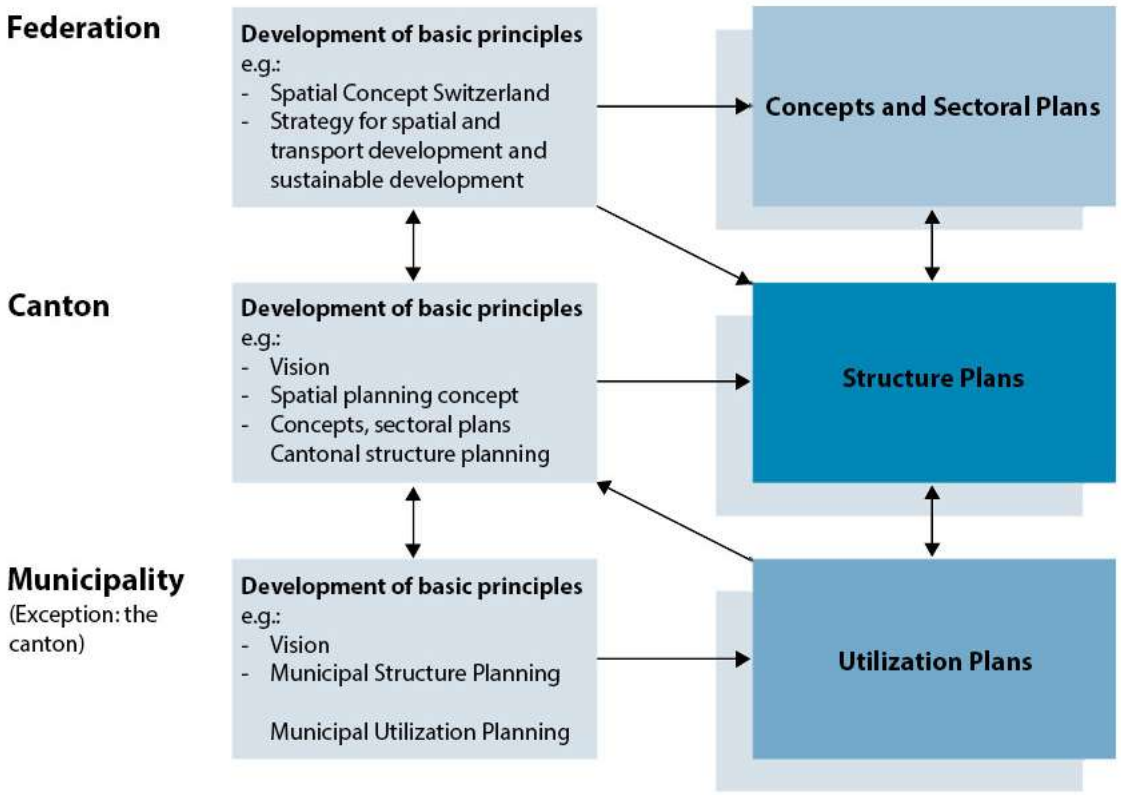

Figure CH6. Spatial planning instruments according to the Federal Law on Spatial Planning (source: SFOSD, 2012; own translation*)*.

Form	Level of governance	Name	Aim	Date of appearance
Law	National	Nature and Cultural Heritage Protection Act (NHG)	Secures the protection and conservation of biodiversity, heritage landscapes, sites of local character, historical sites, natural and cultural monuments.	1966
Inventory	National	Federal Inventory of Heritage Sites of national importance (ISOS)	Inventory of townscapes and settlements with significant cultural value that should be protected (ca. 1250 objects).	1970
Inventory	National	Federal inventory of landscapes and natural monuments (BLN)	Inventory of the most valuable landscapes and natural monuments of Switzerland (162 objects).	1977

Inventory	National	Federal inventory of historic pathways and transport routes (IVS)	Inventory of valuable historic transport routes of Switzerland (3'750 km).	1883
Law	National	Spatial Planning Act (SPA)	Aims to ensure sustainable land use by coordinating urban development, environmental protection, and infrastructure planning. It seeks to balance development needs with the preservation of natural resources and quality of life across the country.	1979
Initiative	National	Second Home Initiative	Aimed at limiting the share of vacation homes per municipality and was accepted by the majority of Swiss voters in 2012 (see below)	2007
Initiative	National	Landscape initiative (*Landschaftsinitiative - Raum für Mensch und Natur)* (withdrawn)	Aimed to introduce densification as a legally binding policy objective. It proposed that building zones should cover no more than the demand for the next 15 years, and that oversized building zones should be reduced or moved to other locations.	2008 - 2013
Strategy	National	Spatial Concept Switzerland	Outlines the country's long-term spatial planning strategy, focusing on balanced regional development, sustainable land use, and the efficient integration of transportation, housing, and environmental conservation.	2012
Law	National	Second Home Law	Bans the construction of new vacation apartments and the use of over 20% of existing apartments per municipality as second homes with the aim of preserving the character of existing settlements and increase their density of use.	2012
Strategy	National	Swiss Biodiversity Strategy	Promotes biodiversity within settlement areas to ensure that they contribute to the networking of habitats, to the preservation of settlement-specific species, and provide	2012

			people opportunities to experience nature in their living environments and local recreational areas.	
Law Revision	National	SPA I (1. revision of the SPA)	Compared to the previous version, the revised law introduced stricter controls on building zones, emphasized the protection of open spaces, and focused on directing urban development to already built-up areas, aiming to ensure more efficient and environmentally conscious land use.	2014
Action Plan	National	Biodiversity Action Plan	Conserve biodiversity by serving as an interface between the Confederation's biodiversity policy and other policy areas, including agriculture, spatial planning, transport, and economic development.	2017
Initiative	National	Initiative against urban sprawl (*Zersiedlungsinitiative)* (rejected)	Launched by the Young Green Party. It demanded a total freeze of the building zones in Switzerland and that new building zones could only be created if an area of at least the same size had been removed as a building zone elsewhere.	2019
Strategy	National	Landscape Concept Switzerland	With the aim of preserving and enhancing diverse landscapes it defines the framework for their coherent and quality-based development. It encompasses 14 landscape quality objectives that provide a framework to support landscape-related stakeholders at the federal, cantonal, and municipal levels with the aim of integrating landscape protection into spatial planning processes, fostering ecological, social, and economic cohesion across the country	2020
Strategy	National	Swiss Land Strategy	In the framework of the 2050 climate net zero goal it aims at ensuring that no more land	2020

			shall be consumed in Switzerland beyond 2050	
Initiative	National	2. Landscape initiative (2. *Landschaftsinitiative)* (withdrawn)	Called for stricter measures to prevent urban sprawl, the protection of landscapes from construction and the prevention of conversion of agricultural buildings	2020
Law Revision	National	SPA II (2. revision of the SPA)	Was developed by the Parliamentary Committee for the Environment, Spatial Planning and Energy (UREK) as a counterproposal to the "Landscape initiative" of 2020 and was unanimously approved by the Parliament in 2023. Its aim is to stabilise the number of buildings and the sealed area outside the building zone.	2023

Table CH7. Policies, initiatives and strategies influencing spatial planning and densification.

6.3 Size and role of the market

The combination of restrictive building zones and low interest rates in Switzerland has sparked a construction boom and driven up land prices, especially in urban areas (BFS, 2021). This trend is primarily fuelled by two factors: a dwindling land supply and increasing demand are causing the housing market to heat up. Additionally, rezoning in certain areas triggered urban renewals and refurbishments of the building stock. Rezoning often entails enhancing accessibility, infrastructure, and the overall quality of neighbourhoods, making these areas more attractive to both residents and businesses. Large-scale rezoning projects, such as those involving entire districts, trigger construction, create jobs, and stimulate local economies. Such economic productivity reinforces densification trends and attracts investors seeking to capitalize on anticipated appreciation, further intensifying demand and development in these urban areas.

For example, the city of Zurich, after years of population decline due to suburbanization, is experiencing a renewed population growth since the late 1990s, partly driven by the influx of highly skilled, high-income migrants, primarily from other European countries (Stadt Zürich, n.d.-a). The redevelopment of former industrial zones entailed large projects that gave a strong boost to the building industry.

Switzerland already has one of Europe's most expensive real estate markets, with Zurich, Geneva, and Basel leading the way. Its robust economy has supported consistent demographic and economic growth. According to a 2023 study by the Federal Office of Housing (BWO, 2023), spatial planning plays a crucial role in shaping housing costs by determining how flexibly the housing supply can respond to shifting demand: Property values

rise most sharply in areas where available building land is scarce. Wüest Partner (2024) further report that the ongoing shortage of rental housing is both caused by rents and transaction prices for owner-occupied properties.

While this increased demand makes urban property highly attractive to investors, it also opens the door to speculation, pushing up land prices and rents. The disparity in rental prices in Zurich, for example, ranges from CHF 15/m² to CHF 55/m² (Lutz et al., 2023). High property values are attracting investors and fuel speculation, which might lead to volatility. According to an expert, investments are primarily driven by the financial sector, as the Swiss property market is regarded as a safe haven for capital (Represenative of SFOSD, personal communication, May 20, 2025). Within the high price segments, public-private partnerships (PPP) are increasingly being adopted to finance large-scale urban redevelopment projects designed to support densification (discussed further below).

From an economic standpoint, Swiss spatial planning in urban areas presents both opportunities and challenges. Rising land values make urban development an attractive target for investments and speculation. These may align with the national densification goals and give a boost to the economy. However, densification often triggers socioeconomic changes, particularly in terms of housing affordability. Although densification may increase the housing supply, it generally entails higher rents due to rising land prices and the renovation of buildings to higher standards. Consequently, market-driven densification often favours higher-income residents, increasing building density without necessarily improving occupancy density. Moreover, higher rents diminish disposable income, reducing purchasing power for many residents.

A similar problem has emerged in tourist areas, where municipalities are experiencing a housing crisis fuelled by the prevalence of second homes and capital investments in underutilized properties. As stated a representative of SFOSD, “There is no shortage of housing in these regions but too little that is affordable for the local population” (Represenative of SFOSD, personal communication, May 20, 2025). Furthermore, rural cantons depending on tourism, such as for example Valais, are not in favour of densification, as could be seen in the popular vote in 2013 (Figure CH5). The focus on growth in cities can lead to opposite developments In rural areas: limited land reserves and a growing rural exodus can leave some remote areas behind by further concentrating development and resources in urban centres (Zufferey, 2020).

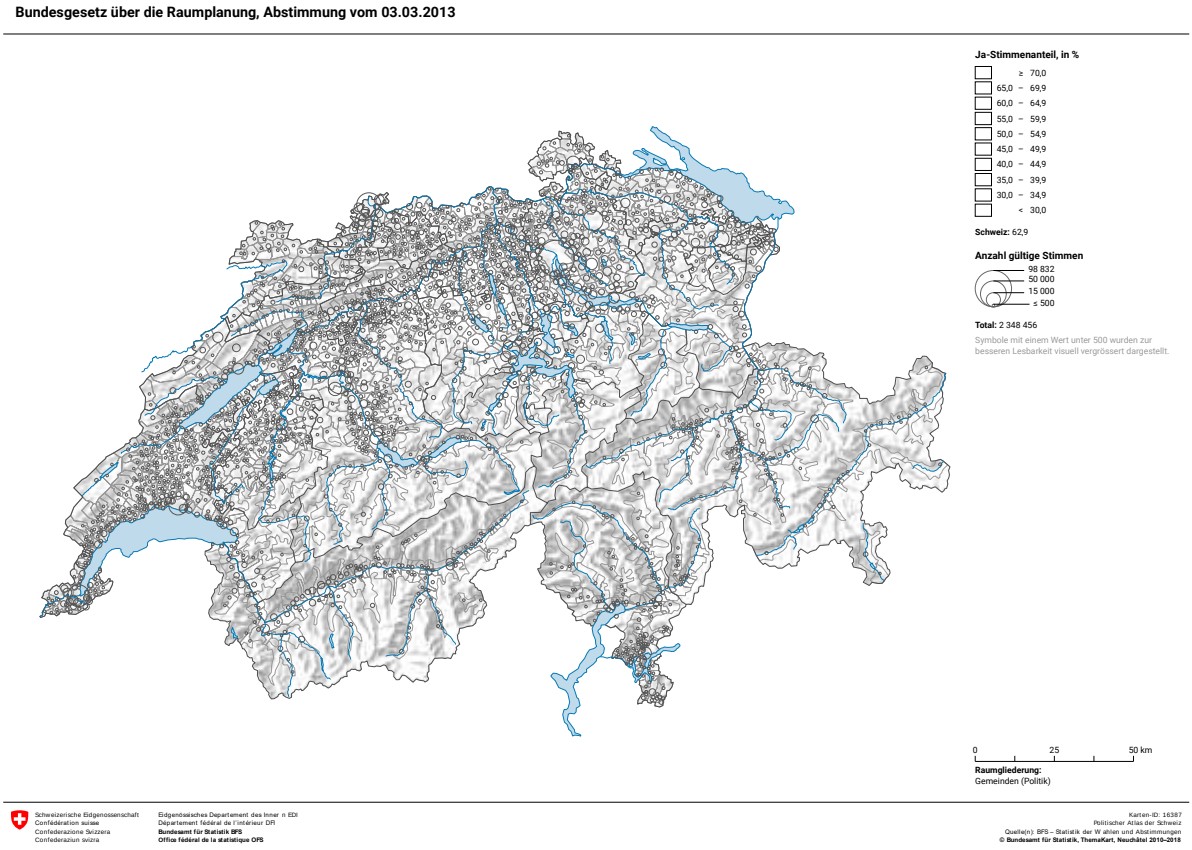

Figure CH5. Distribution of votes on the SPA revision in 2013. Source: BFS – Statistik der Wahlen und Abstimmungen © Bundesamt für Statistik, ThemaKart, Neuchâtel 2010–2020.

6.4 The multilevel governance process

The Swiss Spatial Planning Act (SPA I) aims to coordinate spatial activities across different government levels to promote denser construction. However, implementation varies locally, influenced by cantonal structure plans, planning culture, financial capacity, municipal strategy, and political orientation. Experts view Switzerland's federal structure as a barrier to an effective densification, as regions—despite playing a key role in local spatial development and having the potential to support smaller municipalities—lack formal planning authority (Representative of ETHZ SPUR, personal communication, June 4, 2025).

A report by the SFOSD on factors constraining densification (ARE, 2019) shows that these often result from conflicts between different administrative levels as well as tensions with private individuals. Building codes and land use regulations might hinder the national densification aims, as they regulate distances in between buildings or the usage of strategically important areas (ARE, 2019). Furthermore, regulations of townscape images and landscape heritage can be in conflict with the objectives of the SPA. Besides the legislation of land use planning and cantonal townscape preservation, information and recommendations by the

applicable federal heritage protection inventories[7] have to be considered as well. For each case, a holistic coordination process is required to reach an overarching spatial concept. As a basic planning tool, ISOS is often used to challenge building projects and can constitute a major obstacle to densification. However, it is argued that if applied in line with the SPA it could help to increase public acceptance and the spatial quality of urban developments (ARE, 2016).

Private land hoarding in development zones is common in densifying areas. Accordingly, cantons are required to implement land mobilization measures, by introducing time limits for development. Direct democracy in Switzerland allows citizens to influence legislation, making it crucial to anticipate objections. To mitigate these risks, the SFOSD suggests the adoption of participatory planning processes and an early involvement of all stakeholders as a means to avoid conflicts (ARE, 2019). Municipalities also use tools like special land use plans (*Sondernutzungsplan*) to prevent objections and integrate dense settlements effectively (EspaceSuisse, 2020). Cantons have also introduced instruments to address land ownership issues and achieve densification goals (ARE, 2019).

Regarding horizontal governance, there is broad support for stopping urban sprawl across various political perspectives. The debate over preserving (agricultural) land and natural heritage often engages conservative groups, linking land use to national identity and tourism. Meanwhile, climate-conscious movements advocate densification for social and ecological reasons. Right-wing (*SVP*), liberal (*FDP, GLP*), and conservative (*CVP*) parties tend to be more sceptical of densification, while the Green Party (*Grüne*) and the Social Democrats (*SP*) are generally in favour (M. Gerber et al., 2024).

63% of households in Swiss cities live in apartments owned by the private sector, including firms, banks, insurance companies, and pension funds (Debrunner & Hartmann, 2020). To align private profit motives with public densification goals, municipalities offer incentives like densification bonuses. However, competition in the building market means private actors retain significant power, with public-private partnerships (PPPs) facilitating collaboration between municipalities and investors. Depending on local regulations, these dynamics may lead to high profit margins with significant social costs, as observed in Zurich, or lead to more modest returns and a comparatively stable housing market, as in the case of Geneva (Representative of SFOSD, personal communication, May 20, 2025).

[7] The three inventories Federal Inventory of Landscapes and Natural Monuments (*Bundesinventar der Landschaften und Naturdenkmäler von nationaler Bedeutung, BLN*), Inventory of Swiss Cultural Heritage Sites (*Bundesinventar der schützenswerten Ortsbilder der Schweiz von nationaler Bedeutung, ISOS*), and Inventory of Historic Pathways and Transport Routes (*Bundesinventar der historischen Verkehrswege der Schweiz, IVS*) are part of the NHG and aim at the preservation of cultural and natural monuments in spatial planning.

Sector	Level of governance	Name	Role	Date of appearence
Nation-wide association	National	VLP Espace Suisse	Swiss association for Spatial Planning Works for the federation in questions of spatial planning as educator, consulting	1943
Public	national	Federal Department of the Environment, Transport Energy and Communications, DETEC (*UVEK*)	Responsible for infrastructure and environment, hence spatial planning issues.	1848
public	national	Federal Office for the Environment, FOEN (*BAFU*)	Ensures sustainable use of natural resources such as soil, water, air, tranquillity and forests	1971
public	national	Swiss Federal Office for Spatial Development (*ARE*)	Federal authority responsible for spatial planning, mobility policy and sustainable development.	2000
public	cantonal	Cantonal Offices for Spatial Development	Prepare regional structure plans, allocate and adjust building land and define a land use development strategy in the areas of settlement, landscape, transport and infrastructure for a medium planning interval of 20-25 years.	
public	municipal	Offices for Urban Development	Concretise the structure plan through utilisation plans, targeting areas for certain use and density goals, issuing building permits, integrating the public	
NGO	nationwide association	Swiss Heritage Protection	Independent organisation for the preservation of cultural building heritage	1905
NGO	nationwide association	ProNatura	Independent nature preservation organisation in Switzerland, e.g. protecting nature reserves, launching initiatives	1909
NGO	nationwide association	BirdLife	Independent nature preservation organisation in Switzerland, e.g. protecting	1922

			nature reserves, launching initiatives	
private	nationwide association	Different political parties	Parties are involved in the proposal of initiatives representing public opinions and if accepted changing the law	-
private	different	Private landowners Private investors		-

Table CH8. Actors involved in the policy cycle of densification

6.5 Assessments, achievements and challenges

Urban densification has been a key policy goal in Switzerland since the 2014 revision of the Spatial Planning Act. Yet, despite this legal framework, a study by the Swiss Federal Office for Spatial Development (ARE, 2024a) shows that a significant portion of new housing continues to be built on undeveloped land, particularly in rural and peri-urban areas. However, this trend is gradually shifting, especially in cities and tourist regions. From 2018 to 2022, 59% of new dwellings were built on existing sites, often through redevelopment of already built areas (ARE, 2024a). This shift is reflected in the stable building zones from 2017 to 2022, with demographic growth contributing to a reduction in land consumption per capita—from 309 m² in 2012 to 282 m² in 2022. Today, 95% of the Swiss population lives within building zones, of which 10-16% remains unbuilt and available for future development (ARE, 2022). However, according to a researcher, densification in Switzerland is not contributing to sustainable development at the moment: “De facto, more is being built in the form of more building volume, more concrete in the end.” (Representative of ETHZ SPUR, personal communication, June 4, 2025).

With the second revision of the Swiss Spatial Planning Act, densification became legally mandatory and a key priority of Swiss policies (UVEK, 2024). Platforms like densipedia.ch and EspaceSuisse were established to support its implementation. Harmonizing structural conditions across cantons is also a key focus, which sometimes requires complete overhauls of cantonal building laws. By 2022, all 26 cantonal structure plans were accepted by the Federal Council, with municipalities now tasked with land-use planning and the finalization of building zones. However, so far only 43% of municipalities have adapted their land-use plans to meet cantonal structure requirements (UVEK & ARE, 2024). Urban municipalities are generally ahead of their rural counterparts in adopting SPA I, likely due to greater housing demands, more planning resources, and lower public resistance. Nevertheless, for densification to succeed, municipalities must develop new competences to maintain both urban quality and public support. Limited resources often lead municipalities to rely on external experts, which can slow down knowledge transfer and hinder locally adapted solutions. Particularly in rural areas with a high proportion of residential properties, changes to land use plans - such as the rezoning of land – is often causing strong political resistance (UVEK & ARE, 2024).

One of the central challenges of densification is its impact on housing affordability. Critics have argued that the 2014 SPA revision has contributed to rising housing costs, and in some urban areas to gentrification and displacement (Debrunner, 2024). Indeed, between 2000 and 2021, the price of single-family houses increased by 80%, while rents rose by 30%. The mechanisms of Swiss spatial planning, according to an employee of the SFOSD, allow the market to react immediately, depending on the capacity of local regulation to stabilize: “Ultimately, it is always a question of who benefits from regulation and who from non-regulation” (Represenative of SFOSD, personal communication, May 20, 2025). Land rezoning plays a crucial role in facilitating or restricting development and thus the possibility to adapt to the housing shortage. However, densification only alleviates the housing shortage in places where occupancy rates are already exhausted. In general, therefore, the impact of densification depends on the context (BWO, 2023).

Public acceptance remains a crucial factor in the success of densification, as pointed out by multiple studies (J.-D. Gerber & Debrunner, 2022; Herdt & Jonkman, 2023; Sudau & Grêt-Regamey, 2024; Wicki et al., 2022). A media analysis from 2010 to 2019 on gentrification found that public opinion is pivotal to the success of densification projects. While support for densification at the national level has grown to 57.5%, local support remains much lower, at just 11.9% (Wicki et al., 2022). Emotional responses tied to concerns over place identity and personal autonomy often cause resistance, especially in communities close to proposed densification projects (Herdt & Jonkman, 2023). Despite general agreement on the need for more housing, NIMBYism often obstructs local efforts. Researchers suggest that Switzerland’s direct democratic tools, if used for site-specific solutions and public participation, could improve the quality and equity of densification (Herdt & Jonkman, 2023). Collaborative efforts between the public and the private sector are seen as essential for achieving socially sustainable densification (Perić et al., 2023).

Critics have also pointed out that private actors, particularly corporate property owners, are the main beneficiaries of densification, often prioritizing financial gains over social justice (Debrunner, 2024). Large-scale projects are typically driven by private entities such as banks, insurance companies, and pension funds. Switzerland’s strong property protection laws, which favour property owners, further contribute to rising property values and an imbalance of decision-making power, leaving tenants at a disadvantage (Debrunner, Jonkman, et al., 2024; J.-D. Gerber et al., 2017). This unequal distribution of the benefits of densification has led to growing public resentment. Comparative studies suggest that granting municipalities greater authority to intervene in property rights could lead to more equitable and effective densification outcomes (Götze & Jehling, 2023). A representative of SFOSD criticized the insufficient consideration of the connection between spatial development and real estate market: “I believe the purpose of (spatial) regulation should be (…) to ensure excessive profit opportunities are not offered at the expense of communities or individuals” (Represenative of SFOSD, personal communication, May 20, 2025).

Different densification strategies—such as brownfield developments, transit-oriented developments (TODs), and rezoning—have varied effects on local demographics. For example, it was found that in Zurich, densification efforts have largely been driven by new construction (being 6.5 times more common than refurbishments), leading to the displacement of lower-income residents (Kaufmann et al., 2023). Lutz et al. (2024) also noted that while

TODs increase population density, they tend to displace low-income households near transportation hubs, exacerbating inequality and contributing to gentrification. Similarly, Verheji et al. (2023) explored the challenges of ensuring public access to green spaces in privately managed densification projects.

Currently, no policies specifically address the social impacts of densification: most strategies focus on spatial issues, while socio-economic consequences like displacement and unequal housing conditions are largely overlooked. An expert highlights the construction-oriented focus of current legislation, noting: “If we want to make consistent contributions towards sustainability with the SPA, we must promote use density and mixed uses.” (Represenative of SFOSD, personal communication, May 20, 2025). Most densification projects are driven by private developers who view housing primarily as an investment, rather than a social good (Perić et al., 2023).

Policy / Programme	Measured impacts on housing inequalities	Potential impacts on housing inequalities
SPA I	Displacement of vulnerable groups: In zones with scarcity of buildable land, densification often replaces older, affordable housing with new developments. (Debrunner, 2024) In TOD (transit oriented developments), displacement of lower-income residents has been proved (Lutz et al., 2024)	**Rising Costs**: Reduced building zones and land speculation drive up land prices and urban rents. **Ignored Tenant Needs**: Federal policies prioritize inner development and investor interests over tenant protections. **Uneven Capacity**: Small and large municipalities share densification responsibilities but differ in capacity, leading to slower housing delivery and reduced quality.
Second Home Initiative		Rising housing prices, disappearance of affordable housing for local population in tourist areas

Table CH9. Summary table of measured and potential impacts of densification policies on housing inequalities.

7 Summary and discussion of results

7.1 Summary of changes in EEPs

Also in Switzerland, international policies such as the Kyoto Protocol and Paris Agreement triggered ambitious national climate goals in the early 2000s. With national support, several local governments—especially larger cities—enhanced these goals by launching their own complementary programmes.

As mentioned in Chapter 1, over the last two decades, Switzerland has seen a continuous evolution of environmental and energy policies. Popular initiatives and social movements have played an important role in shaping EEPs, with public opinion capable of both accelerating and impeding political momentum. Although most initiatives aimed at more progressive regulation or stronger climate protection were rejected, they sparked lively public debates and sometimes prompted revisions to legislation.

The Swiss political system not only influences how decisions are made but also leads to considerable variation in regulations across the country. *The subsidiarity principle gives equal responsibility to all municipalities, regardless of capacity, leading to uneven implementation.* Depending on available financial and professional resources, national policies are therefore not implemented uniformly across all municipalities. *Direct democracy can lead to diluted measures in order to gain majority support.* This can lead to approaches deviating from their original objectives or being redirected to serve different agendas. For example, the relatively weak tenant protection law triggers **renovictions as they** enable landlords to carry out extensive renovations and subsequently charge higher rents.

Lobbies are an important part of political decision-making in Switzerland. For EEPs **the conservative farmers' lobby and the liberal building sector have exerted considerable influence, while the homeowners' association (*Hauseigentümerverband* HEV) plays a key role in shaping housing policies, in particular the tenancy law**. Several representatives from federal organisations agreed that parliamentary decision-making is largely driven by market interests rather than environmental concerns. The real estate sector is fuelling density goals, primarily aiming for higher building density. *The building sector defends the Buildings Programme and promotes densification developments*. Thus, while both energy refurbishments and densification are supported by influential lobbies, NBS lack political support, as the market shows little interest in non-profitable measures provided by nature. Furthermore, the farmer's lobby opposes federal subsidies, as it has no interest in more regulations for agriculture. All experts we in on NBS we could interview explained that biodiversity objectives are of secondary importance to parliament, meaning that funds are preferably channelled into energy savings and decarbonisation. Market interests partly explain the political focus on measurable change and technical responses in the climate debate. Regarding an international real estate market, climate adaptation measures are becoming increasingly important to obtain sustainability certifications that enhance property value.

Switzerland’s national policies reflect a strong political focus on energy efficiency, driven by climate goals and energy strategies. The Buildings Programme, with a total budget of CHF 528 million in 2023, has significantly expanded over the past decade making an important contribution to energy savings. National support to energy refurbishments further incentivised cantons to pursue active energy policies and required municipalities to establish structure plans and schemes. However, as stated by the representatives of different federal organisations, there have been considerable budget reductions in all departments. The political orientation of department heads, this can lead to a reduction in funding (Representative of SFOE, personal communication, May 8, 2025).

The term *nature-based solutions* (NBS) has only recently entered public discourse in Switzerland and still lacks a dedicated federal funding scheme—likely due to limited market

interest. To date, municipalities have remained the central actors in regulating, implementing, and promoting NBS, meaning that their success depends entirely on local political will and available resources.

With the enactment of the SPA I revision, densification became a legally binding and central planning objective nationwide. In combination with increased land and real estate speculation, the reduction of designated building zones has been identified as a contributing factor to rising housing costs. **As the implementation of the SPA at the local level has hardly started, these challenges are expected to intensify.**

7.2 Relations and trade-offs between EEPs and housing policies

Both energy retrofitting and densification have entered Swiss legislation in the early 2000s and have led to significant impacts on social sustainability overall and the housing sector specifically. **However, NBS are only now beginning to be considered in relation to housing affordability—and so far, only in large-scale greening projects. By outlining the general challenges and effects of EEPs on housing affordability, their broader social impacts become evident.**

The subsidy structure for energy retrofitting in Switzerland (Buildings Programme) is being criticised due to a significant deadweight effect—nearly half of the funds go to projects that would have occurred anyway. Wealthier households disproportionately benefit from these subsidies, raising concerns about social equity. The programme lacks social criteria, focusing solely on technical aspects, which may unintentionally exacerbate inequalities.

Energy retrofitting often leads to rent increases, as landlords can pass on 50–70% of renovation costs to tenants, minus subsidies. This has contributed to a rise in rents and renovictions, especially in urban areas, displacing lower-income tenants and accelerating gentrification. In Zurich, for example, 30% of renovations involved tenant displacement, with new tenants earning significantly more than those replaced. Proposed reforms to align energy and housing policy - such as tying subsidies to tenant protections - have not been implemented at the national level due to concerns over cost, enforceability, and property rights. If well-regulated, retrofitting could mitigate energy poverty, but current retrofitting policies and incentives risk worsening housing affordability for vulnerable populations.

To date, NBS in Switzerland face limited national support, as federal priorities lean towards climate adaptation over biodiversity. Implementation is largely left to cantonal and local levels, where smaller municipalities often lack the capacity to manage complex NBS projects. As a result, progress is uneven and highly localized. The unequal distribution of greening subsidies - favouring homeowners over tenants - remains largely unexamined. There is little public or academic debate on how NBS affect housing costs or who benefits from green space investments. While green interventions in public areas may raise property values, the delay in effect makes it hard to measure their impact on rents. Swiss tenancy law does not clearly define whether NBS qualify as value-enhancing improvements that could justify rent increases.

Following the second revision of the SPA in 2014, when densification became legally binding, reducing land consumption has become a central goal of Swiss spatial planning policy. Due to the Swiss federal structure, the state of implementation varies widely between municipalities. Critics argue that densification primarily benefits private investors, such as banks and pension funds, while tenancy needs are bypassed. Switzerland's strong property rights further reinforce this imbalance, limiting tenant influence and fuelling public discontent. While direct democratic tools could enhance participation and equity, they are not yet systematically used in densification processes.

Multiple studies found that densification leads to rising housing costs, gentrification, and displacement, particularly in urban areas. The effects of densification on the local context, by factors such as vacancy rates and municipal governments' regulatory capacity. Land rezoning plays a key role in shaping development potential, but its benefits are unevenly distributed. **Currently, national policies prioritize hard densification, often at the expense of ecological and social considerations that could be addressed through more inclusive soft densification strategies.**

The combination of EEPs – **as for example densification targets and the promotion of energy retrofitting** – appears to generate severe social impacts that are require a strong political will to be mitigated. As was mentioned, they trigger large scale demolitions of older but affordable housing. The **Swiss tenancy law limits the right to increase rents following minor upgrades and within ongoing rental contracts, indirectly promoting more extensive renovations or full the full replacement of older buildings, which allow tenant evictions** Such demolitions are not only problematic from a social perspective; as highlighted by some scholars, **current energy policies do not consider the ecological impact of demolition** (Representative of ETHZ SPUR, personal communication, June 4, 2025)..

The growing number of popular initiatives addressing regulations of housing and affordability underscores the increasing tensions between EEPs and social sustainability. Switzerland's complex administrative and political structure leads to significant variation in regulatory approaches across cantons. **Moreover, strong lobbying interests often shape political decisions, frequently sidelining social concerns. Yet, these concerns must be meaningfully integrated into both the development of EEPs and housing policy.**

8 Glossary

Abbreviation (ENG / GER)	German	English
SFOE / BFE	Bundesamt für Energie	Federal Office of Energy
SFOSD / ARE	Bundesamt für Raumentwicklung	Swiss Federal Office for Spatial Development
FSO / BFS	Bundesamt für Statistik	Federal Statistical Office
FOEN / BAFU	Bundesamt für Umwelt	Federal Office for the Environment
FOH / BWO	Bundesamt für Wohnungswesen	Federal Office for Housing
NHG	Bundesgesetz über den Natur- und Heimatschutz	Federal Act on the Protection of Nature and Cultural Heritage Protection
IVS	Bundesinventar der historischen Verkehrswege der Schweiz	Inventory of Historic Pathways and Transport Routes
BLN	Bundesinventar der Landschaften und Naturdenkmäler von nationaler Bedeutung	Federal Inventory of Landscapes and Natural Monuments
ISOS	Bundesinventar der schützenswerten Ortsbilder der Schweiz von nationaler Bedeutung	Inventory of Swiss Cultural Heritage Sites
BDP	Bürgerlich-Demokratische Partei	Conservative Democratic Party
CVP	Christlichdemokratische Volkspartei	Christian Democratic People's Party
	CO2-Gesetz	CO2 Act
	Die Mitte	Centre
EAER / WBF	Eidgenössische Departement für Wirtschaft, Bildung und Forschung	Federal Department of Economic Affairs, Education and Research
DETEC / UVEK	Eidgenössisches Departement frü Umwelt, Verkehr, Energie und Kommunikation	Federal Department of the Environment, Transport, Energy and Communication
EKZ	Elektrizitätswerke des Kantons Zürich	Electricity Provider of the Canton of Zurich
	Energie 2000	Energy 2000
	Energieartikel	Energy Article
	Energiefranken	Energy Franc
	Energiegesetz	Energy Act
	Energieperspektiven 2050	Energy Perspectives 2050

	Energieperspektiven 2050+	Energy Perspectives 2050+
	EnergieSchweiz	SwissEnergy
	Energiestrategie 2050	Energy Strategy 2050
	Energieverordnung	Energy Ordinance
FDP	FDP.Die Liberalen	The Liberals
	Gebäudeprogramm	Buildings Programme
	Gewässerschutzgesetz	Water Protection Act
	Grüne Schweiz	Green Party
GLP	Grünliberale Partei	The Green Liberal Party
	Grünstadt Schweiz	Green City Switzerland
HFM	Harmonisiertes Fördermodell der Kantone	Harmonised Promotion Model of the Cantons
	Junge Grüne Schweiz	Young Green Party
KIV	Klimaschutzverordnung	Climate Protection Ordinance
	Klimastrategie Kanton Thurgau	Climate Strategy of the Canton of Thurgau
EnDK	Konferenz der Kantonalen Energiedirektoren	Conference of the Cantonal Energy Directors
	Langfristige Klimastrategie 2050	Long-Term Climate Strategy 2050
MuKEn	Mustervorschriften der Kantone im Energiebereich	Model Regulations of the Cantons in the Energy Sector
	Nutzungsplan	Utilization Plan
SPA / RPG	Raumplanungsgesetz	Spatial Planning Act
	Richtplan	Structure Plan
	Sachpläne und Konzepte	Concepts and Strategies
	Schweizer Bauernverband	Swiss Farmers' Union
SVP	Schweizerische Volkspartei	Swiss People's Party
SFV	Schweizerischer Fischerei-Verband	Swiss Fishing Federation
	Sondernutzungsplan	Special Land Use Plan
SP	Sozialdemokratische Partei	Social Democratic Party
	Stimulus Programme	Stimulus Programme

	Strategie Anpassung an den Klimawandel	Climate Change Adaptation Strategy
	Strategie Biodiversität Schweiz	Swiss Biodiversity Strategy
	Umwelt Schweiz 2022	Swiss Environmental Report 2022
VSSG	Verband Schweizerischer Stadtgärtnereien und Gartenbauämter	Association of Swiss Departments for Green Spaces
ZWG	Zweitwohnungsgesetz	Second Home Law

Table NO 11. Glossary of Swiss names and acronyms

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10 Annex

Institution	Focus	Name	Place and date	Duration
SFOSD	Densification	Matthias Howald	20.05.2025, online	81 min
SFOE	Energy retrofitting and Buildings Programme	Andrea Streit	08.05.2025, Zurich	85 min
FOH	Housing policy and debate	Martin Tschirren	10.07.2025, online	74 min
EspaceSuisse	Densification	Damian Jerjen	24.03.2025, online	60 min
EnDK	Energy retrofitting, multilevel governance	Olivier Brenner	08.05.2025, online	55 min
ETHZ SPUR	Densification	Gabriela Debrunner	04.06.2025, online	60 min
FOEN	Nature-based solutions	Claudia Moll	17.04.2025, Zurich	62 min
Grünstadt Schweiz	Nature-based solutions, densification	Antonio Diblasi	15.04.2025, online	45 min
Lemon Consult	Energy retrofitting, labels	Mark Frey	07.05.2025, Zurich	45 min

Table CH12. List of Interviews.

PolicyLab	How can ecological sustainability and access to affordable housing be combined?
Date	03.04.2025
Location	Bahnhofplatz 2, 9001 St.Gallen, “Historischer Saal” (in person event)
Number and types of participants	28 participants representing the following organisations: - Federal Office of Housing - Federal Office of Energy - Federal Office of Spatial Planning - Cantonal Office for Spatial Development Zurich - Cantonal Office for Spatial Development Thurgau - Cantonal Office for Housing Subsidy (SG, TG, AI) - Building Directorate St.Gallen - Office for Environment and Energy St.Gallen - Office for Urban Planning St.Gallen - Office for Urban green areas St.Gallen

	- Office for Urban green areas Amriswil - Tenants' Association Zurich - Swiss Homeowners Associations - Association of Housing cooperatives Switzerland - Association of Housing cooperatives Zurich - Association of Housing cooperatives Eastern Switzerland - Housing cooperative ABZ - Housing cooperative St.Gallen - Axa Winterthur (private developer) - Intep (Sustainability consulting and applied research) - Wincasa (private developer) - Pensimo (private developer) - ETH SPUR (Institute for Spatial Planning and Urban Politics) - Fachhochschule OST (Institute for Social Work and Space) - ZHAW (Institute for Social Work) - EAWAG (Swiss Federal institute of Aquatic Science & Technology)

Table CH13. Details PolicyLab.