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2024 fiscal sustainability report for Switzerland

Ageing and net zero target



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Foreword

What will Switzerland's public finances look like in 2060, for the Confederation, the cantons and the communes? How about the social security funds? This report on the long-term sustainability of public finances enables us to look to this distant future, thanks to the projections it contains. In an environment often full of short-term challenges, this foresight beyond the legislative period is essential for a sustainable fiscal policy; a policy that looks at which course we need to set today so we can continue to benefit from a financially healthy and strong state tomorrow.

It is especially important in uncertain times like these, with increased geopolitical and economic risks, to ensure fiscal stability and to make decision-makers and interested members of the public aware of longer-term challenges at an early stage.

The challenges are considerable: without reforms, it will become impossible to comply with the requirements of the debt brake in a few years. Looking to the future further demonstrates the need for fiscal and economic policy action. The ageing population and climate change are two key challenges for public finances, and although their effects are already being felt, they will increase substantially in the medium to long term.

As we all know, projections into the future should always be treated with caution. They are based on many assumptions regarding demographic and economic development. Naturally, the scenarios presented in this report are therefore subject to some uncertainties. Nevertheless, they give an idea of the additional burden that the ageing population will place on public finances in Switzerland. The projections show, among other things, that the greatest demographic pressure will come directly from the retirement of the baby boomers. Coupled with rising life expectancy, this will lead to continued strong growth in expenditure, particularly in the areas of pension provision and healthcare.

While pension provision primarily affects the Confederation, the pressure caused by healthcare expenditure jeopardises the sustainability of the cantonal finances in particular. Based on the assumptions made, the increase in demographic-dependent expenditure alone would increase the debt ratio of the three levels of government, including the social security funds, from the current level of 27% of gross domestic product to 48% in 2060. This therefore shows that the need for fiscal and economic policy action due to the additional demographic burden is pronounced for the Confederation, including the social security funds, as well as the cantons. The need for action at federal level has become even more urgent since the initiative for a 13th monthly payment in AHV pensions was adopted. The counter-financing for this needs to be tackled quickly.

Along with the ageing population, climate change is one of Switzerland's biggest long-term challenges. Climate policy measures are necessary in order to mitigate the effects and costs of climate change. This report analyses the financial impact of climate mitigation measures on public finances for the first time, modelling climate mitigation measures that are necessary to achieve the net zero



target by 2050 – a goal to which Switzerland has committed itself internationally with the Paris Climate Agreement and nationally with the Federal Act on Climate Protection and Innovation.

Based on the assumptions made, the projections show that the path to net zero will place the greatest financial burden on the Confederation and social security funds in particular, because climate mitigation measures dampen economic growth and thus also the growth in public receipts. The increased use of subsidies in the climate policy will further increase the pressure on public finances. Yet climate mitigation measures are also hugely beneficial as they can minimise climate damage. In any case, an alternative scenario without further climate mitigation measures is not a realistic option, and as such, the Federal Council has proposed a revision of the CO₂ Act to Parliament.

As the most recent crises have shown, healthy public finances are crucial for a country's ability to act. They are also necessary for dealing with long-term challenges such as the ageing population and climate change. Well-balanced public finances also strengthen the resilience of the Swiss economy, thereby making a decisive contribution to security and prosperity all round.

A handwritten signature in black ink, consisting of stylized cursive letters that appear to read 'K. Keller-Sutter'.

Karin Keller-Sutter

Federal Councillor and Head of the Federal Department of Finance

Summary

Background

Fiscal policy, and in particular the federal budget, is facing considerable challenges, not least due to the changed geopolitical situation and the fallout from the measures taken to overcome the COVID-19 crisis. It will not be possible to comply with the debt brake requirements in the current legislative period without budgetary consolidation. Looking beyond the budget and financial plan, the ageing population and climate change are two key medium- to long-term challenges for the public finances. Faced with these two structural developments, public finances will come under increasing pressure in the next few decades.

The 2024 report on the long-term sustainability of public finances for Switzerland first highlights the additional burden that will affect Switzerland's public finances due to demographic change. Because of accelerating climate change, the long-term effects that climate mitigation measures, which are needed to achieve the legally binding net zero target, will have on public finances are also estimated for the first time.

The effects of ageing are analysed in a core section of the report and the effects of climate mitigation measures on public finances are analysed in an additional chapter. They should be considered independently of each other. The same macroeconomic developments were assumed in most respects. Both parts of the analysis are based on financial statistics data and the projection period for both is 2021–2060. The assumption is also made that fiscal rules – including the federal debt brake – are not binding. This is to explicitly emphasise the need for fiscal and economic policy action on balanced budgets due to ageing and climate mitigation measures. As the report deals with projections of future developments, they are subject to uncertainties. For this reason, interpretation of the results for both parts is based on the “if-then” principle, and does not provide information about what the future will look like exactly. However, the analyses differ in terms of the methodological approach, the questions investigated and the degree of uncertainty, which is more pronounced in the climate section.

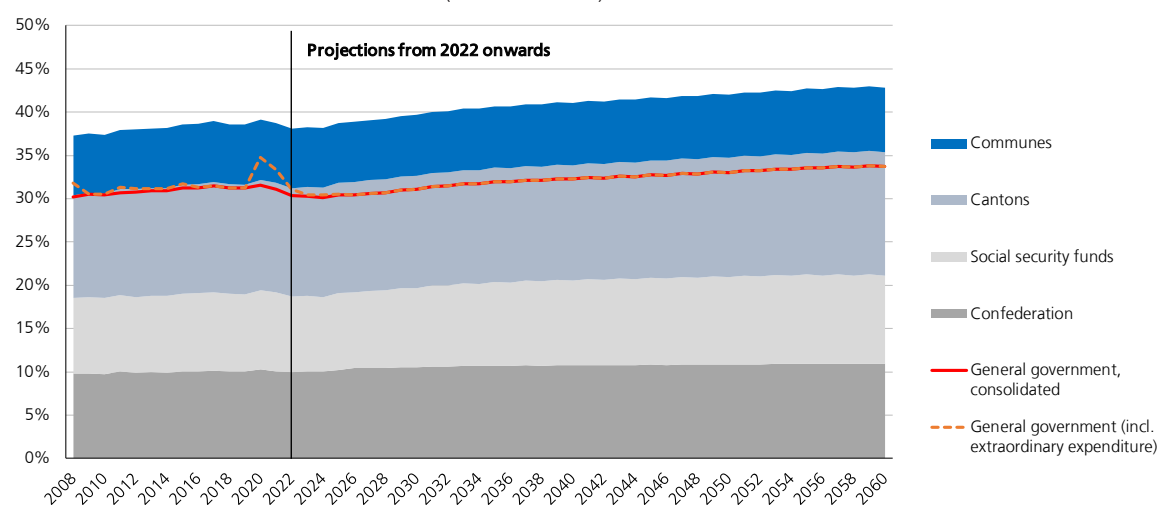
Effects of ageing on public finances

The ageing of the population will continue apace until the mid-2030s, by which point the baby boomers will have retired. Since the 1990s, a low birth rate of around 1.5, and rising life expectancy have led to an increasing ratio between the number of older people aged 65 and over and people of working age (20 to 64-year-olds). According to the Federal Statistical Office (FSO), the old-age dependency ratio will increase from its current rate of 31 % to 50 % by 2060. The public finance projections show this demographic change will lead to noticeable additional strain on public finances.

Development of the general government expenditure ratio

The general government expenditure ratio has increased from 30.2% in 2008 to 31.1% in 2019 (see Figure S.1).¹ In 2020, it rose to 34.8% initially due to the extraordinary expenditure caused by the COVID-19 crisis and remained at 33.3% in the 2021 baseline year, before gradually returning to pre-crisis levels.

Figure S.1: Development of general government expenditure in the past and in the baseline scenario (in % of GDP)



Source: FFA

Note: The general government expenditure ratio is adjusted to allow for transfers between the different levels of government. Extraordinary expenditure is shown for illustrative purposes, but is not taken into account for the general government expenditure ratio projections in the long term.

If demographics and the economy develop as assumed, the general government expenditure ratio in the baseline scenario will rise from the baseline year of 2021 to 33.7% by 2060. This is primarily due to the increase in demographic-dependent expenditure, which will rise from 17.2% of GDP in 2021 to 19.8% in 2060. This expenditure includes social security costs (AHV/IV), healthcare, long-term care (from age 65) and education.

Development of the demographic-dependent expenditure ratio

The levels of government are each affected differently by these additional burdens in the baseline scenario (see Table S.1). Expenditure by the Confederation and the social security funds for which the Confederation is responsible (AHV/IV) increase the most overall at 1.2% of GDP.

¹ The general government expenditure ratio is shown as public spending (including social security) relative to nominal GDP. In order to avoid extrapolating short-term effects into the long term, GDP is adjusted to allow for cyclical fluctuations.

Table S.1: Demographic-dependent expenditure by government level in the baseline scenario (in % of GDP)

Year	2021	2040		2060	
Government level	Share	Share	Deviation vs. 2021	Share	Deviation vs. 2021
Confederation	3.9	4.3	+0.41	4.4	+0.53
Social security funds	5.4	6.0	+0.54	6.2	+0.71
AHV	4.6	5.4	+0.77	5.6	+1.02
IV	0.8	0.6	-0.22	0.5	-0.30
Cantons	5.5	6.0	+0.51	6.5	+0.99
Communes	2.4	2.5	+0.16	2.7	+0.30
General government	17.2	18.8	+1.64	19.8	+2.56

Source: FFA

Note: The general government expenditure is adjusted to allow for transfers between the different levels of government.

The expenditure ratio of the *social security funds* increases significantly (by 0.7% of GDP) by 2060, driven by AHV costs. Up to 2040, the increase in expenditure caused by the retiring baby boomers is relatively high (just under 0.8% of GDP). The dynamics slow down somewhat after 2040, as cohorts from lower birth years enter retirement. The AHV 21 Reform, which primarily involves increasing the retirement age for women to 65, along with a medium-term reduction in IV expenditure in relation to GDP, will curb expenditure growth. The development of IV can be explained by the fact that the number of IV pensioners is growing in line with the labour force. Yet due to the demographic change, the labour force is growing more slowly than the 65+ age group.

For the *federal budget* (+0.53% of GDP), the greatest cost pressure comes from the AHV and its supplementary benefits (+0.3% of GDP). Although development is being cushioned somewhat by the IV. In addition, expenditure on individual premium reductions (IPR) is rising (+0.2% of GDP). The federal budget will be carrying the cost of the retiring baby boomers until 2040. After 2040, pressure on demographic-dependent federal expenditure will ease, but additional burdens in relation to GDP are still to be expected.

The popular initiative «For a better life in old age» (initiative for a 13th AHV pension payment), which was approved by the people and cantons on 3 March 2024, will lead to an increase in expenditure of an additional 0.6% of GDP at federal level, including social security contributions (see excursus in section 2.5.2).

The *cantons'* demographic-related expenditure will also increase significantly at just under 1.0% of GDP. The spending pressure is due in particular to healthcare (+0.6% of GDP) and, to a lesser extent, long-term care (+0.3% of GDP). By 2040, cantonal expenditure growth will also be influenced by education (+0.1% of GDP).

The *communes* incur the lowest additional expenditure (+0.3% of GDP by 2060). Up to 2040, expenditure will be impacted by long-term care (+0.1% of GDP) and education (+0.05% of GDP). After 2040, the care sector will be almost solely responsible for the additional burden.

Assuming the current statutory regulations continue to apply, the increase in demographic-dependent expenditure leads to an increase in the general government's debt-to-GDP ratio from 27% to 48%. In order to stabilise the debt ratio at the level of the baseline year (2021), the government's annual need for consolidation, known as the fiscal gap, would amount to 0.7% of GDP (around CHF 5.2 bn at 2021 prices) from 2028 to 2060.

Alternative scenarios

In order to underline the uncertainty surrounding the demographic and macroeconomic assumptions, four alternative scenarios have been calculated in addition to the baseline scenario. A scenario with higher net immigration has been calculated and one with lower net immigration. A further two scenarios have also been included, each with either a 0.5 percentage point lower or higher productivity gain than that in the baseline scenario (0.7% and 1.7%).

The alternative scenarios show that higher economic growth due to higher productivity gain or higher net immigration reduces the additional burden of ageing on the state as a whole. Weaker economic growth increases the additional burden accordingly. These results are driven by the federal government and social security funds. On the other hand, higher economic growth places a greater burden on the cantons due to higher healthcare expenditure.

Need for action on AHV and healthcare

The core section of the fiscal sustainability report, which covers the effects of ageing, shows that the need for reform is pronounced for the Confederation, including the social security funds, as well as the cantons. Demographic ageing will require further reforms to the AHV at federal level at the end of the 2020s. This need for fiscal and economic policy action has become even more urgent following the adoption of the initiative in favour of a 13th AHV pension payment, the counter-financing of which needs to be tackled quickly. The pressure from healthcare expenditure also jeopardises the sustainability of cantonal finances in particular. This highlights the need for reforms aimed at increased efficiency in healthcare and better control of spending in healthcare. Higher economic growth will tend to make it easier to cope with the additional demographic burden on public finances.

Impact of the net zero climate policy target on public finances

In Switzerland, climate change is making itself felt through an increase in the near-surface air temperature of around 2.5 degrees Celsius since pre-industrial times, leading to reduced snow cover, melting alpine glaciers, more frequent and more intense rainstorms and more frequent heat waves in summer. Climate policy measures are necessary in order to mitigate the effects of climate change.

The 2024 fiscal sustainability report shows, for the first time, the magnitude of the additional burden that the climate mitigation measures to achieve the net zero target will impose on public finances between 2021 and 2060. Projections are used to show how climate policy will change the structure of public receipts and expenditure under the assumptions made and how this will affect the budgetary balance and the debt ratio.

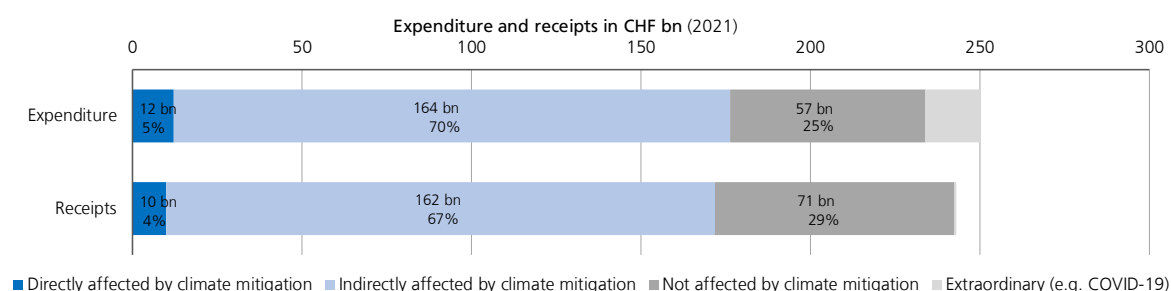
The underlying study builds on Ecoplan (2024) and is a pilot study, as there is still no established international practice for analysing the long-term effects of climate mitigation measures on public finances. The costs of climate change itself and the investments for adjustment measures are not taken into account due to excessive uncertainties and data gaps. The climate mitigation measures are intended to help fulfil the Paris Agreement and thus reduce further climate-related damage in the future. The costs of climate mitigation measures are therefore offset by a benefit that, however, could not be quantified in this study due to a lack of reliable data.

Receipts and expenditure affected by climate change mitigation

Under the assumptions made, climate mitigation measures impact the receipts and expenditure of all three levels of government and the social security system, both directly and indirectly. Direct effects include, for example, declining receipts from mineral oil tax and the CO₂ levy on thermal fuels or additional public expenditure on the federal and cantonal buildings programme. Indirect effects relate to revenue, for example receipts from direct federal tax and VAT, or expenditure on social security, such as federal contributions to social security funds and health insurance individual premium reductions. These variables are impacted, for example, by lower growth in GDP, consumption or wages as a result of the assumed climate mitigation measures.

In 2021, around 75% of the general government's ordinary expenditure and 71% of its ordinary receipts was potentially affected by climate mitigation measures in a direct or indirect way (see Figure S.2). The federal government is particularly exposed, among other things due to its current high receipts from mineral oil tax, performance-related heavy goods vehicle charge (LSVA) and the CO₂ levy. Social security funds are also heavily affected, as climate mitigation measures indirectly influence AHV and IV receipts and expenditure through changes in wage growth.

Figure S.2: General government receipts and expenditure affected by climate change mitigation in 2021



Source: Ecoplan (2024)

The individual receipts and expenditure items of the Confederation, cantons, communes and the public social security funds are projected forwards up to the year 2060, based on the 2021 classification. The extrapolation of receipts and expenditure affected by climate change mitigation is analysed within four different policy scenarios with different weightings of incentive fees (e.g. carbon pricing), emission standards and subsidies. These scenarios were designed to achieve the net zero target by 2050.

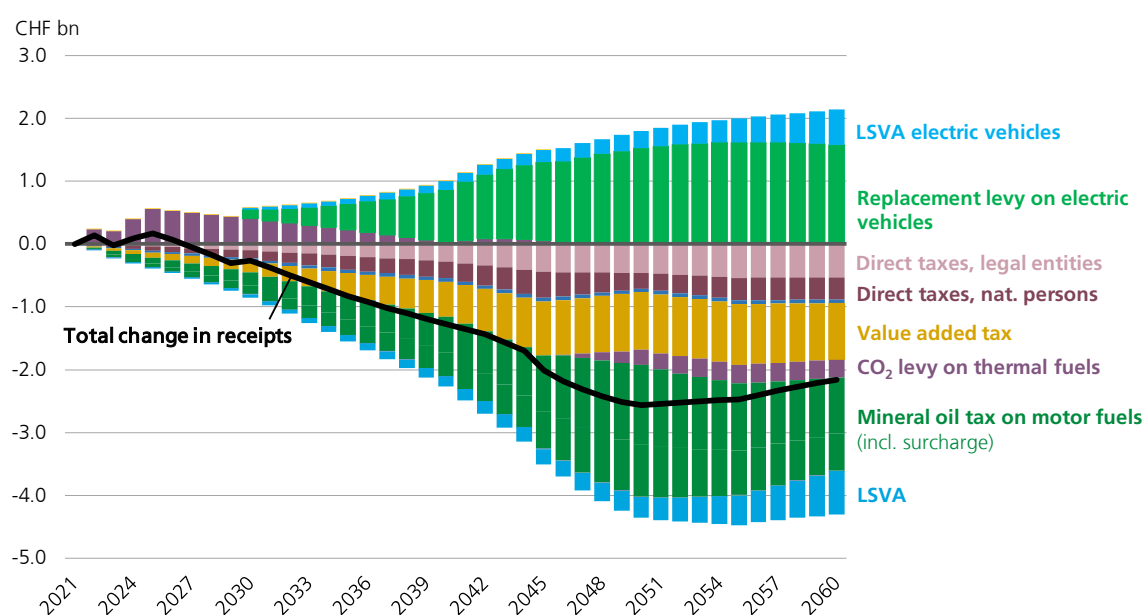
In contrast to the analysis of the effects of demographic ageing, which is subject to an assumption of no policy change, the analysis of the impact of climate mitigation measures compares the development of public finances in the policy scenarios with the development in a reference scenario – “Business as usual” (BAU). In the reference scenario, the existing measures as at the end of 2018 are continued and are not tightened. The net zero target is therefore not achieved in the reference scenario. The differences in development between the policy scenarios and the reference scenario are the key variables in the analysis and they represent the relative changes in public finances for all levels of government. The differences in the development of public finances compared to the policy scenarios could be partially overestimated since certain instruments in the reference scenario no longer correspond to the current climate policy status.

Impact of climate policy on public receipts and expenditure

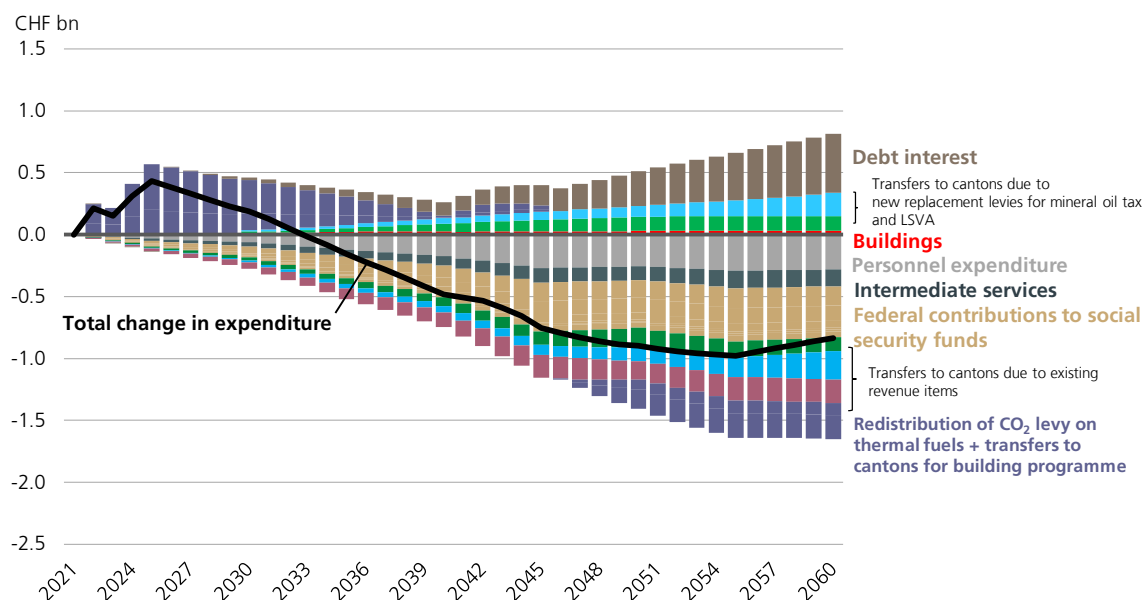
The pilot study reveals that climate mitigation measures will lead to lower receipts and expenditure for public finances every year until 2060. Figure S.3 shows an example for the Confederation in which the receipts in 2060 are just over CHF 2 billion (at 2021 prices) below the level of receipts in the reference scenario (see part A). Looking at the individual revenue items, lower receipts from mineral oil tax is particularly noticeable. Climate mitigation measures will cause these receipts to drop to zero by 2050, while in the reference scenario they are sitting at around CHF 2 billion. This is because, in contrast to the policy scenarios, motor fossil fuels which are subject to mineral oil tax will still be used in the transport sector in 2050 in the reference scenario. It is however assumed that the loss of receipts from the mineral oil tax will be offset by the replacement levy on electric vehicles that will be introduced in 2030.

Figure S.3: Impact of climate mitigation measures on the Confederation’s receipts and expenditure compared with the reference scenario (in CHF bn at 2021 prices)

Part A: Development of receipts



Part B: Development of expenditure



Source: Ecoplan (2024)

The trend for the CO₂ levy on thermal fuels is somewhat different. The receipts rise in comparison to the reference scenario at first, which is linked to the CO₂ levy for achieving the net zero target being significantly higher. From 2040 the effect turns negative, with the climate mitigation measures causing the CO₂ emissions to decrease more quickly than in the reference scenario.

The indirect effects on the receipts from VAT and direct federal tax are also negative. This is due to the negative effects of the climate mitigation measures on GDP, consumption and wages.

As for expenditure, in 2060 the climate mitigation measures lead to around CHF 1 billion lower expenses for the Confederation than in the reference scenario (see part B). This trend can be explained by lower federal contributions to the social security system and lower expenditure on staff, which is the result of lower growth in VAT revenue and lower wage growth in the policy scenarios compared to the reference scenario. There will also be lower transfers to the cantons from mineral oil tax revenue, revenue from the CO₂ levy on thermal fuels and direct federal tax.

The indirect effects are also key for the cantonal, communal and social security fund public finances. In the policy scenarios, the cantons' and communes' receipts from direct taxes on natural persons and legal entities are lower. Whereas the social security funds' receipts from wage contributions drop because of lower wage growth.

Path to net zero increases pressure on public finances

The effects of climate mitigation measures lead to a balance of receipts and expenditure at all levels of government and social security funds that is less favourable than in the reference scenario. This leads to the general government debt ratio being between 8.4 and 11% higher (depending on the policy scenario) than the reference scenario by 2060. The Confederation carries the biggest burden.

The study also shows that introducing replacement levies has a noticeable effect on public finances in that it compensates for the falling receipts from mineral oil tax, LSVA and motor vehicle tax. Finally, the increased use of subsidies increases the pressure on public finances.

1 Introduction

Fiscal policy is currently facing many challenges. An ageing population and climate change are two key long-term challenges, which will bring public finances under increasing pressure in the next few decades.

This report serves to demonstrate the additional burden which public finances in Switzerland are going to have to shoulder between 2021 and 2060, due to demographic change. Given the importance of climate change, for the first time a separate chapter is being dedicated to analysing the long-term impact on public finances of the climate mitigation measures needed to achieve the net zero emissions target by 2050. Switzerland has committed itself by law to achieving this target. The report highlights the need for fiscal and economic policy reform in these two key policy areas in order to ensure the sustainability of public finances in the long term.

The federal government's financial plan serves as the most important financial planning instrument for a four-year time horizon. The medium-term outlook focuses on mapping out the federal government's priorities and takes into account a review period up to 2032.² This report supplements these fiscal policy planning instruments with a long-term view. It also provides an overview of the financial situation of all the government levels (Confederation, cantons, communes and social security funds) and thus goes beyond the other planning instruments.³

Like the previous reports, the current long-term sustainability of public finances report looks at the longer-term effects of ageing on public finances.⁴ Its projections are based on the current legal framework (assuming no policy change) and take into account the reforms already included in the federal government's current legislature financial plan (such as the AHV 21 reform, for example, which has been in force since 2024).

The additional section is breaking new methodological ground, using a pilot study as a basis to show for the first time how the expansion of climate mitigation measures to achieve the net zero target by 2050 can affect public finances.⁵ It is important to note that this pilot study should be considered independently of the analysis on the impact of the ageing population on public finances. This is due to differences in the issues and policy areas under analysis, in the methodological approach, especially in the different underlying analysis models, and in the degree of uncertainty. This is more pronounced when considering the climate. While the analysis of the effects of the ageing population is based on the current legal framework, the climate section focuses on policy scenarios including different climate mitigation measures. The costs of climate change itself are not taken into account in the underlying pilot study due to excessive uncertainties and data gaps.

Despite differences in the analysis of the impact of ageing and climate mitigation measures on public finances, both analyses generally work around the same macroeconomic developments. Both are based on data from public finance statistics, the projection period extends from 2021 to 2060 and it is assumed that the fiscal rules – including the federal debt brake – are not binding. This is to highlight the need for fiscal and economic policy action in both areas. As with the analysis

² See Swiss Confederation (2024), 2025-2027 legislature financial plan, Appendix on the dispatch on the legislative period plan for 2023–2027, Chapter C, Medium-term outlook

³ An overview is presented every four years in the legislature financial plan, see Swiss Confederation (2024), Appendix to the dispatch on the legislative period plan for 2023–2027, Chapter D, Fiscal sustainability report.

⁴ See FFA (2008), FDF (2012), FDF (2016) and FDF (2021)

⁵ See Ecoplan (2024). This report is published in parallel as a basic report for the fiscal sustainability report.

of ageing, the interpretation of the results on the effects of climate mitigation measures are “if-then” hypotheses that do not provide information on what the future will look like exactly.

The time horizon of 2060 was chosen in both analyses because the main effects of an ageing population are likely to have been reflected in public finances by then and the net zero climate target should have been achieved.

This report is structured as follows. As in the previous reports, Chapter 2 focuses on the projections of the long-term impact of the ageing population on public finances. Chapter 3 shows how expanding climate mitigation measures to achieve the net zero target will affect public finances. Chapter 4 contains some closing remarks.

2 Effects of ageing on public finances

2.1 Background

This chapter illustrates how public finances will be affected by demographic change in the long term. The baby boomer generation will be retiring in the next few years. Meanwhile, the birth rate has dropped dramatically since the 1970s and life expectancy is continuing to rise, which will push the ratio between the number of elderly people and the working-age population further out of kilter. According to FSO projections, the old-age dependency ratio will increase from its current rate of 31% to 50% by 2060. In particular, expenditure for old-age and survivors' insurance and disability insurance, healthcare and long-term care, which together account for 13% of GDP at present, will grow considerably faster than the economy as a whole.

In order to provide an overview of public finances, various fiscal policy indicators are shown for the three levels of government and the social security funds based on projections of demographic-dependent areas of expenditure. This includes the general government expenditure ratio, the debt ratio and the fiscal gap. The fiscal gap shows the fiscal and economic policy action that would be required for the debt ratio to be stabilised at the same level as the baseline year at the end of the projection period.⁶ It analyses how ageing would affect public finances if no measures were taken. It also analyses how disposable income would develop with the foreseeable ageing of the population. Long-term demographic and macroeconomic developments are central to the projections of public finances, which is why alternative scenarios are drawn up to reflect this.

Chapter 2 is structured as follows: Chapter 2.2 presents the FSO's underlying demographic scenario and the assumptions regarding economic development. Chapter 2.3 presents the fiscal policy indicators which have been applied. These points are also relevant for the chapter on the impact of climate mitigation measures on public finances. Chapter 2.4 explains the projection methodology used for the demographic-dependent expenditure. Chapter 2.5 shows the changes in public finances, and particularly demographic-dependent expenditure, up to 2060 in the baseline scenario and in the alternative scenarios. Chapter 2.6 draws a comparison with the previous fiscal sustainability report (2021) and provides a brief international comparison, in particular on the work of the European Commission and the OECD. Chapter 2.7 presents a short conclusion.

2.2 Demographic and economic development

This section looks at the expected population development according to the FSO's reference scenario (A-00-2020) and presents the assumed economic development.

2.2.1 Demographics

The FSO's reference scenario for population development in Switzerland from 2022 to 2060 (A-00-2020) forms the basis for these projections.⁷ The FSO assumes an increase in the population in Switzerland from 8.7 million in 2021 to just under 10.8 million in 2060, which corresponds to an average annual growth of 0.5%. However, population growth slows down during the projection

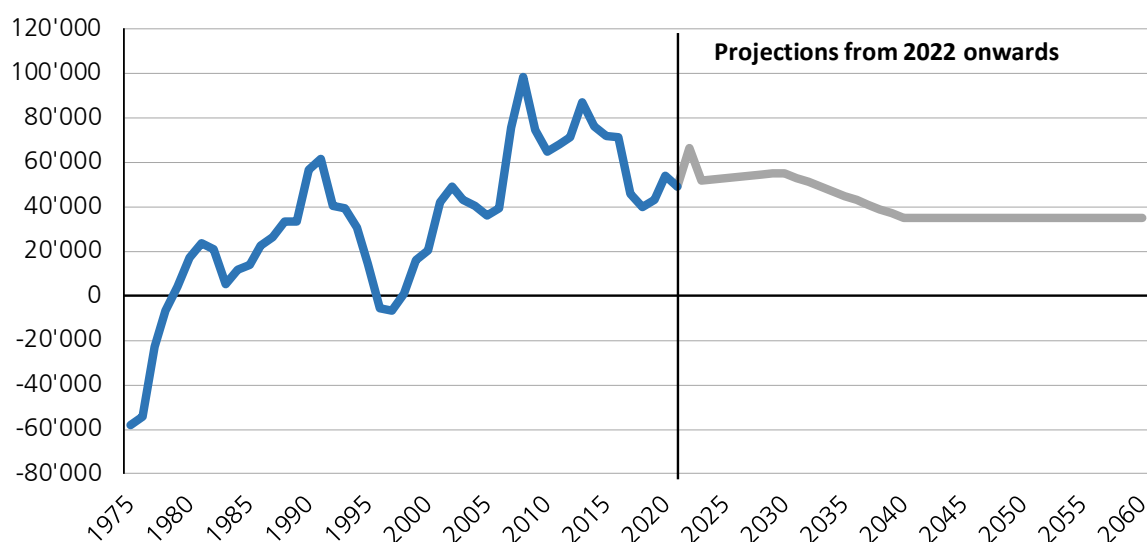
⁶ The Confederation's debt brake mechanism is more restrictive than the sustainability concept applied here, which follows the international standard of the OECD, IMF and European Commission and considers public finances to be sustainable if national debt as a proportion of GDP can be stabilised at a sufficiently low level (see e.g. European Commission, 2024).

⁷ This is an updated version of the reference scenario for 2020 and 2021 A-00-2020 (see FSO, 2020).

horizon. While a cumulative population increase of 15% is expected in the years from 2022 to 2040, this slows down to 7% between 2041 and 2060.

An important factor in determining population growth – but one that is difficult to estimate – is future net migration (the number of immigrants less the number of emigrants each year). The FSO reference scenario assumes net migration of 66,187 people in 2022 (see Figure 1). This reduces to 55,000 people by 2029. Net immigration then gradually decreases to 35,000 people by 2040 and remains constant until 2060. Net immigration is therefore declining in the long term. According to the FSO, this is due to the declining labour force in the European countries caused by relatively low birth rates.

Figure 1: Net migration 1975-2021 and FSO reference scenario (A-00-2020)

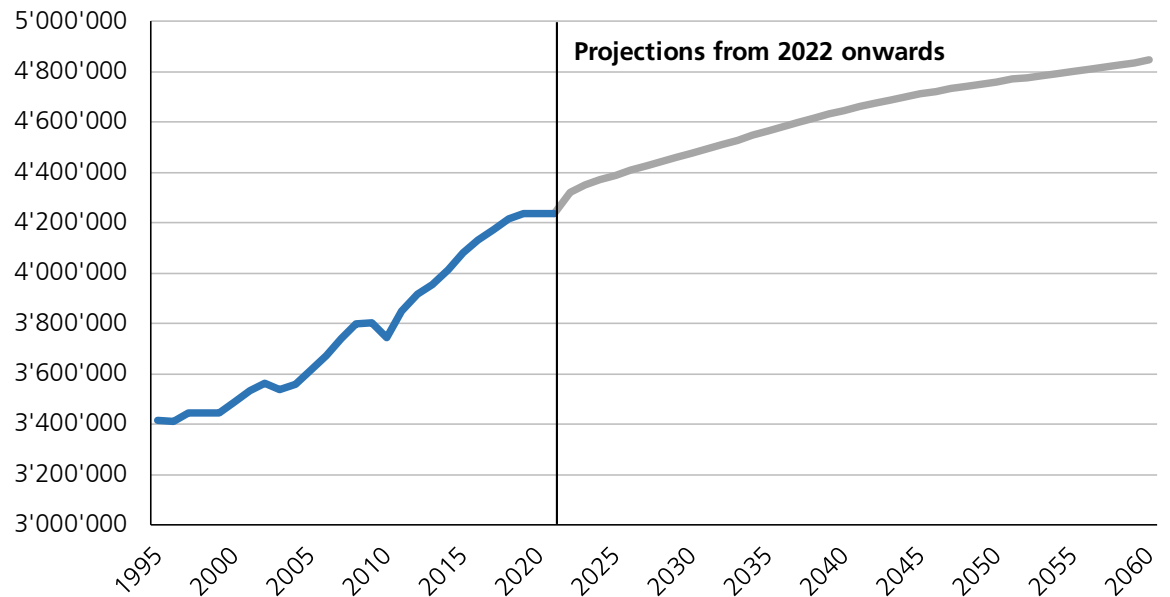


Source: FSO

The change in the demographic structure has particular implications for macroeconomic development and public finances. For example, the FSO's reference scenario assumes a rise in average life expectancy for men at birth from 81.6 years in 2021 to 88.1 years in 2060, with life expectancy for women rising from 85.7 to 90.6 years. An ageing population increases the number of elderly people relative to the working-age population. This trend poses a major challenge for future fiscal policy, as it means higher expenditure for the non-working population. The shift in the age structure also leads to a change in expenditure in the area of healthcare and long-term care.

Figure 2 shows the change in the size of the labour force in terms of full-time equivalents (FTEs). Firstly, it shows the previous development from 1995 onwards, which indicates an increase in the labour force from 3.4 million to 4.2 million in 2021. It then also shows the development in accordance with the FSO's reference scenario. It is assumed that the labour force will rise to 4.8 million by 2060 as a result of net migration. The labour force participation rate remains almost unchanged at 84.5%.

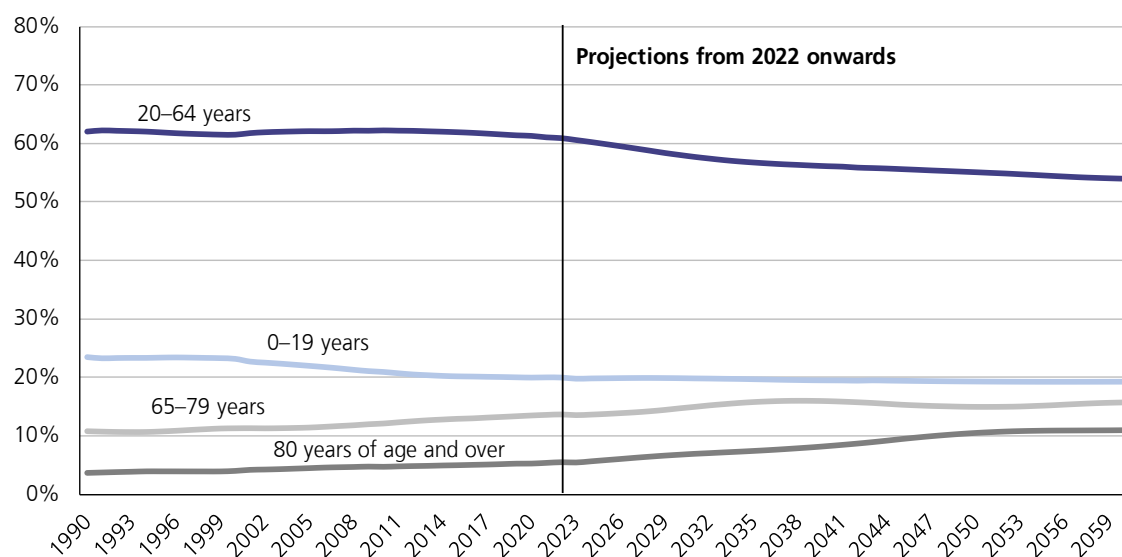
Figure 2: Labour force in full-time equivalents 1995–2021 and the FSO’s reference scenario (A-00-2020)



Source: FSO

The population age structure changes noticeably up to 2060 (see Figure 3). As a proportion of the total population, the working-age population declines from an almost constant 62% from 1990 to 2020, down to 54% by 2060. The proportion of the population of retirement age from 65 to 79 years increases from about 14% in 2020 to just over 16% in 2060. The temporary sharp increase until the end of the 2030s caused by the baby boomer generations is striking. This is also reflected in the doubling of the proportion of people aged 80 and above from 5% to 10% between 2021 and 2050. This proportion rises to 11% by 2060. Meanwhile, the proportion of those under 20 falls slightly.

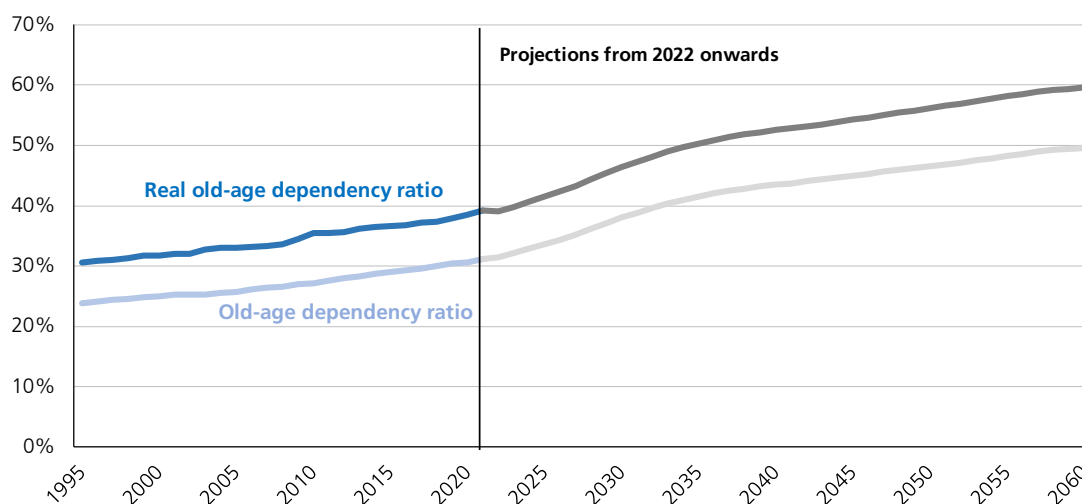
Figure 3: Development of the population structure 1990-2021 and the FSO's reference scenario (% of the population)



Source: FSO

The old-age dependency ratio shows the number of people over 65 relative to the working-age population. Whereas in 1995 there were just over four persons of working age for each person over the age of 65 (old-age dependency ratio of 24%), by 2021 this had fallen to 3.2 persons (old-age dependency ratio of 31%). This ratio declines to 2 persons (old-age dependency ratio of 50%) in 2060 (see Figure 4). The disproportionately strong increase in the old-age dependency ratio from 31% in 2021 to 43% in 2039 is due to the baby boomers reaching retirement age. After this, the ageing of the population slows down.

The real old-age dependency ratio is the number of pensioners relative to the number of people actually in the labour force, measured in full-time equivalents (FTE). This quotient is higher than the age quotient. Since the labour force participation rate in FTE decreases from 49% to 45% during the projection period, this means the gap between the two age quotients increases by 2 percentage points.

Figure 4: Development of the old-age dependency ratio 1990-2021 and the FSO reference scenario

Source: FSO

Note: The old-age dependency ratio is calculated as the number of people over 65 relative to the working-age population. The real old-age dependency ratio is the number of people over 65 relative to the labour force (FTEs).

2.2.2 Economic development

The projections require assumptions to be made about important macroeconomic variables. The figures used for the budget and financial planning period are the key figures (macroeconomic assumptions) set out in the 2025–27 legislature financial plan (LFP) (see Table 1). The key figures in SECO's medium-term outlook for the development of GDP from 2028 to 2032 are also assumed. These assumptions apply to the baseline scenario and the alternative scenarios.

Table 1: Macroeconomic assumptions according to the 2025-2027 legislature financial plan (%)

Indicator	2022	2023	2024	2025	2026	2027
Growth rates GDP						
Real GDP	2.45	1.30	1.20	1.80	1.60	1.50
Nominal GDP	5.07	2.60	2.80	2.90	2.60	2.50
Further assumptions						
Real interest rate (long term)	-1.92	-1.08	-0.69	0.30	0.79	1.09
Inflation (CPI)	2.80	2.20	1.90	1.10	1.00	1.00
Nominal interest rate	0.83	1.10	1.20	1.40	1.80	2.10

Note: Definitive figures are available for 2022. 2023 figures are estimates.

Assumptions about economic development are necessary for long-term projections. In line with international practice, simple determinants are defined for long-term economic growth.⁸ These are summarised in Table 2 for the baseline scenario.

⁸ See European Commission (2024)

Table 2: Macroeconomic assumptions for the baseline scenario (%)

Indicator	Assumptions	Period
Labour productivity growth	1.20	2033–2060
Real interest rate (long term)	1.40	2028–2060
Inflation	1.00	2028–2060
Nom. interest rate (real int. rate + inflation)	2.40	2028–2060

Note: It is assumed that the interest rate and inflation are in a long-term equilibrium from 2028. This is assumed to apply to labour productivity growth from 2033 only.

For the baseline scenario, it is assumed that labour productivity from 2033 to 2060 will develop much as it has in the past. Between 1992 and 2022, annual productivity gains in Switzerland amounted to 1.2% on average.⁹

Furthermore, it is assumed that real wages follow labour productivity trends, thereby ensuring distributive neutrality between capital and labour.

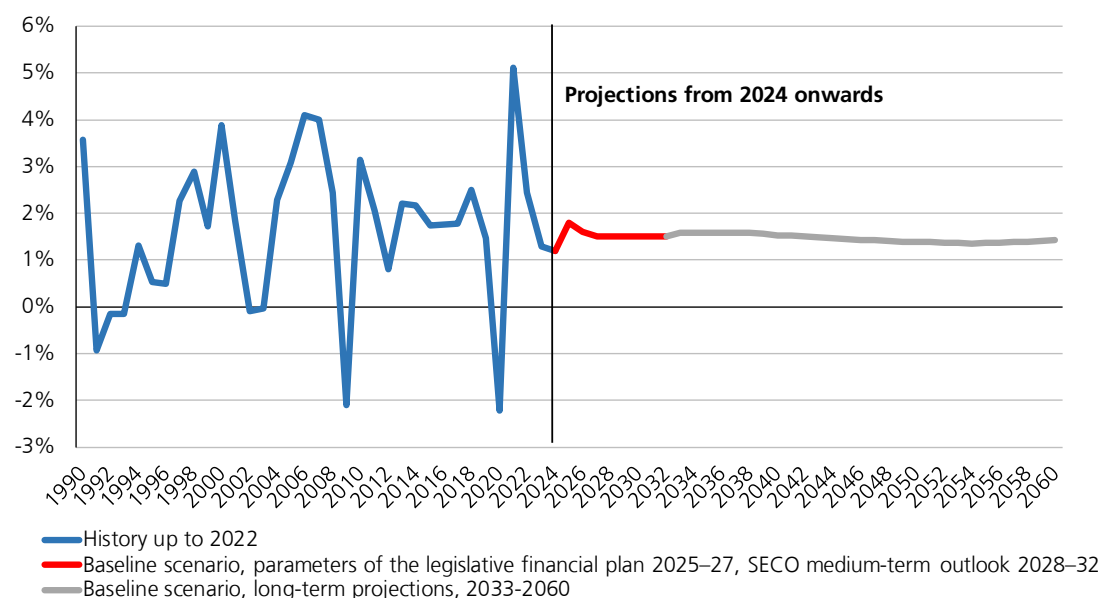
The assumption of 1.4% for the real long-term interest rate is justified by the development of 10-year Confederation bonds over the last decade, an unconventional monetary policy prior to the outbreak of the Ukraine crisis and the energy crisis with a prolonged period of low interest rates and the dependence of Swiss interest rates on the global interest rate cycle.¹⁰

An inflation rate assumption is required for the projections. An annual price increase of 1% is assumed. This is in the centre of the SNB's target range. It should be noted that this assumption does not significantly affect the fiscal gaps and the expenditure ratios, which is why separate interest rate scenarios or inflation scenarios are not calculated.

From 2024 to 2032, the development of real GDP is based on the assumptions of the legislature financial plan and SECO's medium-term outlook for economic development. The assumption for long-term productivity growth then applies thereafter. Real GDP growth in the long term from 2033 is calculated from the development of the working population (expressed in full-time equivalents) and the growth rate of labour productivity.

⁹ An overview of analyses of the development of labour productivity in Switzerland can be found in sources such as Colombier (2014) and issue 1-2/2016 of Die Volkswirtschaft published by the State Secretariat for Economic Affairs.

¹⁰ See Hauzenberger et al. (2021)

Figure 5: Development of real GDP 1990-2022 and in the baseline scenario (%)

Source: FSO, SECO (autumn 2023), FFA

From 2024 to 2027, real GDP growth is driven by the economy (see Figure 5). GDP then returns to its medium to long-term growth path. On an annual average, real GDP increases by 1.5% in the baseline scenario, whereby from 2022 to 2040, with a 1.6% increase, it is marginally higher than the 1.4% increase from 2041 to 2060. Figure 5 also shows how the decline in the working population leads to economic growth in the baseline scenario from 2033 to 2053, initially approaching the annual increase in labour productivity of 1.2%. After 2053, the labour force grows somewhat faster, which leads to higher economic growth.

Labour productivity, real interest rates and inflation are also determined exogenously. Repercussions of the government budget on macroeconomic variables are not taken into account in the underlying macro cohort model or have no effect on the expected long-term economic growth. This report also disregards the implications of a declining labour force and thus a fall in labour supply on productivity and wage development.

2.3 Fiscal policy indicators

The concept of sustainability in relation to long-term fiscal policy development was first discussed in relation to economic policy in the early 1990s. Fiscal policy is sustainable if the debt ratio can be stabilised; over a long period of time at the desired level; in accordance with international convention, at the level of the baseline year; or at a defined target value such as the 60% criterion of the EU Stability and Growth Pact.¹¹ As such, a stable debt ratio is the basis for sustainable public finances.

¹¹ Note that neither theoretical nor empirically backed statements can be made regarding the optimal debt ratio (see Blanchard, 2019).

One of the key determinants for the sustainability of public finances is the primary surplus, i.e. the balance between receipts and expenditure excluding interest on liabilities. Another is the difference between the interest rate for public debt and economic growth. If the interest-growth differential is positive, the general government needs to generate a primary surplus to stabilise the debt ratio; if it is negative, primary deficits may be allowed.

Expenditure and the general government expenditure ratio

The expenditure of the Confederation, cantons, communes and social security funds, which is directly affected by demographic developments in areas such as AHV/IV and healthcare, will increase in the future as a result of the ageing of the Swiss population. In order to estimate the additional burden, these demographic-dependent expenses are set in relation to overall economic income (GDP). An increase in the general government expenditure ratio indicates the extent to which Switzerland's GDP is additionally burdened by demographics. The general government expenditure ratio expresses overall government spending as a proportion of GDP.

Debt ratio and fiscal gap

In order to determine the stability of the debt ratio, two variables have to be compared: the initial value and the target value. If the two values are identical, this is referred to as stable. However, the initial value may not be a desirable target from a fiscal policy stance, for example if the current debt is considered too high. Since an optimum debt level cannot be derived a priori from economic theory, financial sustainability has to be defined with respect to a certain target value. This target value may seek to maintain the level (with no increase in the debt ratio during the observation period), or it may be a specific debt ratio. Fiscal sustainability exists if the debt ratio at the end of the given horizon equals the target level. The debt ratio measures the government's gross debt in relation to GDP.

The fiscal gap is a tried-and-tested method of presenting the deviation of the debt ratio from the set target value. This states the extent to which public finances would need to be improved annually from a certain point in time, in this report from 2028 onwards, to ensure that a certain debt ratio is not exceeded at the end of the period. It is not specified whether this correction is to be made on the expenditure and/or receipts side. If, for example, the fiscal gap for a time horizon up to 2060 is 1% of GDP, the account balances for the three levels of government and the social security funds would have to be improved by around CHF 8 billion a year through to 2060.

In addition to the customary international criterion for stabilising the debt ratio, this report also provides details of the fiscal gap for the sustainability target defined in the Confederation's debt brake, the stabilisation of nominal debt.

The starting point in the baseline year is also important for the results. The financial situation of public finances is also shaped by the economic cycle or crises. In order to avoid temporary influences having a long-term impact, this report applies the cyclical factor used for the debt brake to adjust the revenue from 2021 to 2027 for one-off effects. The assumption regarding unemployment insurance is a return to structural equilibrium at the end of the 2025–27 legislature financial plan at the latest, i.e. from 2028.

Disposable income

In order to show how the demographic-related additional government expenditure would affect the financial situation of Switzerland's inhabitants on average, the development of GDP per capita, i.e. the average income per inhabitant, after deduction of taxes, social contributions and premiums for compulsory health insurance, is taken into account.¹²

For future developments, it is assumed that because of the demographic-related additional burdens for old-age provision, healthcare, long-term care and education, government receipts will have to be increased to such an extent to enable the government to stabilise the debt ratio at the level of the baseline year of 2021, i.e. 27.1% of GDP. This scenario assumes that public finances are fiscally sustainable, which means that there is no fiscal gap. Disposable per capita income defined in this way is inflation-adjusted. If the disposable income per person rises in the future, this means that prosperity rises despite the demographic-dependent additional burden.

2.4 Methodological approach

Presenting the individual demographic-dependent government functions makes it possible to identify the need for fiscal and economic policy action in specific areas. The projection methodology, i.e. the use of a macro cohort model, largely corresponds to that of the EU.¹³ The public budget projections are based on the financial statistics system. The FSO's demographic scenarios form the basis for demographic-related expenditure. The baseline year is 2021. The calculations for the Confederation are also based on the LFP for 2025–2027.

The projections take into account the current legal status quo and the reforms set out in the LFP. The assumption is also made that fiscal rules – including the federal debt brake – are not binding. This is to emphasise the need for fiscal and economic policy action to deal with ageing. As the projections are of future developments, they are subject to uncertainties. The results are therefore to be interpreted in the sense of «if-then» hypotheses: if demographics and the economy develop as assumed, then this will mean an additional burden for public finances due to increased expenditure on AHV and healthcare, for example.

2.4.1 Demographic-dependent expenditure

Detailed projections of expenditure at all levels of government including social security funds were made in those areas most affected by demographic change. These include old-age and survivors' insurance (AHV), disability insurance (IV), healthcare including long-term care, and education. These constituted 39% of total expenditure for the Confederation and the communes in 2021, and in the cantons, it was 71%.

¹² As occupational benefits are not addressed as part of this report, pillar 2 salary contributions are not factored into calculations.
¹³ See European Commission (2024)

Old-age and survivors' insurance and disability insurance

In the area of old-age and survivors' insurance and disability insurance, the projections for AHV and IV expenditure and receipts are made by the FSIO.

For AHV, the FSIO calculates total annuities based on the number of pensioners by age and gender according to the FSO's demographic scenarios, including Swiss and foreign beneficiaries as well as those living outside of the country. These pensions are adjusted in accordance with the mixed index, i.e. fully indexed for inflation but only half-indexed with respect to real wage growth. The FSIO calculates AHV receipts by adding the social security contributions and public sector contributions such as those of the Confederation, which comprise the portion of VAT receipts allocated to old-age insurance, the Confederation's contribution to old-age insurance expenditure (20.2% of annual AHV expenditure) and casino tax.

The projections take into account the AHV-21 reform which came into force in January 2024. This includes an alignment of the retirement ages, with women retiring at 65, and simultaneous compensatory measures (lower reduction rates for early drawing of a pension, more favourable pension calculation formula). There was also a proportional increase in the VAT rate of 0.4 percentage points in favour of the AHV.

The effects of the initiative for a 13th AHV pension payment, which was adopted in March 2024, are discussed in an excursus. The focus here is on the impact on demographic-dependent expenditure, as the counter-financing has not yet been determined.

The IV is financed by social security contributions and the Confederation's contribution. Effective since 2014, the federal contribution is no longer based on disability insurance expenditure, but rather on the development of VAT receipts (Article 78 of the Federal Act on Invalidity Insurance (InvIA)).¹⁴ However, the law stipulates that the Confederation's minimum contribution may not fall below 37.7% of disability insurance expenditure.¹⁵ At the same time, the federal contribution may finance a maximum of 50% of IV expenditure.

Healthcare

The FFA projects healthcare expenditure in several stages, based on an internationally recognised methodology such as that used by the European Commission and the OECD. In a first step, total healthcare expenditure is broken down by age cohort, gender and healthcare services based on the baseline year of 2021. In line with the OECD and European Commission, a distinction is made between long-term care (from the age of 65) and the other areas of healthcare expenditure (excluding long-term care), because the development of expenditure in these areas is influenced differently by the cost drivers in the healthcare system.¹⁶ Based on these projections, the next step involves extrapolating public expenditure on healthcare, whereby expenditure on individual premium reductions and AHV supplementary benefits, which are assigned to social welfare in public financial statistics, are likewise factored in.

¹⁴ As VAT receipts tend to increase more than disability insurance expenditure, the link to VAT receipts is further adjusted by a «discount factor», thereby addressing the fact that the pension system does not follow the general wage trend, but the mixed index.

¹⁵ To calculate the minimum and maximum federal contribution, the expenditure for the IV helplessness allowance is deducted from the IV expenditure, as this is fully financed by the Confederation (Article 77 para. 2 of the InvIA).

¹⁶ See European Commission (2024)

The assumption is that the population's health improves with increasing life expectancy. That means that people born in any given year are half a year younger and correspondingly healthier medically speaking with every extra year of life. As regards healthcare excluding long-term care, the assumption is that expenditure grows by a factor of 1.1 (income elasticity: 1.1) as incomes rise. This disproportional income effect captures the population's increasing demands on the healthcare system, advances in medical technology and increased non medically-indicated care. It is assumed that inflation in the healthcare sector excluding long-term care is 50% higher than general inflation. The above-average increase can be attributed, among other things, to the shortage of healthcare professionals, excessive prices and the Baumol effect (relative price effect).¹⁷

The Baumol effect is particularly pronounced in the area of long-term care from the age of 65 due to the high labour intensity. As such, inflation is assumed to be 75% higher there than in the overall economy. In contrast, the income effect plays no role, as the need for care is not correlated to incomes.¹⁸

Education

For education expenditure, the number of students in secondary and tertiary education is projected per age cohort. This is based on the FSO's education forecasts, which extrapolate current demographic trends for all levels of education up to 2031. These projections are based on the FSO's middle population scenario (A-00-2020). In this instance, it is assumed that the proportions of pupils and students per age cohort remain constant.

The method used for the report is based on the European Commission's methodology for education, so there are no projections at preschool level. Research expenditure in education is based on the assumption that it is uncorrelated to demographics. It is therefore extrapolated using GDP.

2.4.2 Non-demographic-dependent expenditure

For expenditure that is not demographic-dependent (with the exception of interest expenditure), a simplified assumption is generally made that this grows in line with nominal GDP, thereby maintaining a constant proportion of GDP over time. This assumption is taken in most comparable studies, given the difficulty in making any quantitative estimates regarding the impact of demographic change on such expenditure. One exception to this is the Confederation, for whom the expenditure growth in the years to 2027 is based on the LFP for 2025–2027. Unemployment insurance expenditure is likewise extrapolated for the long term on the basis of the nominal GDP growth rate.

2.4.3 Receipts

It is generally assumed that the ratio of receipts to GDP remains constant under the general assumption of no policy change. Accordingly, receipts increase in line with nominal GDP for the three levels of government.

¹⁷ The Baumol effect can be explained as follows: the high labour intensity in the healthcare sector implies relatively low productivity growth. This creates cost pressure if healthcare wages grow in line with those in the rest of the economy over the longer term. If demand for healthcare services is relatively inelastic, prices rise correspondingly more than in the rest of the economy (see Colombier (2012)).

¹⁸ See Brändle and Colombier (2022) for a detailed discussion on cost drivers in the context of healthcare expenditure projections.

This rule is not applied in relation to the profit distribution agreement between the Federal Department of Finance (FDF) and the Swiss National Bank (SNB). The current agreement, valid from 2020 to 2025, provides for a maximum distribution of CHF 6 billion to the Confederation and cantons. The amount depends on the threshold values of the respective SNB balance sheet profit. The maximum distribution comprises a base amount of CHF 2 billion and a (maximum) supplementary distribution of CHF 4 billion. Given the SNB's high balance sheet loss in 2022, the profit distribution is expected to remain below the maximum for some time. A gradual increase is therefore assumed in the projections, up to a maximum in 2032. The profit distribution of CHF 6 billion is assumed to remain constant thereafter up to 2060.

2.4.4 Interest-dependent expenditure and receipts

For expenditure on interest payable, a nominal long-term interest rate of 2.4% and a short-term rate of 1.4% are used. It is further assumed that the composition of federal, cantonal and communal debt in terms of short and long term corresponds to the average of the past ten years (Confederation: 20% short term, 80% long term; cantons 25% short term; 75% long term; communes 60% long term, 40% short term). A historically based interest premium of 0.3 and 0.8 percentage points is assumed for the interest payments of the cantons and communes.

2.4.5 Alternative scenarios: migration and productivity

The uncertainty regarding the influence of key determinants on the projection results is illustrated using alternative scenarios.

First, the labour productivity growth, which is 1.2% in the baseline scenario, is varied by plus/minus 0.5 percentage points respectively in two scenarios. This takes account of the fact that future growth in labour productivity is dependent on a number of factors that are difficult to predict, such as productivity surges, innovations or structural change.

Secondly, as a key factor influencing demographic change, migration is placed into two scenarios. The high migration scenario assumes a higher net immigration than in the baseline scenario and the low migration scenario assumes a correspondingly lower migration. By 2029, the symmetrical difference in net immigration for both scenarios compared to the baseline scenario increases from 12,000 people to 15,000 people. Thereafter, the difference remains constant until 2060.

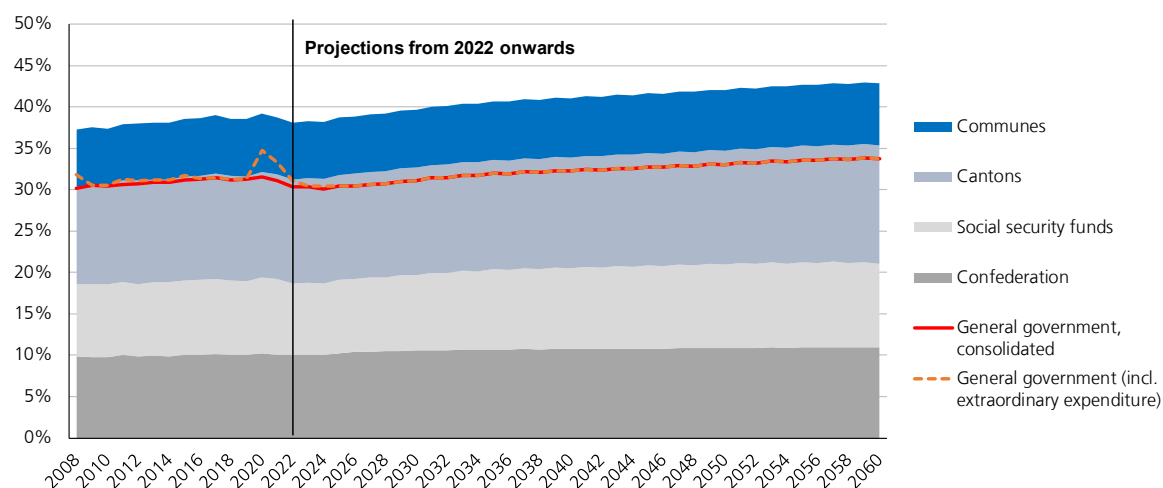
2.5 Results

This section presents the effects of the ageing population on the general government expenditure ratio and the demographic-related expenditure. In a further step, the discussion extends to government debt, the fiscal gap and the consequences for disposable income. The additional expenditure resulting from the adoption of the initiative for a 13th AHV pension payment is discussed in an excursus.

2.5.1 Development of the general government expenditure ratio

The general government expenditure ratio increased from 30.2% in 2008 to 31.1% in 2019 (see Figure 6). In 2020, it rose to 34.8% initially due to the extraordinary expenditure of the COVID-19 crisis and remained at 33.3% in the 2021 baseline year, before gradually returning to pre-crisis levels.

Figure 6: Development of general government expenditure in the past and in the baseline scenario (in % of GDP)



Source: FFA

Note: The general government expenditure ratio is adjusted to allow for transfers between the different levels of government. Extraordinary expenditure is shown for illustrative purposes, but is not taken into account for the general government expenditure ratio projections in the long term.

In the baseline scenario, the general government expenditure ratio decreases initially from the baseline year of 2021 to 30.3% in 2023, due to a sharp rise in nominal GDP. It then rises steadily to 33.7% by 2060. This is primarily due to the increase in demographic-dependent expenditure which rises from 17.2% of GDP in 2021 to 19.8% in 2060 (see Table 3).

2.5.2 Development of the demographic-dependent expenditure

The demographic-dependent expenditure includes the areas of old-age and survivors' insurance (AHV), disability insurance, (IV), healthcare, long-term care (from age 65) and education. As well as providing projections for these areas, the results of the expenditure projections are broken down into the federal, cantonal and communal levels of government and the social security funds.

Expenditure ratios by area

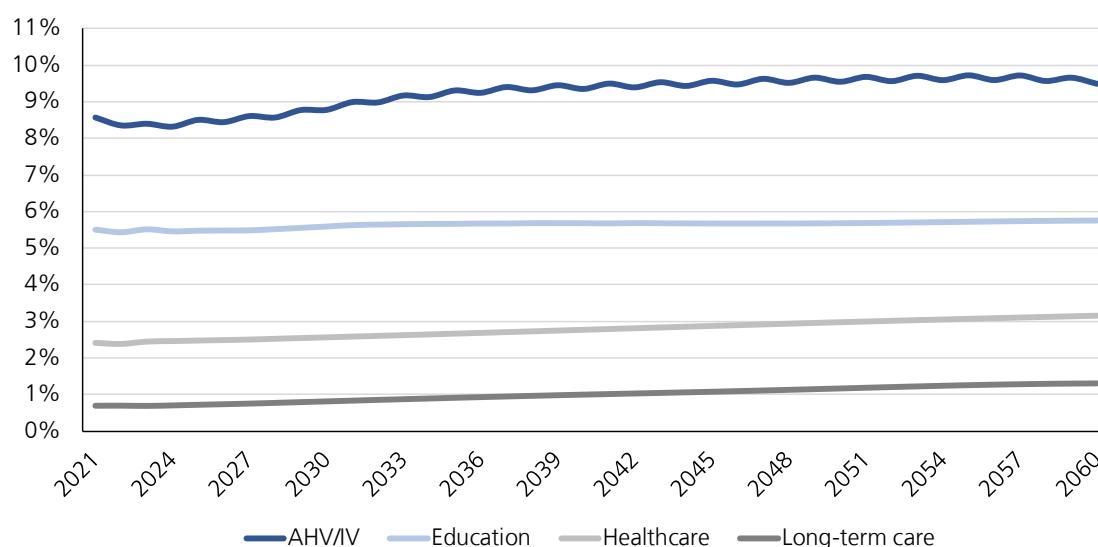
In the projections, 53% of the increase in demographic-dependent expenditure is attributable to the healthcare system (health 29%, and long-term care 24%), 36% to old age and survivors' insurance (with AHV/IV supplementary benefits) and 10% is attributable to education (see Table 3). Accordingly, the greatest pressure on public spending comes from the healthcare system, followed by old-age and survivors' insurance. Education expenditure records the smallest increase.

Table 3: Demographic-dependent government expenditure by area in the baseline scenario (in % of GDP)

Year	2021	2040		2060	
Area	Share	Share	Deviation vs. 2021	Share	Deviation vs. 2021
Social security funds	8.6	9.4	+0.79	9.5	+0.93
AHV	4.6	5.4	+0.77	5.6	+1.02
IV	0.8	0.6	-0.22	0.5	-0.30
Healthcare	2.4	2.8	+0.36	3.1	+0.74
Long-term care	0.7	0.9	+0.22	1.3	+0.61
Education	5.5	5.7	+0.17	5.7	+0.25
Total	17.2	18.8	+1.64	19.8	+2.56

Source: FFA

Note: The general government expenditure is adjusted to allow for transfers between the different levels of government. In addition to AHV and IV expenditure, the functional definition of social security also includes other expenditure such as supplementary benefits for AHV and IV.

Figure 7: Development of the demographic-dependent expenditure by area in the baseline scenario (in % of GDP)

Source: FFA

The ageing of the population impacts the individual areas differently over the projection horizon (see Figure 7). The cost pressure in the area of old-age and survivors' insurance comes solely from AHV benefits. The retiring baby boomer generation raises the additional burden on the AHV, in particular up to 2040 (see Table 3). Between 2040 and 2060, the increase in expenditure on AHV slows down. The favourable trend in IV expenditure can partially offset the additional burden of the AHV. The IV expenditure grows more slowly than GDP because the number of IV pensioners is growing at a lower rate than GDP. As a result, the population share of the IV insurance pool (0–65 year olds) is reducing (see Figure 3).

Expenditure on education also increases most in the period up to 2040. This is because the numbers of pupils and students rise sharply initially, before they begin to fall from the early 2030s.

In contrast, in the healthcare and long-term care sector, it is not only ageing but also non-demographic factors such as advances in medical technology that increase expenditure. The pressure on healthcare expenditure will therefore continue over the entire period. In long-term care, costs will also increase due to the fact that over the projection period, the proportion of the population aged 80 and over will double, due to the ageing baby boomers and increasing life expectancy (see Figure 3).

Expenditure ratio by level of government

The different levels of government are each affected differently by the demographic additional burdens (see Table 4). Expenditure by the Confederation and the social security funds, for which the Confederation is responsible (AHV/IV), will see the highest overall increase at 1.2% of GDP.

Table 4: Demographic-dependent expenditure by government level in the baseline scenario (in % of GDP)

Year	2021	2040		2060	
Government level	Share	Share	Deviation vs. 2021	Share	Deviation vs. 2021
Confederation	3.9	4.3	+0.41	4.4	+0.53
Social security funds	5.4	6.0	+0.54	6.2	+0.71
AHV	4.6	5.4	+0.77	5.6	+1.02
IV	0.8	0.6	-0.22	0.5	-0.30
Cantons	5.5	6.0	+0.51	6.5	+0.99
Communes	2.4	2.5	+0.16	2.7	+0.30
General government	17.2	18.8	+1.64	19.8	+2.56

Source: FFA

Note: The general government expenditure is adjusted to allow for transfers between the different levels of government.

The social security expenditure ratio will increase significantly by 2060, with a gain of 0.7% of GDP. The pressure on costs is driven by the AHV. The increase in expenditure caused by the retiring baby boomers is relatively high (just under 0.8% of GDP) until 2040. The dynamics slow down somewhat after 2040, as cohorts from lower birth years enter retirement. The AHV 21 Reform, which primarily involves raising the retirement age for women to 65, along with a medium-term reduction in IV expenditure in relation to GDP, will curb expenditure growth. The IV trend can be explained by the fact that the number of IV pensioners is growing in line with the labour force. Yet due to the demographic change, the labour force is growing more slowly than the 65+ age group.

For the federal budget (+0.53% of GDP), the greatest cost pressure is coming from the AHV and its supplementary benefits (+0.3% of GDP), although development of this is cushioned somewhat by the IV. Expenditure on individual premium reductions (IPR) is also rising (+0.2% of GDP). The federal budget will be carrying the cost of the retiring baby boomers until 2040. After 2040, demographic pressure on federal expenditure will ease.

The cantons' demographic-dependent expenditure will also increase significantly, by just under 1% of GDP. The pressure on expenditure is due in particular to health (+0.6% of GDP) and, to a lesser extent, to long-term care (+0.3% of GDP). By 2040, the growth in cantonal expenditure will also be influenced by education (+0.1% of GDP).

The communes will incur the lowest additional expenditure (+0.3% of GDP by 2060). By 2040, expenditure will be impacted by long-term care (+0.1% of GDP) and education (+0.05% of GDP). After 2040, the care sector will be almost solely responsible for the additional burden.

Excursus: The impact of the popular initiative for a 13th AHV pension payment

The effects on demographic-dependent expenditure of the popular initiative «For a better life in old age» (initiative for a 13th AHV pension payment), which was approved by the people and cantons on 3 March 2024, are briefly presented here within the scope of the fiscal sustainability report projections. The AHV calculations required were prepared by the FSIO. However, the content and direct consequences of the initiative for the AHV budget are first presented separately.

The initiative calls for an annual supplement for people drawing an old-age pension. This is intended to offset the increased cost of living. Supplementary benefits may not be reduced. The initiative does not provide for any specific counter-financing.

According to the FSIO, the 13th monthly pension will create additional expenses of CHF 3.3 billion for the AHV and CHF 800 million for the Confederation in 2026. Overall, AHV expenditure will therefore rise by CHF 4.1 billion (0.5% of GDP). According to the FSIO's calculations, with no counter-financing for the initiative, the difference between AHV income and expenditure, excluding capital gains, will be in the red as soon as 2026, rather than 2031. Additionally, the AHV fund balance would have almost halved by 2033 (97% vs. 45% of the AHV annual expenditure).¹⁹

Given that the necessary counter-financing for the initiative has not yet been determined, only the change in demographic-dependent government expenditure is reflected in these supplementary projections for the fiscal sustainability report (cf. Table 4a). Statements on the development of the debt ratio and the fiscal gap would not be meaningful without any information on the counter-financing.

Table 4a: Demographic-dependent expenditure by government level with the 13th pension payment, compared to the baseline scenario (in % of GDP)

Year	2021	2040		2060	
Scenarios	Baseline year	Baseline scen.	13th AHV pens.	Baseline scen.	13th AHV pens.
Government level	Share	Share	Deviation to baseline scen.	Share	Deviation to baseline scen.
Confederation	3.9	4.3	+0.12	4.4	+0.13
Social security funds	5.4	6.0	+0.47	6.2	+0.50
AHV	4.6	5.4	+0.47	5.6	+0.50
IV	0.8	0.6	+0.00	0.5	+0.00
Cantons	5.5	6.0	+0.00	6.5	+0.00
Communes	2.4	2.5	+0.00	2.7	+0.00
General government	17.2	18.8	+0.59	19.8	+0.63

Note: The general government expenditure is adjusted to allow for transfers between the different levels of government.

The 13th AHV pension payment directly changes the level of expenditure for the AHV and the Confederation. The majority of the increase is already apparent in 2040. When the 13th AHV pension payment is included, expenditure is around 0.6% of GDP higher than expenditure in the baseline scenario without the 13th AHV pension payment. In 2060, the additional burden for the Confederation and the AHV rises to just over 0.6% of GDP compared to the baseline scenario (without the 13th AHV pension payment). Taking into account the 13th AHV pension payment, the expendi-

¹⁹ See FSIO (2024)

ture ratios of the Confederation and the social security funds go up to 11.2% of GDP. This means that demographic-dependent government spending will be a quarter higher in relation to GDP than in the baseline scenario (19.8 vs. 20.4% of GDP). Only the federal level is affected, with the Confederation directly bearing one fifth of the additional burden (+0.13% of GDP) and the AHV the remainder (+0.5% of GDP). This analysis of expenditure alone shows that counter-financing needs to be tackled quickly.

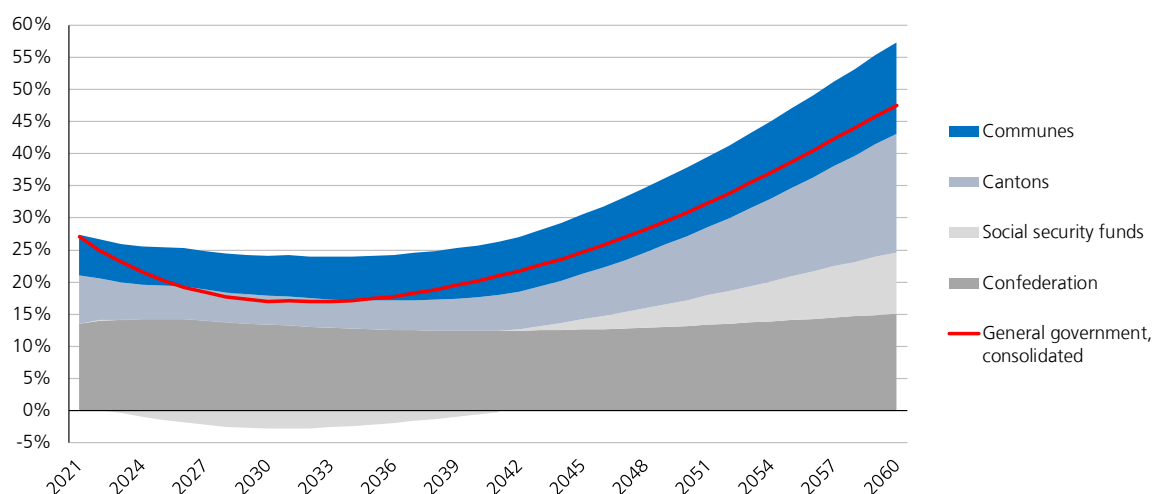
2.5.3 Development of the debt ratio and fiscal gap

Debt ratio

The increase in demographic-dependent expenditure means that current benefit entitlements will have to be financed by higher taxes, social security contributions or savings in future. If no steps are taken to restore the financial equilibrium between receipts and expenditure, government gross debt measured against GDP (debt ratio) would rise in the basis scenario from around 27% to 48% between 2021 and 2060 (see Figure 8). This development can be explained by rising demographic-related expenditure.

As mentioned, receipts are linked proportionally to the development of GDP, in line with international practice. Exceptions are the period up to the end of the Confederation's legislature financial plan in 2027 and the SNB profit distributions to the Confederation and cantons.

Figure 8: Development of debt by government level in the baseline scenario
(in % of GDP)



Source: FFA

Note: The general government's debt ratio is adjusted to allow for transfers between the different levels of government.

Based on these assumptions, the general government's debt ratio sinks at first, down to just below 17% of GDP by 2033, before it begins to rise steadily. The AHV 21 reform is one of the reasons behind this, thanks to which there will not be regular social security deficits until 2032, along with the positive IV trend. The assumed successive increase in the SNB profit distributions between 2024 and 2032 from CHF 1.3 billion to CHF 4 billion will work in favour of the cantons. The general government's debt ratio will also benefit from the annual average growth in nominal GDP exceed-

ing its long-term trend until 2030. At the same time, the annual average interest rate on the state debts is also relatively low at 1.4%.

Table 5: Gross debt by government level in the baseline scenario (in % of GDP)

Year	2021	2040		2060	
Government level	Share	Share	Deviation vs. 2021	Share	Deviation vs. 2021
Confederation	13.5	12.4	-1.10	15.1	+1.56
Social security funds	0.0	-0.6	-0.62	9.5	+9.46
Cantons	7.5	5.2	-2.30	18.4	+10.90
Communes	6.2	8.0	+1.80	14.3	+8.02
General government	27.1	20.1	-6.99	47.5	+20.41

Source: FFA

Note: The general government's debt ratio is adjusted to allow for transfers between the different levels of government. The debt ratios at individual levels of government are not adjusted for intergovernmental transfers.

Contrary to this trend, the burden at federal level increases in view of various expenditure challenges in the legislature financial plan period. At federal level, debt rises from 13.5% in 2021 to 14.3% in 2026. The demographic-related additional federal burden that is effective in the long term can largely be counterbalanced by the assumed SNB profit distributions, the AHV 21 reform, the IV and favourable macroeconomic developments during the projection period. This means the federal debt ratio in 2060 (15.1%) does not deviate significantly from the baseline year (see Table 5).

However, the federal level is also responsible for social security. In 2021, the social security funds have no significant gross debt.²⁰ Thanks to the AHV 21 reform and the favourable IV development, the social security funds can generate surpluses at first which will begin to fall from 2030 due to the worsening AHV situation. From 2033, the AHV deficits will be causing the social security funds to generate losses, which will accumulate to a debt ratio of 9.5% of GDP by 2060.

The increase in the demographic-related cantonal expenditure ratio is also reflected in the development of the debt ratio. As such, the debt ratio of the cantons rises from 7.5% in 2021 to 18% in 2060, at the highest rate of all the levels of government. This development is also significantly impacted by expenditure on healthcare and long-term care and, until 2040, also by expenditure on education.

The debt ratio of the communes rises from 6.2% to 14%, with the development of expenditure on long-term care being primarily responsible for this. Increasing education expenditure also plays a role in the period leading up to 2040.

Fiscal gap

The fiscal gap reflects the development of the debt ratio. It indicates the degree to which (based on the assumptions) permanent savings, contribution increases or tax hikes will be necessary from 2028 onwards in order for the debt ratio to be stabilised at the level of the baseline year of 2021 by 2060, which would mean the fiscal policy was sustainable. The general government's fiscal gap is just under 0.7% of GDP (around CHF 5.2 bn) (see Table 6). This means that the development of

²⁰ In accordance with international standards, the fiscal sustainability report incorporates the gross debt ratio as a key figure, which means the assets of the AHV and IV funds are not considered.

public finances is deemed to be unsustainable due to the demographic change and there is a corresponding need for fiscal and economic policy reform.

Table 6: Fiscal gap in the baseline scenario at the start of consolidation in 2028
(in % of GDP)

Government level	Annual consolidation requirement 2028–2060	
	Debt ratio	Debt level
Confederation	0.05	0.34
Social security funds	0.32	0.32
Cantons	0.35	0.50
Communes	0.27	0.40
Staat	0.68	1.24

Source: FFA

Note: The general government's fiscal gap ratio is adjusted to allow for transfers between the different levels of government. The fiscal gap at individual levels of government does not take into account intragovernmental transfers.

The fiscal gaps of the social security funds, the cantons and the communes are at roughly the same level, while the Confederation has a smaller fiscal gap. Yet the Confederation is also responsible for the social security funds, which means that overall, there is a more pronounced need for fiscal and economic policy action at federal level.

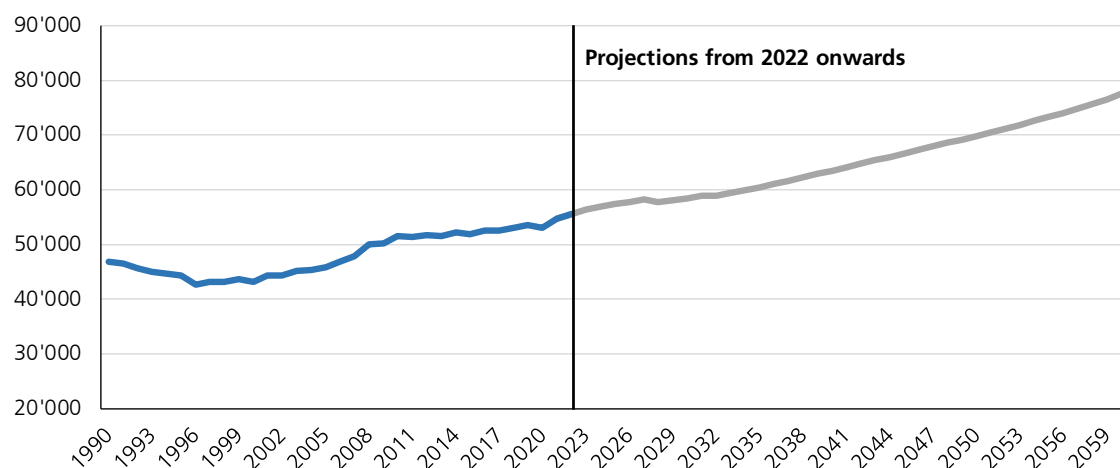
If the stricter sustainability criterion of the debt brake is assumed for all levels of government, i.e. stabilisation of the debt level in Swiss francs at the level of the baseline year, then all the levels of government apart from the social security funds show a higher fiscal gap (see Table 6). As such, the general government's fiscal gap increases when stabilising the debt level in Swiss francs compared to the target of stabilising the debt ratio from 0.7% to 1.2% of GDP. The fiscal gap of the social security funds remains unchanged because they are debt free in the baseline year of 2021.

It is also noteworthy that the fiscal gap increases if the start of the consolidation is postponed until after 2028. Postponing the start of the consolidation would increase the annual correction requirement for public finances.

2.5.4 Development of disposable income

The disposable income per capita of the Swiss population is used to show how strong the additional burden is felt on average by Swiss residents if the debt ratio of the general government is stabilised at its current level, with the additional demographic-dependent expenditure financed through higher taxes and social security contributions, for example. For the purposes of this report, disposable per capita income is displayed as the inflation-adjusted average income per capita after deduction of taxes, social security contributions and compulsory health insurance premiums.

Figure 9: Disposable income per capita from 1990 to 2021, and in the baseline scenario
(in CHF at 2021 prices)



Source: FFA, SECO, FSO

Note: Given that the consolidation of public finances is assumed to start in 2028, the inflation-adjusted per capita income falls abruptly between 2027 and 2028.

Disposable income rises on average in the baseline scenario, despite the additional burden indicated by the fiscal gap (see Figure 9). The increase is mainly due to the assumed productivity growth of 1.2% per annum. According to the baseline scenario, disposable income increases by 0.9% per annum between 2021 and 2060. This means the projected income is growing faster than in the period from 1990 to 2021, with a growth rate of 0.5%. However, if we exclude the stagnation period of the 1990s, the growth in disposable income in the period from 2000 to 2021 (1.1%) is slightly higher than in the baseline scenario to 2060.

The development of disposable income illustrates that the level of prosperity of the Swiss population can still increase under plausible assumptions, despite the additional burden caused by the ageing of the population. However, it should be borne in mind that this analysis does not take into account other potential financing burdens, for example due to geopolitical challenges and climate change.

2.5.5 Sensitivity analysis: migration and productivity

The alternative scenarios encompass one scenario with higher productivity growth in the long term (1.7%) and one scenario with a lower productivity growth rate (0.7%). Then two further scenarios are considered, with higher/lower net immigration – high migration and low migration.

Demographic-dependent expenditure

First of all, the results of the alternative scenarios are analysed in relation to the productivity gain. While a higher productivity growth reduces the additional burden on public finances overall, due to ageing, a lower productivity growth would increase the additional burden (see Table 7). The three levels of government and the social security funds are affected differently by a change in the assumption on productivity growth.

For the Confederation and in particular for the social security funds, the spending pressure in relation to GDP decreases with a higher productivity growth. This is explained by the fact that AHV/IV

pensions are indexed to the mixed index, which means that when the same population development is assumed as in the baseline scenario, the pensions have disproportionately low growth relative to GDP.²¹

By contrast, a higher productivity growth causes a higher additional burden than in the baseline scenario for the cantons. This is due to the pressure on healthcare expenditure. Demand for healthcare services (without long-term care) is therefore assumed to increase at a higher rate than GDP. In addition to this, there is cost pressure due to the expected shortage of healthcare professionals, excessive tariffs and lower productivity gains in the healthcare sector.

Long-term care is the dominant driver of expenditure for the communes. Expenditure on care is largely driven by ageing, which means that the higher productivity and economic growth cause the expenditure on care to decrease slightly in relation to GDP compared to the baseline scenario.

Table 7: Demographic-dependent general government expenditure scenarios compared to the baseline scenario (in % of GDP)

Year	2021	2060				
Scenarios	Baseline year	Baseline scenario	Productivity		Migration	
Government level	Share	Share	+0.5	-0.5	High	Low
Confederation	3.9	4.4	-0.10	+0.13	-0.08	+0.10
Social security funds	5.4	6.2	-0.35	+0.40	-0.34	+0.42
AHV	4.6	5.6	-0.34	+0.39	-0.32	+0.39
IV	0.8	0.5	-0.01	+0.01	-0.02	+0.03
Cantons	5.5	6.5	+0.12	-0.10	+0.07	-0.05
Communes	2.4	2.7	-0.04	+0.04	+0.05	-0.05
General government	17.2	19.8	-0.37	+0.46	-0.25	+0.37

Source: FFA

Note: Taking SECO's medium-term outlook into account means that the alternative scenarios only differ from the baseline scenario in terms of economic assumptions from 2033 onwards. The alternative scenarios show differences to the baseline scenario in 2060.

Higher net immigration into the labour market also reduces the overall burden on public finances. If net immigration were to be lower, the burden on public finances would be correspondingly greater. However, the different levels of government are again affected differently. The following comments refer to the scenario with high migration.

In this scenario, stronger economic growth results from higher net immigration, which leads to an increase in the working-age population. This benefits the social security funds primarily. Economic growth accelerates without the AHV/IV pensions rising more sharply. This also reduces the burden on the Confederation in terms of AHV and IV contributions.

As it is primarily comparatively healthy people of working age who immigrate, the cantons and communes benefit from a slight relief in the burden of health and care expenditure. On the other hand, an additional burden is caused by a stronger increase in education expenditure, which is attributable to a higher increase in the number of pupils and students than in the baseline scenario. This results in a slightly increased burden for the cantons and communes overall.

²¹ The mixed index consists of half the inflation rate and half the nominal wages growth. Wages are assumed to increase in line with inflation and productivity gain.

Debt ratio

The development of demographic-dependent expenditure in the alternative scenarios is reflected accordingly in the change in the debt ratio. Both an increase in productivity growth and higher net immigration lead to a lower general government debt ratio than in the baseline scenario (see Table 8). The debt ratio increases in the pessimistic scenarios.

Table 8: Debt ratio compared to the baseline scenario (in % of GDP)

Year	2021	2060				
Scenarios	Baseline year	Baseline scenario	Productivity		Migration	
	Share	Share	+0.5	-0.5	High	Low
Government level						
Confederation	13.5	15.1	-2.96	+3.59	-1.78	+2.23
Social security funds	0.0	9.5	-5.38	+6.58	-10.31	+12.09
Cantons	7.5	18.4	+0.84	-0.69	+3.35	-3.37
Communes	6.2	14.3	-1.88	+2.17	+1.43	-1.35
General government	27.1	47.5	-8.32	+10.32	-0.29	+2.38

Source: FFA

Note: The general government's debt ratio is adjusted to allow for transfers between the different levels of government. The debt ratios at individual levels of government are not adjusted for intergovernmental transfers. The alternative scenarios show differences to the baseline scenario in 2060.

With higher productivity growth, the general government debt ratio in 2060 is significantly lower than in the baseline scenario. This is due to the fact that except for the cantons all levels of government and the social security funds will have a reduced burden.

Higher net immigration, on the other hand, only reduces the debt ratio slightly, as the opposing effects on the demographic-dependent expenditure of the Confederation and the social security funds on one side and the cantons and communes on the other largely offset each other. The noticeable positive effects of net immigration on the social security funds and primarily on the AHV are also confirmed in a recent study by the FSIO.²²

The results of the debt ratio suggest that the need for fiscal and economic policy action is reduced by stronger economic growth and increased by weaker growth.

2.6 Comparison with the 2021 fiscal sustainability report and international studies

2.6.1 Comparison with the 2021 fiscal sustainability report

Like the last fiscal sustainability report in 2021, these projections take into account public spending on the COVID-19 crisis. Since the report on the long-term prospects for 2021, the FSO's underlying population scenario A-00-2020 has been updated to include the years 2020 and 2021 to allow the demographic effects of the COVID-19 crisis to be taken into account.

The Confederation's current legislature financial plan for 2025-2027 is also included in this report and the projection period has been extended from 2050 to 2060. The macroeconomic assumptions of SECO's medium-term outlook, which runs to 2032, have also been adopted for the first time in

²² See FSIO (2023)

the 2024 fiscal sustainability report. As such, in contrast to the 2021 fiscal sustainability report, it is now assumed that the economy will only reach its long-term growth path with a longer delay of five additional years. This means that the effects of the change in long-term assumptions regarding productivity progress and net immigration presented in the alternative scenarios will be softened.

The long-term macroeconomic assumptions regarding productivity growth and inflation of 1.2% and 1% per annum remain unchanged from the 2021 report, but real interest rates are assumed to be 1.4% in the long term rather than 1.6%. However, experience shows that the change in real interest rates does not have a major impact on the results of the projections. Unlike the 2021 report, it is assumed that the SNB profit distributions to the Confederation and cantons gradually increase to CHF 6 billion by 2032. In the 2021 fiscal sustainability report it was assumed that this amount would be distributed for the entire projection period from 2019 to 2050.

The current projections confirm the results of the 2021 fiscal sustainability report, according to which the COVID-19 crisis had a temporary effect on public finances. As in the 2021 fiscal sustainability report, the greatest pressure on general government expenditure from the ageing population comes from old-age provision, healthcare and long-term care. Education expenditure plays a minor role. While the Confederation and social security funds are affected by the demographic change in particular through old-age provision, the cantons are mainly affected by the healthcare system. The communes are mainly affected by long-term care and education.

The general government fiscal gap appears *prima facie* somewhat lower than in the 2021 fiscal sustainability report (0.7% vs. 0.8% of GDP). However, the fiscal gap is not directly comparable, as the assumed consolidation period in the current report is seven years longer at 32 years. If the consolidation period were shortened to the same length as in the 2021 fiscal sustainability report, i.e. 25 years, the fiscal gap would increase from 0.7% to 0.9%. In reality, the fiscal gap has thus increased by 0.1 percentage points compared to the 2021 fiscal sustainability report.

The slightly higher need for consolidation can largely be explained by the more pessimistic assumption on the development of SNB profit distributions. This leads to a higher cantonal fiscal gap. By contrast, the AHV-driven spending pressure is somewhat weaker, meaning that the Confederation and cantons have slightly lower fiscal gaps. The communes' fiscal gap hardly changes.

2.6.2 Comparison with international studies

All developed countries are affected by demographic change and have an ageing population, albeit to varying degrees. The European Commission and various countries regularly produce reports aimed at quantifying the impact of demographic change on future national budgets.²³ The European Commission's Ageing Report, which is methodologically similar to this report, is particularly interesting for a comparison of the development of demographic-related expenditure. The OECD projections published in the latest OECD country report for Switzerland are also briefly discussed.

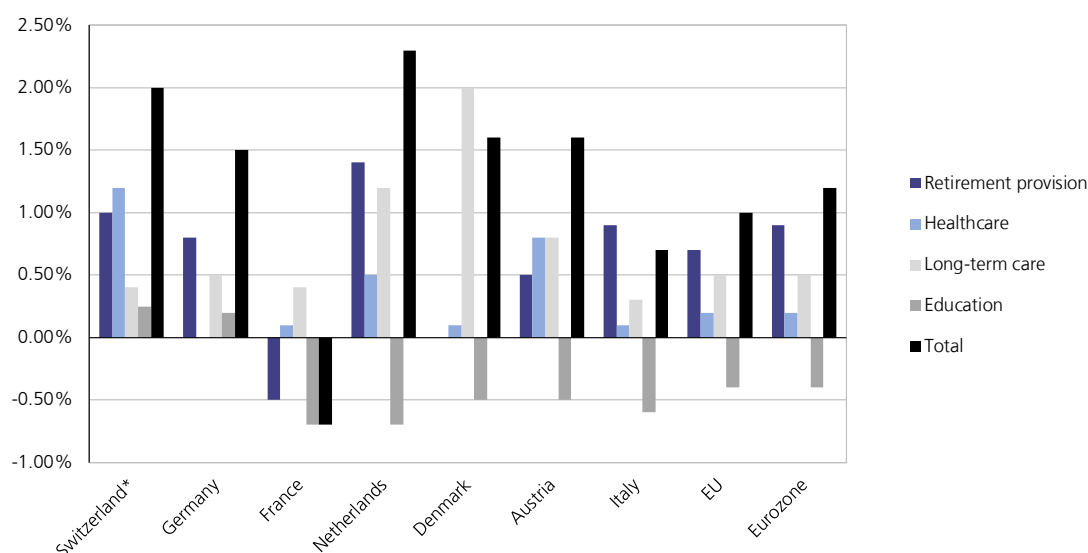
²³ See e.g. the European Commission's Ageing Report (European Commission 2024), the Long-Term Budget Outlook by the US Congress (Congressional Budget Office, 2023), the Fiscal risks and sustainability report of the UK OBR (Office for Budget Responsibility, 2023) and the Long-term budget forecast by the Austrian Federal Ministry of Finance (2022).

European Commission

In the European Commission's current Ageing Report 2024, the foreseeable demographic development in the EU is comparable to that of Switzerland – both have a strongly ageing population structure. In 2022, the ratio of over 65-year-olds to the working-age population (old-age dependency ratio) will be 36% on average in the EU and 32% in Switzerland.²⁴ According to the population scenarios, an average old-age dependency ratio of 58% is expected in the EU in 2060 and 50% in Switzerland. The ageing of the Swiss population is therefore developing at a slower rate than the EU average. Ageing is progressing at a similar rate in Germany and France, where the old-age dependency ratios will rise from 37% and 38% respectively in 2022 to 52% and 55% in 2060. By contrast, the population in Austria is ageing much faster than in Switzerland. The old-age dependency ratio is increasing from 32% to 55% over the same period.

Long-term real GDP growth is lower on average in the EU and the eurozone than in Switzerland. The European Commission projects an annual average GDP growth rate of 1.3% for the EU and of 1.2% for the eurozone from 2022 to 2070. At 1.5% per annum, the growth rate for Switzerland from 2022 to 2060 is slightly higher. For Germany and France, the European Commission is projecting a significantly lower real GDP growth rate of 1.1% per annum. Austria is right in line with the EU average.

Figure 10: Development of the demographic-dependent expenditure in the EU and Switzerland from 2022 to 2045 according to the baseline scenario (in % of GDP)



Source: European Commission (2024), FFA

Note: A comparison up to 2060 would not change the quality of the results.

*Switzerland: 2021–2045. For better comparability, compulsory health insurance is taken into account because, unlike other European social health insurance funds, it is not part of the general government sector. The insurance is offered by private insurers.

According to the European Commission, demographic-dependent government spending (pensions, healthcare, long-term care, education) will increase by 1% of GDP in the EU between 2022 and 2045 (see Figure 10). At 1.2% of GDP, the increase for the eurozone is slightly higher. This

24 See European Commission (2023) and European Commission (2024)

increase is mainly due to an increase in expenditure on old-age provision and long-term care. With the exception of Germany, the increase in expenditure is cushioned by education. The decline in education expenditure can be explained by a decrease in the proportion of the population aged 0 to 24 in the EU. With the exception of Austria and the Netherlands, the increase in healthcare expenditure is relatively low. Among the EU countries analysed in Figure 10 and Switzerland, the Netherlands recorded the strongest growth in total demographic-dependent expenditure with an increase of 2.3% of GDP. With the exception of education, all areas affected by demographic change are growing significantly. By contrast, total demographic-dependent expenditure for France will fall from 2022 to 2045 due to the projected decline not only in education but also in healthcare expenditure.

At 2.0% of GDP, Switzerland has a relatively big increase in demographic-related expenditure compared to the EU. This is mainly due to the projected increase in healthcare expenditure. Switzerland has one of the most expensive healthcare systems in Europe with high costs dynamics.²⁵ On the other hand, at 1% of GDP, the increase in expenditure on pensions is almost in line with the eurozone average of 0.9% of GDP. At 0.4% of GDP, the increase in expenditure on long-term care is also only just below the EU and eurozone average of 0.5% of GDP.

When making a comparison, however, it should be borne in mind that the healthcare systems in the European countries differ greatly in terms of financing, organisation (state, corporatist, private), cover, scope of services and quality. There are similarly large institutional differences in the pension funds, e.g. in terms of financing, retirement age, structure and scope of benefits.

OECD

In its latest country report on Switzerland, the OECD presents projections for demographic-related expenditure from 2021 to 2060.²⁶ According to the OECD's baseline scenario, government revenue in 2060 would have to be 6% of GDP higher than in the baseline year for fiscal policy to be sustainable and the debt ratio to be able to stabilise at the level of the baseline year.²⁷ However, the projections in this report suggest a significantly lower adjustment requirement of 2.6% of GDP in the baseline scenario.

The respective results are based on different assumptions about demographics and the economy. For example, the OECD bases its projections on the UN's population scenarios, while this report is based on the FSO's population scenarios. Other assumptions are also made about economic development, and the projection methodology of the reports also differs.

2.7 Conclusion

The analysis of the impact of demographic change on public finances shows that the need for fiscal and economic policy action on the part of the Confederation, including social security expenditure, and the cantons is pronounced. Demographic ageing will require further reforms to the AHV at

²⁵ See Brändle and Colombier (2022)

²⁶ See OECD (2024) and Guillemette and Turner (2023)

²⁷ A directly comparable figure is not given in this report.

federal level at the end of the 2020s. This need for fiscal and economic policy action has become even more urgent in light of the adopted initiative in favour of a 13th AHV pension payment, the counter-financing of which must be tackled quickly.

The pressure from healthcare expenditure jeopardises the sustainability of cantonal finances in particular. This highlights the need for reforms aimed at increased efficiency and better control of spending in healthcare. Such reforms would affect the responsibilities of both the Confederation and the cantons.

Comparison with the European Commission's expenditure projections only serves to emphasise this. The above-average increase in demographic-related expenditure in Switzerland compared to the EU is mainly due to the high level of spending on healthcare (including compulsory health insurance). Higher economic growth will tend to make it easier to cope with the additional demographic burden on public finances.

3 Effects of climate mitigation measures on public finances

3.1 Background

Climate change is becoming increasingly apparent and is progressing faster than previously expected. According to the Intergovernmental Panel on Climate Change (IPCC), global warming is primarily due to emissions of greenhouse gases by human. In addition to steadily rising global temperatures, climate change is characterised by more frequent and more intense extreme weather events such as droughts, floods and storms.²⁸ Higher temperatures and rising sea levels can also change entire landscapes and affect food production and living conditions.

Systematic observations of the climate system over many years show that Switzerland is experiencing above-average effects of climate change. The near-surface air temperature has risen by around 2.5 degrees Celsius between the pre-industrial reference period of 1871–1900 and the last few years – significantly more than the global average of around 1 degree.²⁹ The increase in temperature has been particularly pronounced in Switzerland since the 1980s.³⁰ Climate change is making itself felt in Switzerland through decreasing snow cover, melting Alpine glaciers, more frequent and more intense rainstorms and more frequent heat waves.

Switzerland signed the Paris Agreement in 2015 and ratified it in 2017. The agreement obliges countries to reduce their greenhouse gas emissions in order to limit global warming to below 2 degrees Celsius above pre-industrial levels. The aim is to achieve a maximum temperature rise of 1.5 degrees. To help achieve these targets, the Federal Council has been striving since 2019 to halve the 1990 greenhouse gas emission levels by 2030 and to reduce them to the target value of net zero by 2050. The latter goal was enshrined in law in 2023 with the Climate and Innovation Act (CIA).

Macroeconomic turbulence can be caused by climate change itself, climate mitigation measures aimed at reducing greenhouse gas emissions, and also by adjustment measures to climate change. To this end, supervisory authorities and central banks have begun to assess the potential consequences of climate change and climate policy for economic and financial stability.³¹ However, little attention has so far been paid to the climate-related effects on public finances.

A qualitative analysis of the complex interrelationships between climate change and public finances was provided in the 2021 fiscal sustainability report for Switzerland.³² The pilot study on which this chapter is based analyses for the first time the long-term effects of climate mitigation measures to achieve the net zero target on Switzerland's public finances.³³ Projections are used to show how climate policy will change the structure of public revenue and expenditure under the assumptions made and how this affects the budgetary balance and the debt ratios at the different levels of government.

28 Damage caused by extreme weather events in 2022 was estimated at USD 270 billion and 30,704 deaths were recorded.

An estimated 185 million people worldwide were affected by extreme weather events (see IPCC, 2023, and OECD, 2023b).

29 See NCCS (2023)

30 See Begert et al. (2019)

31 See e.g. Banque de France (2020), ECB (2021), Deutsche Bundesbank (2022) and NGFS (2022).

32 The basis for this is a conceptual study conducted by the Federal Finance Administration together with the OECD (see Baur et al., 2021, and Baur & Bruchez, 2021).

33 See Ecoplan (2024). This baseline report is published in parallel to the fiscal sustainability report.

This is a pilot study, as there is still no established international practice for analysing the long-term effects of climate mitigation measures on public finances. The costs of climate change itself, for example the direct costs of rising temperatures, extreme weather events and the loss of biodiversity, are not taken into account due to excessive uncertainties and data gaps. Investments for adjustment measures, for example for dealing with natural hazards or maintaining agriculture, are also not taken into account.³⁴

According to international studies by the IPCC and the Network for Greening the Financial System (NGFS), the economic costs of climate change mitigation will be significantly lower in the long term than the costs of unchecked climate change.³⁵ The climate mitigation measures should help to fulfil the Paris Agreement and limit global warming. This could prevent significant climate-related damage and reduce the need for adjustment measures.

The chapter is structured as follows. Chapter 3.2 briefly addresses the costs of climate change. These costs are not the focus of this study, but they highlight the climate damage future generations could be faced with if sufficient measures are not taken to combat climate change. Chapter 3.3 presents the methodology for analysing the impact of climate mitigation measures on public finances, which is based on the underlying study by Ecoplan (2024). Chapter 3.4 discusses the results. Chapter 3.5 provides a brief categorisation of the results based on initial, comparable international studies. A short conclusion is drawn in Chapter 3.6.

3.2 The costs of climate change

Selected findings from the literature

There is a consensus among researchers that the physical risks of unchecked climate change far outweigh the costs of mitigation. Estimating the ecological and economic impact of climate change is complex and fraught with uncertainty. Calculating the effects of climate change is particularly challenging when tipping points are reached. Tipping points are critical thresholds in the ecosystem which, if exceeded, can lead to significant changes in the system. Examples of this are the Greenland ice sheet collapsing, and the Arctic permafrost thawing, as these could accelerate the pace of climate change and increase the intensity of extreme weather events.

A study by the International Monetary Fund estimates that a temperature rise of around 3 degrees Celsius above the 2020 level by 2100 would lead to a 7% decrease in global GDP per capita in 2100.³⁶ According to the NGFS, a rise in temperature such as this could even lead to a slump in GDP of up to 20% in 2100 if chronic (temperature rise) and acute (extreme weather events) risks are taken into account. A study by Oxford Economics, on the other hand, estimates that a temperature increase of 2.2 degrees Celsius and the resulting extreme weather events will reduce global

³⁴ According to the Energy Perspectives 2050+, investments totalling around CHF 1,400 billion will be required by 2050 for the renewal, modernisation and replacement of existing energy infrastructures, buildings, systems, appliances and vehicles. The net zero by 2050 target increases the investment requirement by CHF 109 billion (about 8%). It is assumed that these investments will mainly be made by Swiss companies (see DETEC, 2022a).

³⁵ See IPCC (2022) and NGFS (2022)

³⁶ See Kahn et al. (2019)

GDP levels by up to 20% already by 2050.³⁷ By way of comparison, the slump in global and Swiss GDP during the COVID-19 crisis was around 3%.³⁸

These results show that climate change will create considerable costs for the economy, but that the extent of cost estimates is subject to major uncertainties and dependent on various assumptions.

According to the European Commission, the economic impact of climate change could already be apparent in the next few years through an increase in the debt ratios of EU countries. According to the latest estimates as part of a stress test analysis, increasingly frequent and intense extreme weather events would increase the debt ratio of Italy, Austria and Germany by 1 to 3 percentage points between 2024 and 2032. Other countries, including Spain, Czech Republic and Greece will be even more exposed to the costs of climate change.³⁹

According to the latest NGFS projections, achieving the net zero target by 2050 would lead to an additional reduction in global GDP of around 2%. Nevertheless, climate change would still lead to a reduction in global GDP of 6% by 2050.⁴⁰ Early expansion of climate mitigation measures is therefore desirable from an economic point of view. In addition, the OECD has estimated in a study that the net zero target could lead to future GDP levels that are on average 3.7% lower in OECD countries in 2050. This is in comparison to a scenario in which climate mitigation measures are not tightened in line with the targets and without considering the economic costs of climate change itself and adaptation measures. According to the OECD study, GDP in Switzerland would be around 2.5% lower in 2050 as a result of climate mitigation measures.⁴¹ The OECD has also estimated that the EU's "Fit for 55" climate target, which aims to reduce emissions by at least 55% from 1990 levels by 2030, will lead to GDP losses in the EU of around 1% in 2030.⁴²

The Federal Council report on the long-term climate strategy of 2050 reports estimates from scientific studies which suggest that uncontrolled climate change in Switzerland would come with a loss of up to 4% of GDP in 2050.⁴³ If, on the other hand, global emissions can be reduced through climate mitigation measures and the global temperature rise limited to 1.5 degrees Celsius, the costs of climate change would only amount to 1.5% of GDP in 2050. This means savings of CHF 20 to 30 billion in 2050 at 2022 prices.

A study by the Swiss Federal Institute of Technology Lausanne (EPFL) also estimates that private consumption in Switzerland is likely to fall by between 0.37% and 1.37% in 2060 as a result of climate change.⁴⁴ This is due to the higher temperatures in summer, which lead to higher mortality rates and lower labour productivity. Yet this analysis only covers part of the climate costs. The effects of climate change on international trade, for example, have not been considered. A decline in demand for Swiss export goods due to climate damage abroad could exacerbate the negative impact on the Swiss economy because partner countries would be less able to afford these goods.

37 See Kiehl & Winter (2022) and Fuje et al. (2023)

38 See World Bank (2023) and SECO (2023)

39 See Gagliardi et al. (2022)

40 See NGFS (2023)

41 See OECD (2023c)

42 See OECD (2023a)

43 See Federal Council (2021)

44 See Vöhringer et al. (2019)

In addition to this, climate change could also lead to increased migration to Switzerland, which in turn would have economic consequences. The variety of channels through which its impacts can manifest themselves on the economy makes it clear that Switzerland will also likely be exposed to several indirect effects of climate change.

Overall, however, it should also be noted that in an international comparison, advanced economies such as Switzerland will be less affected by climate change than developing countries.⁴⁵

The costs of climate change are not taken into account

The costs of climate change itself, often referred to as physical impacts, such as the costs of rising temperatures, extreme weather events and biodiversity loss, are not included in this analysis.

The main reason for not including them is that the database for the costs of climate change and the ways through which they impact the ecosystem and the economy is still insufficient. Taking these costs into account would also significantly increase the complexity of the analysis. The quantification of the impact of climate mitigation measures on public finances would be pushed into the background. Another reason is that the costs of climate change are likely to rise exponentially, especially in the longer term. The period up to 2060 may therefore become less meaningful.

The costs of climate change and adjustment measures in Switzerland are currently being examined as part of the NCCS Impacts research programme which is being carried out by the National Centre for Climate Services (NCCS) and is expected to run until 2025. The aim is to provide a systemic overview of the effects of climate change in Switzerland and to highlight the key challenges for the environment, the economy and society.

It should be noted that taking the costs of climate change into account would put the results on the impact of climate mitigation measures on public finances into perspective. The costs incurred today to expand the climate mitigation measures needed for net zero would reduce the future costs of climate damage and adjustment to climate change. As the costs of climate policy in Switzerland are also very likely to be lower than the costs of climate change itself, economic growth and the associated development of public finances could be higher if the net zero target is achieved by 2050 than if it is not. This is because the costs of climate change would be much higher in a world where net zero were not achieved.⁴⁶

3.3 Modelling the effects of climate mitigation measures on public finances

The methodological approach is based on the study conducted by Ecoplan (2024) on the impact of the net zero emissions target on public finances in the long term. The assumptions are largely based on the results of the Energy Perspectives 2050+ commissioned by the Swiss Federal Office of Energy (SFOE).⁴⁷

⁴⁵ See Guo et al. (2021), Fuje et al. (2023) and Notre Dame Global Adaptation Initiative (2023)

⁴⁶ See IPCC (2022) and NGFS (2022)

⁴⁷ See DETEC (2022a&b)

The analysis of the effects of climate mitigation measures largely assumes the same macroeconomic developments and is based on the same data from public finance statistics as the analysis of ageing in the previous chapter. However, as described in the following sections, the analyses differ in terms of the methodological approach and the degree of uncertainty, which is more pronounced in the climate area. In particular, the analysis of the effects of climate mitigation measures analyses scenarios with policy changes, while the analysis of demographic ageing assumes unchanged legal framework conditions (a “no-policy-change” assumption). In addition, the effects of climate mitigation measures on receipts and expenditure are analysed in detail, while the chapter on ageing focuses on expenditure. These and other differences mean that the results of the two analyses are not directly comparable.

3.3.1 Defining the receipts and expenditure affected by climate mitigation measures

Estimating the impact of the climate mitigation measures on public finances is complex. The climate mitigation measures affect the receipts and expenditure of all three levels of government and the social security system both directly and indirectly.

Direct effects include, for example, declining receipts from mineral oil tax and the CO₂ levy on thermal fuels along with subsidies for the federal and cantonal buildings programme. Indirect effects incorporate for example receipts from direct federal tax and VAT or expenditure on social security, such as federal contributions to social security funds and health insurance individual premium reductions (IPR). These variables are influenced by changes in macroeconomic development as a result of the assumed climate mitigation measures, in particular by reduced growth in gross domestic product (GDP), consumption or wages. Table 9 provides an overview of the direct and indirect effects of the individual revenue and expenditure items.

Table 9: Overview of the affected revenue and expenditure items
Part A: Impact on the revenue

Receipts	direct	indirect	Influencing factor	Level affected	Source
Finances and taxes					
a) Direct taxes, natural persons		X	78% earned income, 22% capital income	Conf, ctn, com	CGE
b) Direct taxes, legal entities		X	GDP	Conf, ctn, com	CGE
c) Wealth taxes		X	Capital income	ctn, com	CGE
d) Tax deductions for energy efficiency measures		X	Additional investments in building renovations and marginal tax rate	Conf, ctn, com	ESM
e) Value added tax		X	Consumption	Conf	CGE
f) Motor vehicle tax	X		Composition of vehicle fleet	ctn	ESM
g) Motor vehicle tax on electric vehicles	X		Equivalent taxation of electric vehicles (compensation for reduced receipts from motor vehicle tax)	ctn	calc. comp.
h) Mineral oil tax and surcharge on motor fuels	X		Consumption of petrol/diesel	Conf	ESM
i) Mineral oil tax on thermal fuels	X		Consumption of petroleum products (excl. thermal fossil fuels)	Conf	ESM
j) Levy on electric vehicles (replacement levy for mineral oil tax)	X		Equivalent taxation of electric vehicles (vehicle kilometre-dependent levy)	Conf	ESM
k) Heavy vehicle charge LSVA	X		Vehicle kilometres with fossil-fuelled heavy goods vehicles, taking into account the emission classes	Conf	ESM
l) Replacement levy for LSVA not paid for electric vehicles	X		Taxation of electric vehicles (reduced LSVA rate for electric vehicles)	Conf	ESM
m) CO ₂ levy on thermal fuels	X		CO ₂ emissions from thermal fuels subject to tax multiplied by CO ₂ levy ₂	Conf	ESM, CGE
n) CO ₂ levy on motor fuels	X		CO ₂ emissions from motor fuels subject to tax multiplied by CO ₂ levy ₂	Conf	ESM, CGE
o) Wage contributions AHV and IV		X	Wage level	SS	CGE
Protection of the environment and spatial planning					
o) Receipts from the auctioning of emission allowances (ETS)	X		Auctioned emission allowances multiplied by CO ₂ price	Conf	CGE and Ecoplan assumptions

Part B: Impact on expenditure

Expenditure	direct	indirect	Influencing factor	Level affected	Source
Cross-sectional items					
a) Personnel expenditure		X	Wage level	Conf, ctn, com, SS	CGE
b) Buildings	X		Additional costs for energy-related building measures	Conf, ctn, com, SS	ESM
c) Intermediate services		X	Intermediate service price (incl. wage level)	Conf, ctn, com	CGE
Social security					
d) AHV pension payments		X	Mixed index	SS	CGE
e) IV pension payments		X	Mixed index	SS	CGE
f) SB for AHV		X	Mixed index	ctn, com	CGE
g) SB for IV		X	Mixed index	ctn, com	CGE
h) Social assistance		X	Mixed index	ctn, com	CGE
i) Individual premium reduction		X	Mixed index	Conf, ctn, com	CGE
Protection of the environment and spatial planning					
j) Negative emissions technologies (NET)	X		Price and quantity of NET purchased abroad	Conf	ESM
Finances and taxes					
k) Debt interest		X	Additional primary deficit, interest rate	Conf, ctn, com, SS	CGE

Source: Ecoplan (2024)

Taking personnel expenditure in line a) of part B as an example: Personnel expenditure or staffing costs are indirectly dependent on climate change mitigation. As a result of the climate mitigation measures taken, wage levels are changing, which leads to changes in staffing costs. The changed wage levels are taken from the results of the equilibrium model (CGE). The climate-related changes in personnel expenditure affect the Confederation (Conf), cantons (ctn), communes (com) and social security funds (SS). SB: Supplementary benefits.

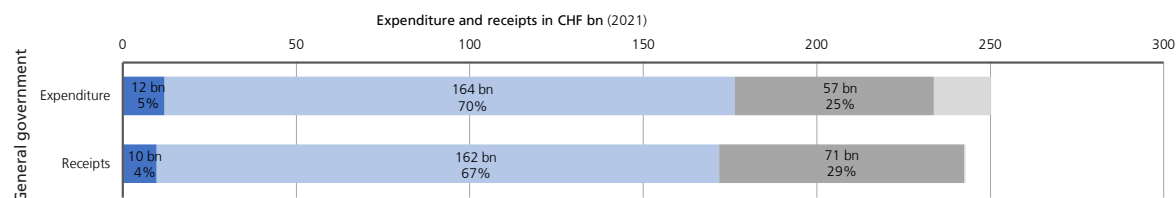
One example of a revenue item which is directly affected by climate mitigation measures is the CO₂ levy on thermal fuels (see part A, line m). These federal revenues are calculated by the amount of the levy per tonne of CO₂ emissions and the volume of CO₂ emissions from fuels which are subject to the levy. Federal, cantonal and municipal receipts from direct taxes on natural persons, on the other hand, are indirectly influenced by climate mitigation measures through changes in earned income and capital income. As the direct taxes of natural persons are more strongly influenced by earned income, the influence of earned income on tax revenue has a higher weighting (around 3/4 compared to 1/4 for capital income). The changes in earned income and capital income are derived from the general equilibrium model (see section 3.3.3).

Among expenditure items, the additional costs of energy-related building measures are directly influenced by climate mitigation measures, for example if emission standards for the building sector are tightened. Personnel expenditure for the Confederation, cantons and communes, on the other hand, is indirectly influenced by the impact of climate mitigation measures on salary levels.

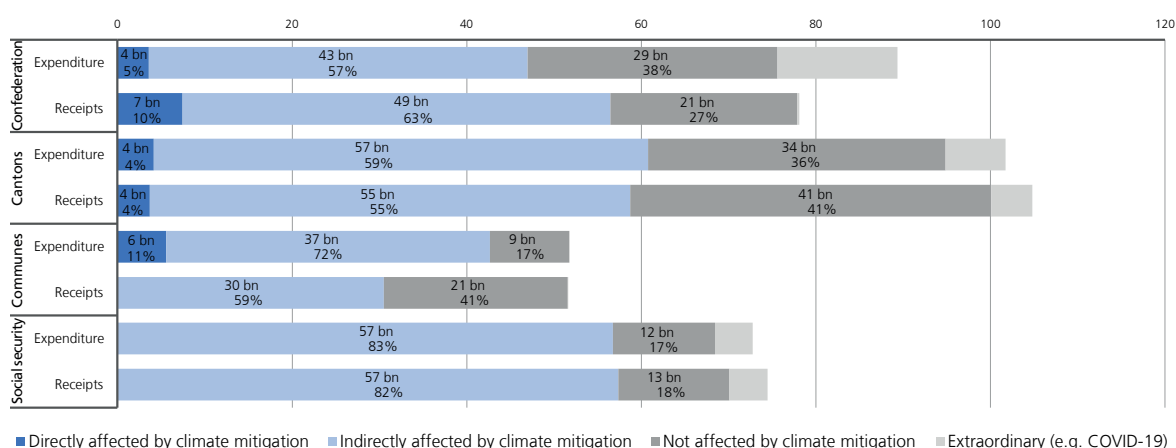
Based on data from public financial statistics, Figure 11 shows the share of public expenditure and receipts affected by climate mitigation measures for the general government, the three levels of government and the public social security funds in CHF billions for 2021. Both the directly and indirectly affected receipts and expenditure are taken into account.

Figure 11: Receipts and expenditure affected by climate change mitigation
(2021, in CHF bn)

Part A: General government



Part B: Government levels and social security funds



Source: Ecoplan (2024)

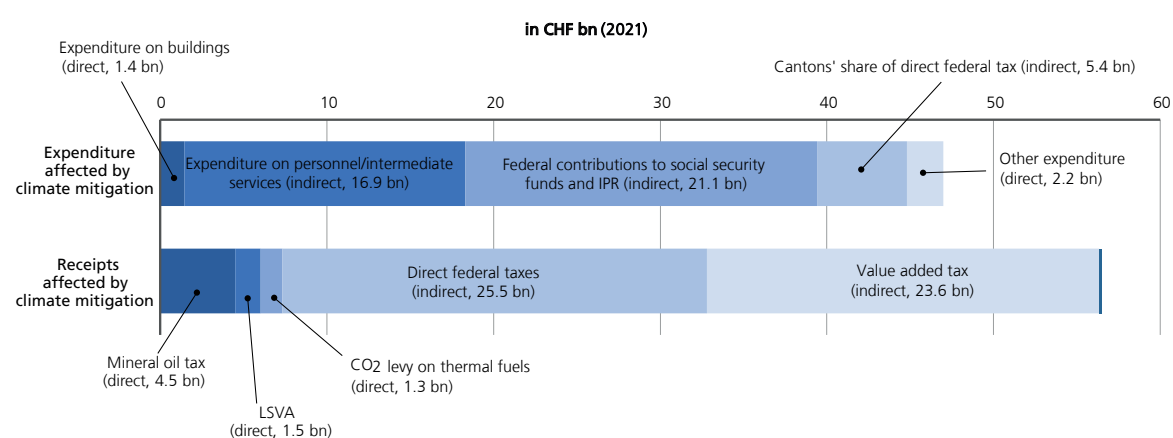
Note: The percentages refer respectively to the total of ordinary expenditure and income.

Part A provides an overview of the impact on the general government. This shows that 75% of ordinary expenditure and 71% of ordinary receipts is potentially affected by climate mitigation measures. The largest part is affected indirectly: around CHF 164 billion of public expenditure and CHF 162 billion of public receipts. On the other hand, climate mitigation measures directly affect CHF 12 billion of expenditure and CHF 10 billion of receipts. Across all levels of government, the affected expenditure and revenue accounts for around 24% and 23% of GDP, of which 1.7 % and 1.3% is directly affected.

Part B breaks down the impact on public receipts and expenditure by individual levels of government and social security funds. The results show that the federal government is particularly exposed. This is in part due to its high receipts from mineral oil tax, the performance-related heavy goods vehicle charge (LSVA) and the CO₂ levy. Social security funds are also heavily affected, as climate mitigation measures indirectly influence AHV and IV receipts and expenditure through changes in labour income. Cantonal and municipal receipts are affected by climate mitigation measures as well. This is in part due to the fact that the receipts from certain taxes and levies are distributed to different levels of government through transfers. For instance, the Confederation passes on part of the receipts from the mineral oil tax and the LSVA (directly affected), as well as the direct federal tax (indirectly affected), to the cantons.

On the expenditure side, the pronounced indirect impact is partly due to the fact that social security expenditure involves all levels of government. Depending on the change in wages, this expenditure is therefore also affected by climate mitigation measures. If, for example, wage growth falls as a result of climate mitigation measures, the growth in contributions to social security funds will also fall. These mechanisms are exemplified by the Confederation, whose affected expenditure and receipts are broken down in more detail in Figure 12.

Figure 12: Breakdown of the Confederation's climate mitigation-related expenditure and receipts (2021, in bn CHF)



Source: Ecoplan (2024)

Note: Other expenditure directly affected by climate change mitigation includes the redistribution of the CO₂ levy on thermal fuels and the cantons' share of receipts from mineral oil tax and the LSVA.

We can conclude from this that the majority of climate mitigation-related expenditure results from federal contributions for AHV and IV, supplementary benefits and IPR as well as the transfer of direct federal tax receipts to the cantons. Staff expenses and intermediate services as well as expenses for buildings also play a major role. Under receipts, the previously mentioned income from mineral oil tax and the LSVA and the CO₂ levy on thermal fuels are responsible for the direct impact. Added to this are the receipts from direct federal tax and VAT, which are indirectly affected by climate mitigation measures and account for almost two thirds of public federal receipts.

Finally, Figure 11 shows that around a quarter of general government receipts and expenditure are not affected by climate mitigation measures. This includes, for example, expenditure on education, culture, sport and leisure as well as healthcare. Various studies have shown that the majority of climate change has a negative impact on health, for example via heat waves and the quality of water and food, as average temperatures rise, thus increasing health expenditure.⁴⁸ However, there is no evidence that the expansion of climate mitigation measures has any direct or indirect impact on health.

⁴⁸ See e.g. WHO (2022) and IPCC (2022)

3.3.2 Projections

The individual receipts and expenditure items of the Confederation, cantons, communes and the social security funds are projected forwards up to the year 2060, based on the 2021 classification. The receipts and expenditure that are not affected by climate mitigation measures are extrapolated with the growth in GDP in a reference scenario – “business as usual” (BAU). In the reference scenario the net zero target is not achieved by 2050 (see Figure 13).

In contrast to the demographic ageing analysis, which applies the assumption of no policy change, the extrapolation of income and expenditure affected by climate change mitigation is analysed within four different policy scenarios (1 to 4). These policy scenarios are characterised by a different weighting of incentive fees (in particular carbon pricing), emission standards and subsidies. These scenarios were designed to achieve the net zero target by 2050. Table 10 provides an overview of the assumed climate mitigation measures in the reference scenario and in the policy scenarios.

Table 10: Overview of the reference scenario and the policy scenarios

Policy scenarios for achieving the net zero target by 2050					
Source of emissions	Reference scenario (BAU)	Policy scenario 1	Policy scenario 2	Policy scenario 3	Policy scenario 4
Energy-intensive industries	Emissions trading system (linked to EU-ETS)				
Thermal fossil fuels (e.g. heating oil, natural gas)	CO ₂ levy (CHF 96/t CO ₂)	CO ₂ levy (CHF 96/t to max. CHF 500/t CO ₂)		a) Emissions standards b) CO ₂ levy (CHF 120 /t CO ₂)	a) Emissions standards b) CO ₂ levy (CHF 120 /t CO ₂) c) CIA federal subsidies
Motor fossil fuels (e.g. petrol, diesel)	No regulation	Emissions standards	CO ₂ levy (CHF 0 to max CHF 400/t CO ₂)	Emissions standards	
Electricity production	No regulation	Exogenously determined minimum quotas for production from renewable energies			
Other (mainly agriculture, waste and industrial processes)	No regulation	Utilisation of carbon capture and storage (CCS) and negative emission technologies (NET). Financed by polluters			Utilisation of CCS and NET. NET financed by federal subsidies
Replacement levies	Replacement levies to compensate for mineral oil tax (incl. surcharge), LSWA (from 2030) and motor vehicle taxes (from 2028)				

Source: Illustration based on Ecoplan (2024).

Note: The amount of the CO₂ levy on thermal fuels of CHF 96 per tonne of CO₂ in the baseline year was taken from Energy Perspectives 2050+. This is below the figure of CHF 120 per tonne of CO₂ introduced from 2022. This difference means that the model-based negative results for the development of public revenue in the policy scenarios can be viewed as upper limits compared to the reference scenario, all other assumptions being equal. Two thirds of the receipts from the CO₂ levy on thermal fuels is redistributed to the population and the economy, while one third is channelled into the buildings programme. The technology fund has not been included. Two thirds of the receipts from the CO₂ levy on motor fuels is also redistributed and one third flows into emission-free forms of mobility in the form of subsidies (mobility programme). Electricity producers are required to produce a minimum amount of renewable electricity in accordance with the Energy Perspectives 2050+. See Ecoplan (2024) for further information on the scenarios.

In order to estimate the impact of climate mitigation measures on public finances, the projections of the development of public revenue and expenditure in the policy scenarios are compared with those in the reference scenario. These differences are the key variables in the analysis and represent the changes in public finances for the three levels of government and the social security funds.

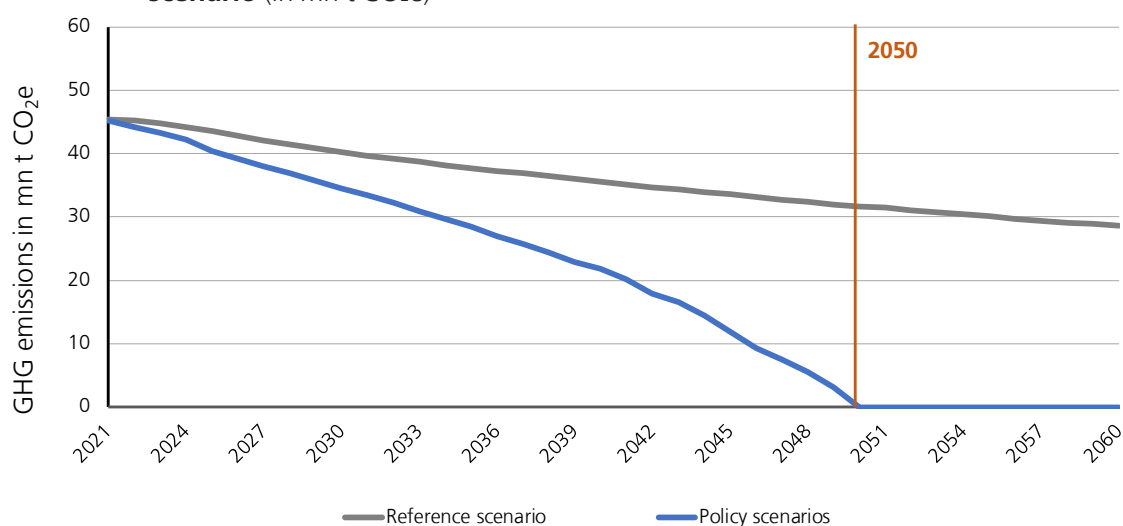
As with the analysis on demographic ageing, the interpretation of the results on the effects of climate mitigation measures are “if-then” projections that do not provide information on what the future will look like exactly. Equally, the assumption is also explicitly made that fiscal rules – including the federal debt brake – are not binding. This is to emphasise the need for fiscal and economic policy action to achieve net zero while maintaining balanced public budgets. The results should be interpreted with caution due to the uncertainties surrounding the future development of climate policy and the pilot nature of this study.

In order to keep the complexity of the pilot study within manageable limits, the underlying *ceteris paribus* approach does not account for the demographically induced additional burdens of ageing on public finances. Besides, considering the demographically induced additional burdens would probably only have a limited impact on the results. This is because the demographic development is largely unaffected by the assumed climate mitigation measures to achieve net zero emissions and it therefore proceeds in a similar fashion in the policy scenarios and the reference scenario.⁴⁹

Reference scenario

The reference scenario is a no-policy-change scenario in which, based on the Energy Perspectives 2050+, all energy and climate policy measures and instruments in force up to the end of 2018 are continued in the future. Since the climate targets are not achieved in the reference scenario, this means the scenario is not compatible with the 2015 Paris Agreement and is not an equivalent alternative to the policy scenarios. The reference scenario only serves as a comparison that allows the impact of climate mitigation measures on public finances to be visualised.

Figure 13: Development of net emissions in the policy scenarios and the reference scenario (in mn t CO₂e)



Source: Illustration based on Ecoplan (2024) and UVEK (2022a).

49 See OECD (2023c)

In the reference scenario, it is assumed that energy-intensive industries are subject to the Swiss Emissions Trading Scheme (ETS), which is linked to the EU ETS. The CO₂ levy on thermal fossil fuels (e.g. heating oil and natural gas) will remain unchanged until 2050. There is no tightening of regulation regarding the consumption of motor fossil fuels (such as petrol and diesel), electricity production and other emissions, particularly in agriculture, waste incineration and cement production.

Policy scenarios

The analysis of the impact of climate mitigation measures on public finances focuses on a policy scenario that continues the existing energy and climate policy instruments for Switzerland and tightens them in line with the aim to achieve the net zero target by 2050 (policy scenario 1).

Energy-intensive industries are subject to the Emissions Trading System in this policy scenario, just as they are in the reference scenario. The CO₂ levy on thermal fossil fuels will be gradually increased and will eventually reach CHF 500/t CO₂ in 2050. Motor fossil fuels are subject to emission standards which are designed to ensure that by 2050 there will be no more emissions produced in the transport sector.

The spread of electric vehicles erodes the receipts from mineral oil tax, the mineral oil tax surcharge, the LSVA and motor vehicle tax. This decline in federal and cantonal receipts is to be expected particularly in the policy scenarios. Since these taxes are the central financing instruments in the transport sector for the transport infrastructure, replacement levies for electric vehicles are already being reviewed for mineral oil taxes, for example.⁵⁰ Although these replacement levies have not yet been finalised, they are expected to be introduced in the future. This study therefore assumes the introduction of three replacement levies in both the reference scenario and the policy scenarios.

The current mineral oil taxes will be continued. From 2030, however, an additional levy will be introduced on electric vehicles and vehicles with alternative drive systems. This is a usage-based charge of around 5 centimes per kilometre for passenger cars and approximately 22 centimes per kilometre for heavy goods vehicles.⁵¹ The existing LSVA will be continued, but the exemption for lorries with alternative drive systems will be abolished from 2030. Lorries with alternative drive systems are taxed at a lower rate (1.85 centimes per thousand kilometres versus 2.28 centimes per thousand kilometres for a Euro 6 lorry) in line with their lower external costs. Ultimately, it is assumed that the cantons will adjust their tax rates for motor vehicle taxes from 2028 so as to not have any tax shortfalls.

The use of carbon capture and storage (CCS) and negative emission technologies (NET) is assumed for emissions that are difficult to reduce, for example in agriculture, waste incineration and cement production. These technologies are financed by the private sector, based on the principle that it is the polluter who pays.⁵² For electricity production, exogenously determined minimum quotas for production from renewable energy sources are assumed.

⁵⁰ See DETEC (2022c)

⁵¹ Since 1 January 2021, the mineral oil tax on petrol has been 45.30 centimes per litre plus a surcharge of 31.52 centimes per litre. On diesel it is 48.11 centimes per litre plus a surcharge of 31.46 centimes per litre (see DETEC, 2022c).

⁵² Current planning assumes that around 7 million tonnes of CO₂ per annum will have to be captured in Switzerland and permanently stored (CCS) by 2050. A study has calculated that the cost of the CCS system will amount to between CHF 11.2 and 21.4 billion between 2028 and 2050. These costs include the necessary investments in infrastructure and ongoing operating costs (see BAK and dena, 2023).

The other three policy scenarios differ from policy scenario 1 as follows. Policy scenario 2 places more emphasis on incentive fees and introduces a CO₂ levy instead of emission standards for motor fossil fuels. Policy scenario 3 places more emphasis on emission standards, which are also introduced for thermal fossil fuels. In this scenario, the CO₂ levy remains unchanged until 2050.

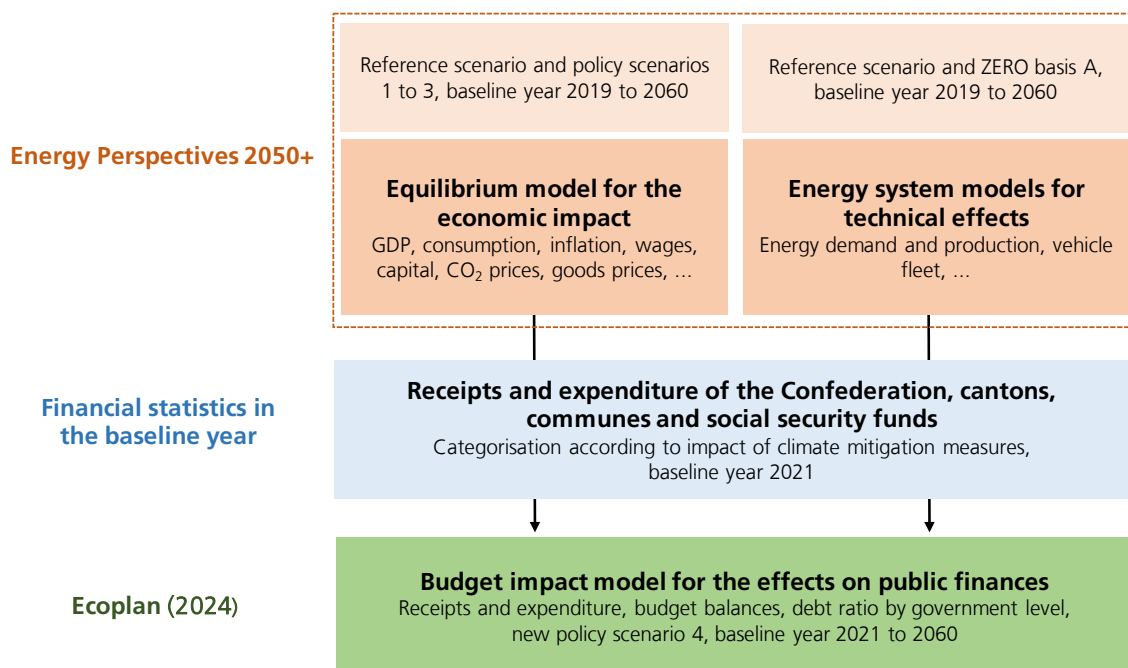
Policy scenario 4 – which was newly defined for the 2024 fiscal sustainability report – places more emphasis on subsidies. It is assumed that federal subsidies under the Climate and Innovation Act (CIA) are used for fossil fuels and that NET purchases abroad are financed by the Confederation.

3.3.3 Underlying models

In order to analyse the impact of climate mitigation measures on public finances, a budget impact model was created for this study. The results of the economic (general equilibrium model) and technical (energy system models) analyses in the Energy Perspectives 2050+ were used.⁵³

To improve compatibility with the public finances database, the results of the economic modelling were also adjusted to the baseline year of 2021 and to the framework development of the fiscal sustainability report. Further information from other studies and publications was also used for individual aspects such as the design of possible replacement levies or the building stock. Figure 14 provides a schematic overview of the data sources and the processing steps for analysing the impact of climate mitigation measures on public finances.

Figure 14: Overview of the processing steps for the budget impact model



Source: Illustration based on Ecoplan (2024).

⁵³ See DETEC (2022a&b)

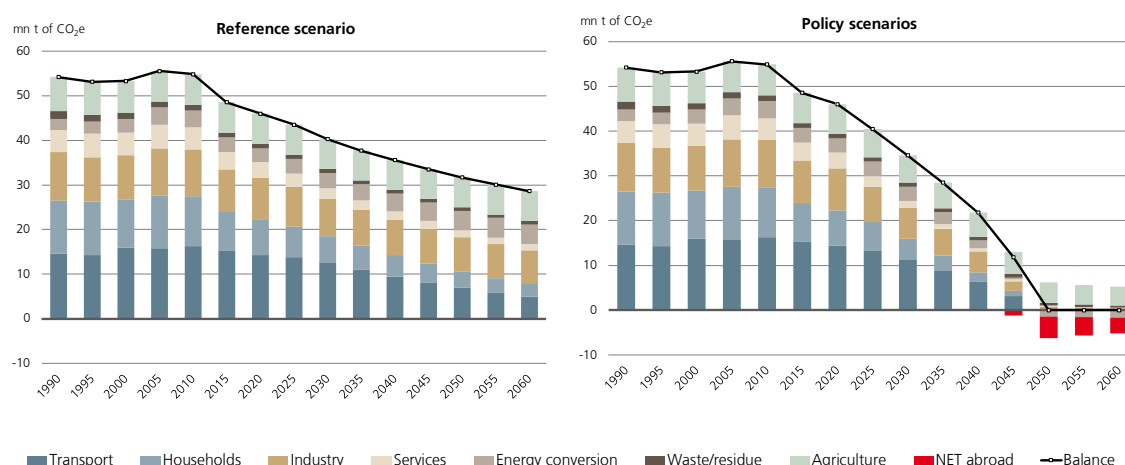
Energy system models (ESM)

The energy system models use partial analytical sector-specific energy models to analyse how the net zero target can be achieved while guaranteeing the energy supply (bottom-up approach). Various scenarios for restructuring the energy system were analysed. This study is based on the baseline variant (basis ZERO, variant A). This variant appears to be favourable in terms of maximum cost efficiency and high social acceptance. Aspects of the security of the energy supply and the robustness of target achievement are also taken into account.

The results from the energy system models show that reducing greenhouse gas emissions to net zero by 2050 is possible with today's technologies, but that there is a high sense of urgency. Figure 15 shows that in the policy scenarios, CO₂-equivalent emissions fall from around 45 million tonnes in 2021 to net zero by 2050. The transport sector, households and the service sector (especially residential and service buildings) will be fully decarbonised by 2050. These sectors are the largest emitters in Switzerland, accounting for 31%, 25% and 20% of total emissions in 2021. The remaining greenhouse gas emissions that are difficult or impossible to reduce – particularly in agriculture and industry – are offset using NETs. The use of CCS is also necessary in waste incineration plants and cement works.

In the reference scenario, which does not provide for any expansion of climate mitigation measures, there will still be around 30 million tonnes of CO₂-equivalent emissions in 2050. That is around one third less than in 2021.

Figure 15: CO₂ emissions reduction by sector in the reference scenario and in the policy scenarios (in mn t CO₂e)



Source: Energy system model used in Energy Perspectives 2050+ (Ecoplan, 2022; 2024).

General equilibrium model (CGE)

The impact on the economy of achieving the net zero emissions target, including welfare, GDP, foreign trade and other macroeconomic variables, was analysed using a macroeconomic multi-country equilibrium model (top-down approach).⁵⁴ Restructuring the energy system, as calculated by the energy system models in the ZERO basis A scenario, was specified in the equilibrium

⁵⁴ The economic welfare concept used includes the consumption opportunities and leisure time of the domestic population (see DETEC, 2022b).

model in the form of greenhouse gas emissions to be achieved, technology portfolios and available potential for renewable energies, among other things.

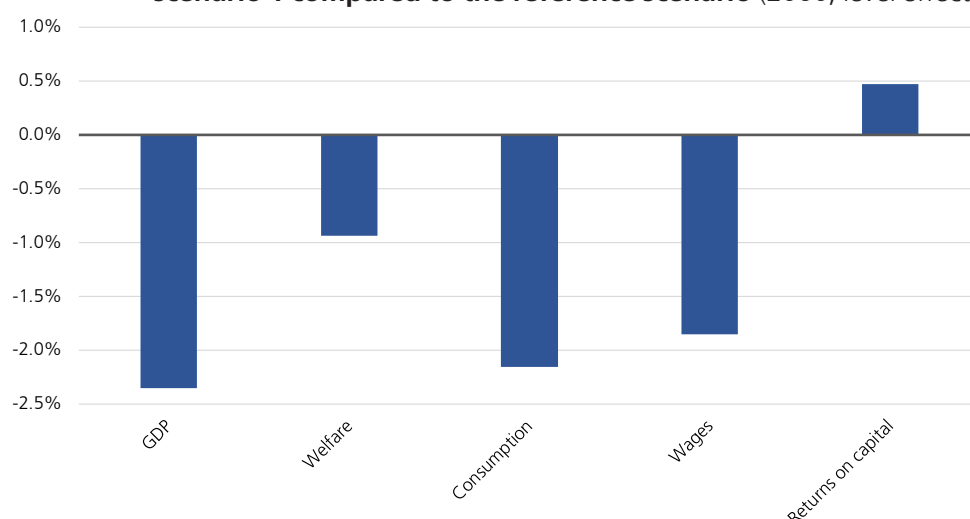
The economic effects of restructuring the energy system and achieving the net zero target were analysed for different stylised policy scenarios (1 to 3). It was assumed that not only Switzerland, but the entire international community would implement the Paris Agreement.

The results from the equilibrium model show that climate mitigation measures have a negative impact on welfare and GDP (see Figure 16). Although the negative economic effects are noticeable, they are moderate. In policy scenario 1, the GDP per capita and the welfare level in 2050 are around 2.4% and 1.4% respectively below those in the reference scenario. The difference in the GDP level remains stable until 2060, while the welfare effect becomes slightly less negative, as private consumption in the policy scenario approaches the level in the reference scenario again somewhat, after the net zero target is reached. This is also because in the policy scenario people have more free time and work less.

It is important to note that the costs of climate change itself were not taken into account. With a certain degree of probability, these would be higher in the reference scenario than in the policy scenarios and thus put the costs of the climate mitigation measures into perspective.

Figure 16 also shows that the additional costs of restructuring the energy system are passed on to price factors, i.e. wages and returns on capital. The labour factor reacts less flexibly than the relatively mobile capital factor. This means that restructuring the energy system places a greater burden on the former. Wages therefore fall more sharply than domestic returns on capital, which even increase in relative terms in the later years. Total investments are hardly affected compared to the reference scenario. This is partly because the slightly weaker economic growth has a negative impact on them and partly because decarbonising the economy and the restructuring of the energy system that comes with it (and the use of CCS and NET in later years) requires new investments, compensating the former effect.

Figure 16: Impact of climate mitigation measures on macroeconomic variables in policy scenario 1 compared to the reference scenario (2060, level effects in %)

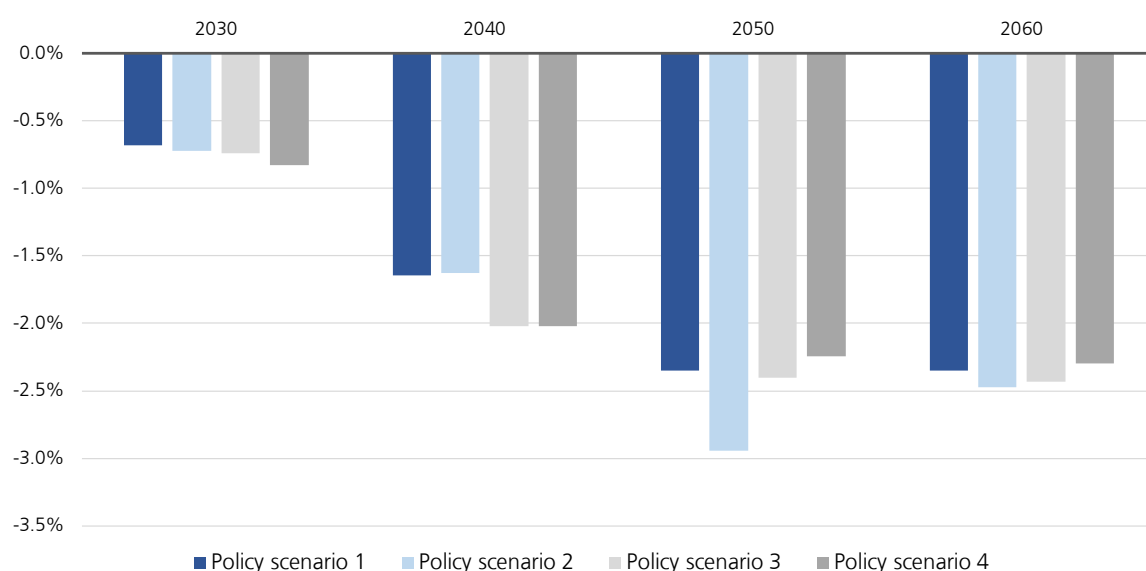


Source: Illustration based on Ecoplan (2024).

A comparison of the effects of climate mitigation measures on GDP between the policy scenarios does not reveal any major differences (see Figure 17). Additionally, the Energy Perspectives 2050+ show that, from a welfare perspective, policy scenario 2 with its primarily market-based measures (increasing the CO₂ levy on motor and thermal fossil fuels) offers the most efficient mix of instruments in 2050. GDP, on the other hand, is most negatively affected in this policy scenario. The differences in GDP and welfare between the policy scenarios (compared to the reference scenario) equalise again in 2060 – when the net zero target is reached.

Policy scenarios 3 and 4, i.e. a mix of instruments that relies more heavily on emission standards or subsidies, have a comparable impact on GDP between 2050 and 2060, after a more negative impact in 2040 (see Figure 17).

Figure 17: Impact of the climate mitigation measures in policy scenarios 1 to 4 on GDP compared to the reference scenario (level effects in %)



Source: Illustration based on Ecoplan (2024).

3.3.4 Methodological limitations

As already mentioned, the costs of climate change itself cannot be taken into account in this study, because the data basis is not yet available. The costs of climate change would put the impact of climate mitigation measures on public finances into perspective, as considerable economic costs would be incurred, especially in the reference scenario. According to several international studies these will exceed the costs of climate mitigation measures.

In addition, the fact that the results are dependent on the assumed path for reducing greenhouse gases should be raised as a key uncertainty. If, for example, a more ambitious path to reach net zero in 2050 were assumed, in which emissions fall earlier, this could result in other effects on public finances. The direction the resulting change would take is not clear a priori. On the one hand, an ambitious climate target would presumably have a greater negative impact on macroeconomic development, which would lead to greater tax losses, among other things. On the other hand, an ambitious target would probably also result in a steeper increase in the CO₂ levy. This

would, at least temporarily, increase government revenue, as the higher levy would still be applied at a time of high CO₂ emissions. It is currently not possible to predict which of the two effects would dominate at which point in time for Switzerland. However, initial international studies indicate that delayed implementation of climate mitigation measures is generally associated with higher economic costs.⁵⁵ Similar changes could occur if the assumed path for reducing greenhouse gases changes due to events such as pandemics or wars or essential technological advances.

When interpreting the results, it should be noted that the key results of the Energy Perspectives 2050+ are themselves the results of model estimations. The uncertainties contained in the Energy Perspectives 2050+ are therefore also implicitly included in the results of this study.

In the reference scenario, which is based on the Energy Perspectives 2050+, all energy and climate policies and instruments that were in force up to the end of 2018 are continued. This means that some of the instruments are therefore no longer reflecting the current policy environment. This has an impact on the differences in the development of public finances between the policy scenarios and the reference scenario, some of which could be overestimated.

3.4 Results

The expansion of climate mitigation measures to achieve the net zero target will place a burden on public finances in the coming decades – whether directly or indirectly. This chapter shows how the receipts and expenditure affected by climate mitigation measures, the budgetary balances and the debt ratio would develop in the policy scenarios compared to the reference scenario.

3.4.1 Development of climate mitigation-related receipts and expenditure

The individual receipts and expenditure items of the Confederation, cantons, communes and the social security funds are projected forwards up to the year 2060, based on the 2021 classification (see Figure 11). The results for the individual levels of government and social security funds are presented below.

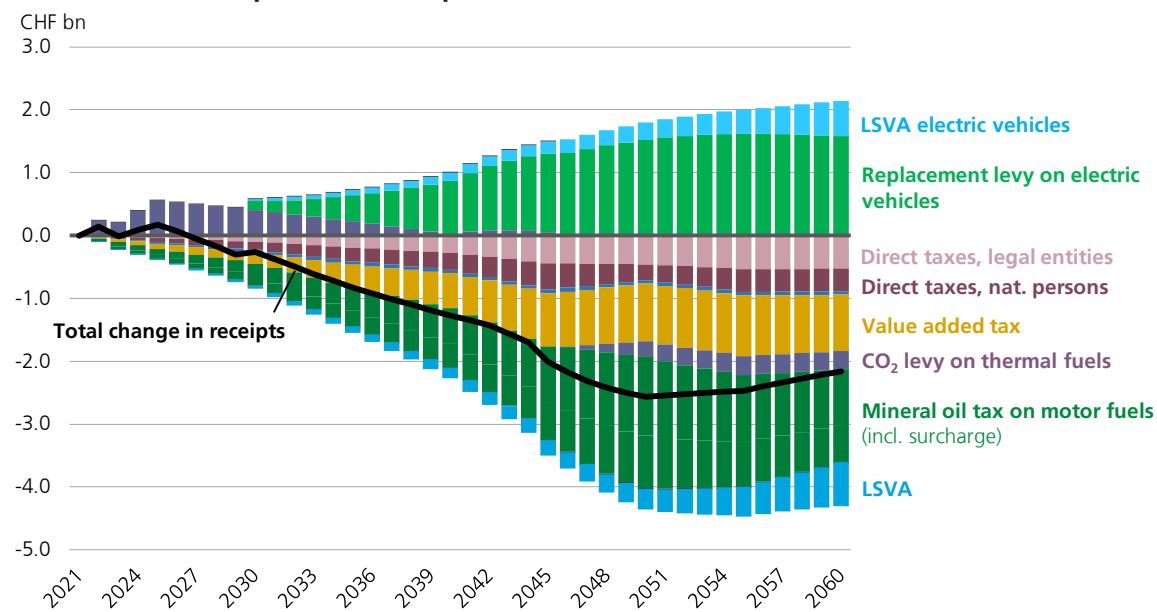
Confederation

Figure 18 shows the impact of climate mitigation measures on public receipts and expenditure items for the Confederation. Part A illustrates the development of the receipts and Part B the expenditure at prices from 2021 to 2060. The black lines show the development of total receipts and total expenditure. The trend shows that the climate mitigation measures lead both to lower receipts and to lower expenditure than in the reference scenario, with receipts being significantly lower (around CHF 2.2 billion less than the reference scenario in 2060) than expenditure (around CHF 0.9 billion less in 2060).

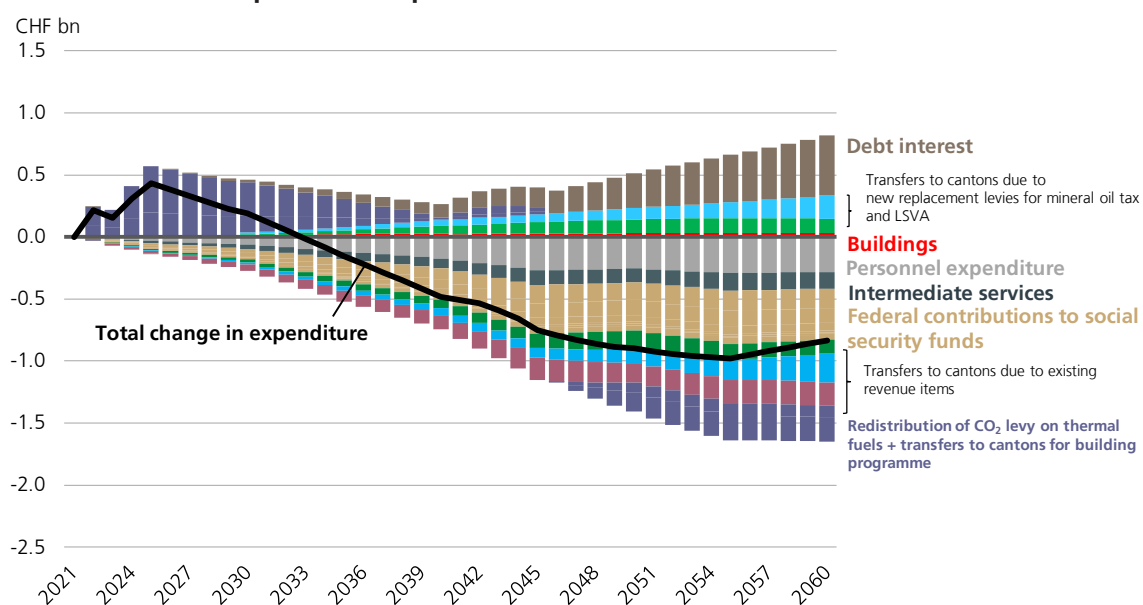
⁵⁵ See Stern (2007), OBR (2021) and NGFS (2022)

Figure 18: Impact of climate mitigation measures on federal receipts and expenditure in policy scenario 1 compared to the reference scenario (in CHF bn at 2021 prices)

Part A: Development of receipts



Part B: Development of expenditure



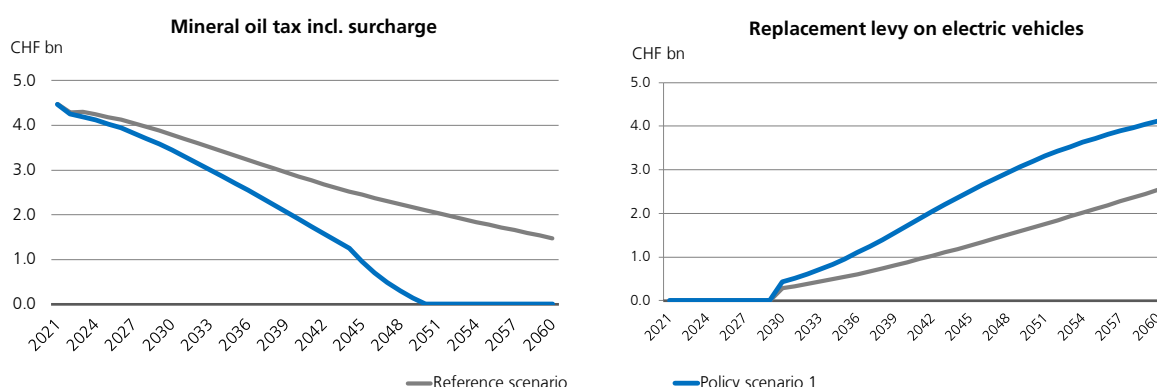
Source: Ecoplan (2024)

Note: Negative values are synonymous with lower receipts or expenditure, positive values with higher receipts or expenditure in the policy scenario compared to the reference scenario. Transfers to cantons based on existing revenue items include the cantonal shares of mineral oil tax, LSWA and direct federal tax.

Looking at the individual revenue items, the lower receipts from mineral oil tax (incl. surcharge) are particularly striking (CHF 2 bn less in 2050). As a result of the climate mitigation measures, these revenues will fall to zero by 2050 in policy scenario 1, while they would still amount to around CHF 2 billion at 2021 prices in the reference scenario (see Figure 19). However, this loss of receipts will be offset by the replacement levy on electric vehicles that will be introduced in 2030. It is a

similar pattern for the LSVA, a second revenue item which is directly affected. Without the new replacement levies to compensate for the loss of revenue from mineral oil tax and the LSVA, total federal revenue would be around CHF 4.3 billion lower in 2060 than in the reference scenario.

Figure 19: Development of absolute federal revenue from mineral oil tax and the replacement levy in policy scenario 1 and in the reference scenario (in CHF bn at 2021 prices)



Source: Illustration based on Ecoplan (2024).

The trend for the CO₂ levy on thermal fuels is somewhat different. The receipts rise in comparison to the reference scenario at first, which is linked to the CO₂ levy for achieving the net zero target being significantly higher. From 2040 the effect turns negative, with the climate mitigation measures causing the CO₂ emissions to decrease more quickly than in the reference scenario.

The indirect effects on the receipts from VAT and federal tax are also negative. This is due to the negative effects of the climate mitigation measures on GDP, consumption and wages, which were described in section 3.3.3. This leads to lower tax receipts than in the reference scenario, in the case of VAT for example, CHF 0.9 billion lower in 2050.

Overall, the lower projected growth in receipts from climate mitigation measures versus the reference scenario, is primarily down to indirect effects. It is assumed that the most changes in the directly affected revenue items will be offset by replacement levies.

On the Confederation's expenditure side, climate mitigation measures will lead to lower federal contributions towards social security funds in comparison to the reference scenario. Two effects play a role in this. Firstly, less income from VAT flows into the AHV in the policy scenario than in the reference scenario. Secondly, the climate mitigation measures lead to slightly lower social security expenditure, because wages – and therefore also pensions – are not growing as much in the policy scenario as they do in the reference scenario. As a result, the required federal contribution to the AHV is also lower.

Other effects on expenditure include changes in transfers of direct federal tax receipts to the cantons, mineral oil tax receipts and receipts from the CO₂ levy on fuels. The latter are distributed back to the economy and passed on to the cantons for the buildings programme. Expenditure on debt interest will be higher from 2030 than in the reference scenario. This effect is attributable to the

less favourable federal budget balance due to the lower receipts. Although the policy scenario also results in slightly higher interest rates, their impact on financing costs is very small.

Finally, staff expenses will be reduced by around CHF 0.3 billion in the long term. The reason for this is again the lower wage growth in the policy scenario than in the reference scenario.

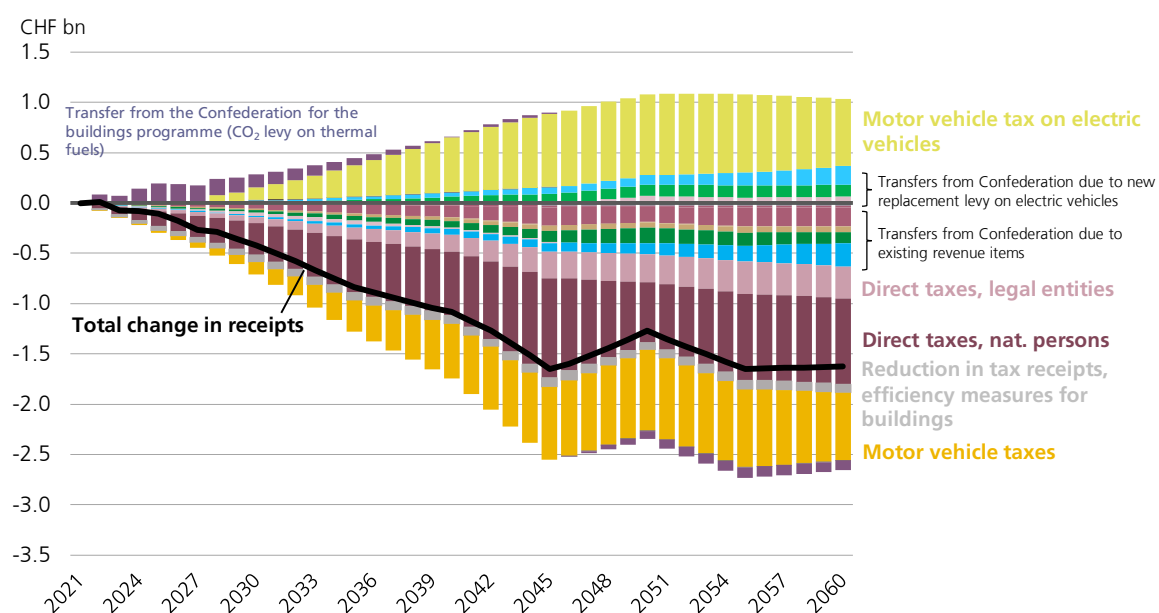
If all climate mitigation-related changes to expenditure are considered together, increased expenditure still prevails in the first few years. This is because, in contrast to the reference scenario, there is a higher redistribution of the CO₂ levy in absolute terms due to the additional receipts. From 2030 onwards, the overall effect turns negative. This is due in particular to lower personnel expenditure and lower federal contributions to social security funds, an effect that is partially offset by steadily rising expenditure on debt interest.

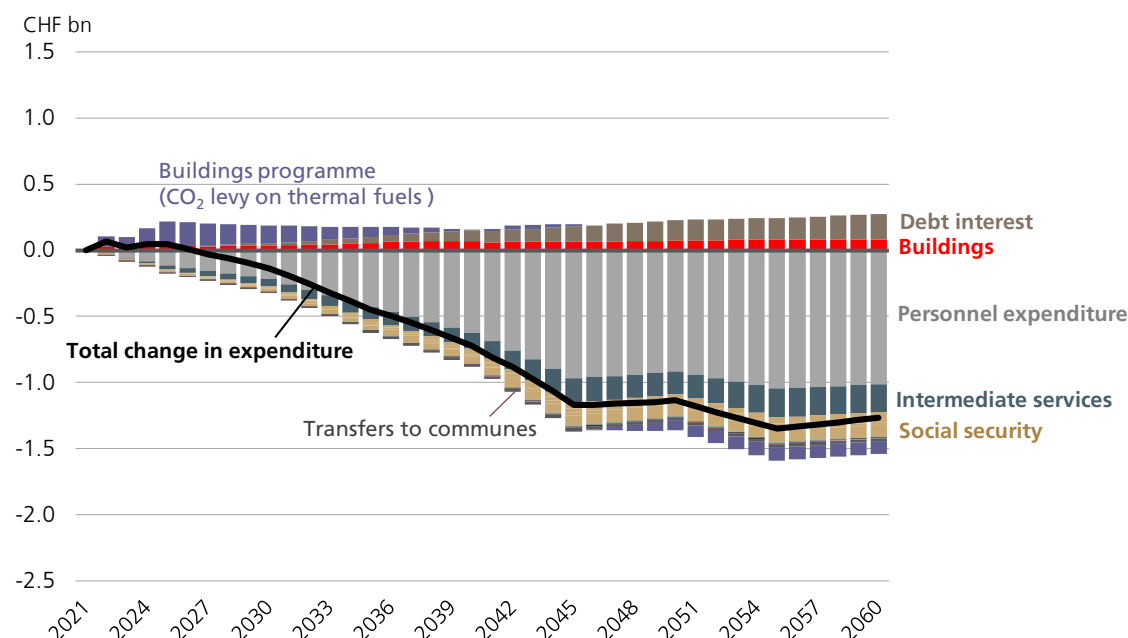
Cantons

Overall, the cantons are less affected by climate mitigation measures than the Confederation. As Figure 20 illustrates, climate mitigation measures have a greater impact on the receipts of the cantons (CHF 1.7 billion less in 2060 than in the reference scenario) than on their expenditure (CHF 1.3 billion less in 2060). The overall effect of the change to receipts and expenditure will be around CHF -0.4 billion in 2060.

Figure 20: Impact of climate mitigation measures on cantonal receipts and expenditure in policy scenario 1 compared to the reference scenario (in CHF bn at 2021 prices)

Part A: Development of receipts



Part B: Development of expenditure

Source: Ecoplan (2024)

Note: Negative values are synonymous with lower receipts or expenditure, positive values with higher receipts or expenditure in the policy scenario compared to the reference scenario. Transfers from the Confederation based on existing revenue items include the cantonal shares of mineral oil tax, LSVA and direct federal tax.

Part A shows that indirect effects in particular play a significant role in lowering receipts. Since the cantons have higher direct tax revenues than the Confederation, they are also affected more acutely by changes in macroeconomic factors such as labour and capital income or GDP growth. As a result, the cantons have noticeably lower receipts from direct taxes on natural persons and legal entities in the policy scenario than in the reference scenario.

Another important element is receipts from motor vehicle tax. These decrease steadily compared to the reference scenario (direct effect). The new levy on electric vehicles is designed around the assumption that the losses will be fully compensated from 2028. The net effect on motor vehicle taxes will therefore be zero from this point onwards. However, this is only the case if the loss is compensated in this manner. Without the assumption of such a compensation, the loss in cantonal revenue, as well as the Confederation's revenue, would be significantly higher than in the reference scenario (around CHF 2.7 billion in 2060 compared to CHF 1.7 billion with replacement levies).⁵⁶

Also worth mentioning are the transfers from the Confederation, in particular of the cantons' share of the receipts from transport levies (mineral oil tax incl. surcharge and LSVA or the respective replacement levies) and direct federal tax. This means that developments at federal level also have an impact on the cantons.

Part B shows that around two-thirds of the change in cantonal expenditure is attributable to the indirect effects of public personnel expenditure. As with the Confederation, this expenditure is lower in the policy scenario because wage growth up to 2060 is lower than in the reference sce-

⁵⁶ The calculation refers to the reduced receipts from motor vehicle tax and the Confederation's transfers to the cantons of the revenue from mineral oil tax including the mineral oil tax surcharge.

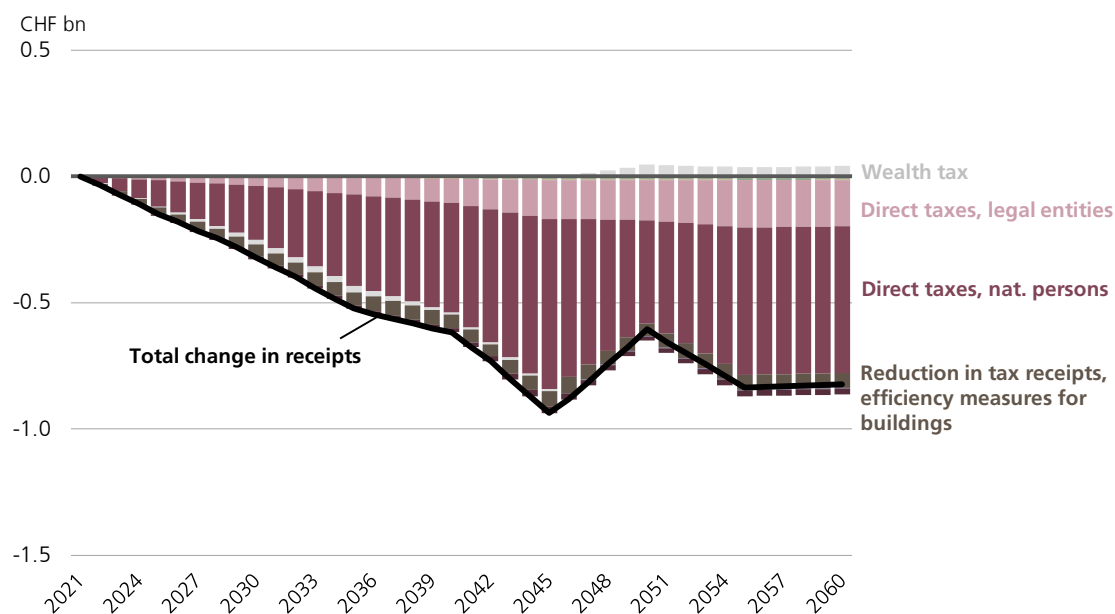
nario. Moreover, there will be lower expenditure for intermediate services, for example for material and operating expenses and building maintenance, for social security, and additional expenditure for the cantonal buildings programme and for interest on debt.

Communes

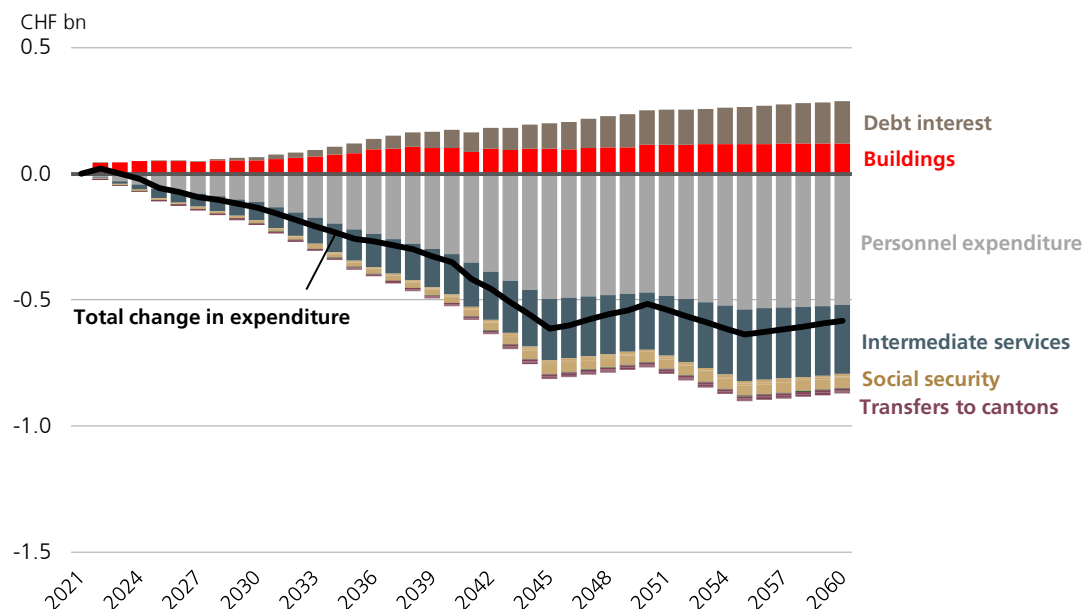
The development of communal receipts and expenditure is very similar to that of the cantons, since their structure is similar, as illustrated in Figure 21. In 2060, receipts in the policy scenario are CHF 0.8 billion below the reference scenario and expenditure is CHF 0.6 billion below.

Figure 21: Impact of climate mitigation measures on communal receipts and expenditure in policy scenario 1 compared to the reference scenario (in CHF bn at 2021 prices)

Part A: Development of receipts



Part B: Development of expenditure



Source: Ecoplan (2024)

Note: Negative values are synonymous with lower receipts or expenditure, positive values with higher receipts or expenditure in the policy scenario compared to the reference scenario. Transfers between communes and cantons include transfers for supplementary benefits AHV/IV, social assistance and IPR.

Part A shows that the main impact of climate mitigation measures on communal revenues is indirect. The lower GDP growth in the policy scenario compared to the reference scenario leads to lower tax receipts from natural persons and legal entities.

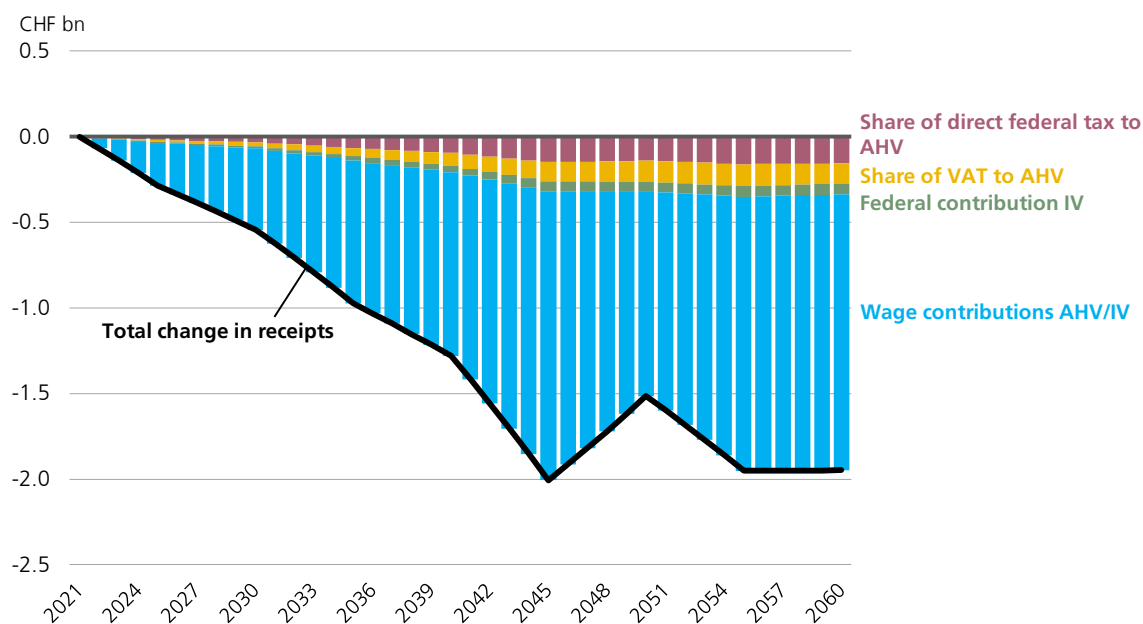
Once again, personnel expenditure plays an important role in the expenditure. Added to this is reduced expenditure on the procurement of intermediate services, as their prices will fall as a result of climate mitigation measures – in particular due to lower labour costs.

Social security funds

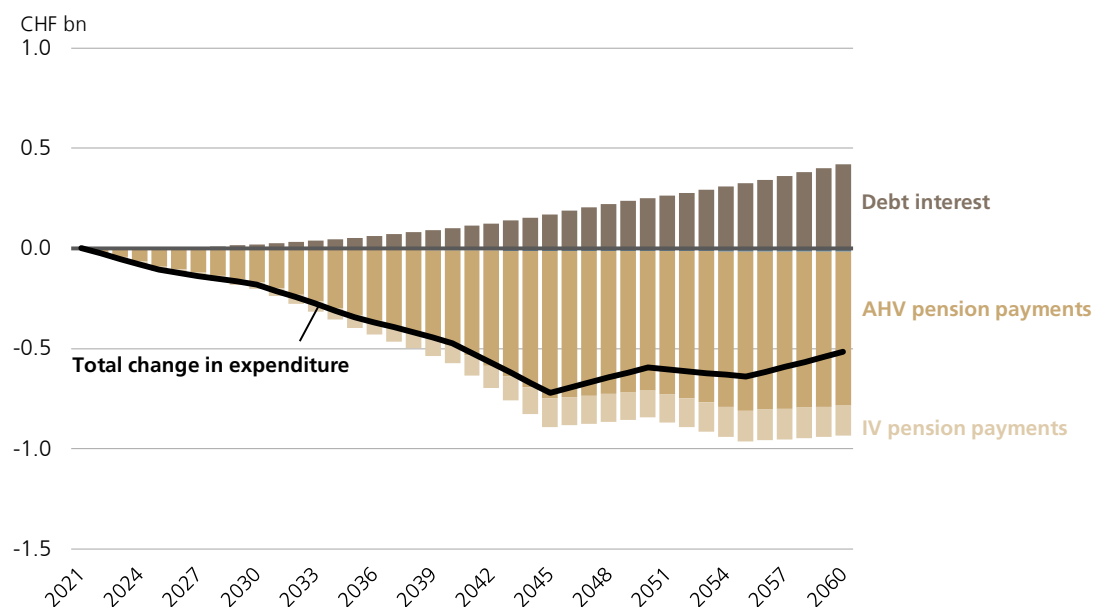
Figure 22 shows that the overall impact of climate mitigation measures on social security funds is also negative. As with the Confederation, cantons and communes, the lower receipts (CHF 1.9 billion less in 2060 than the reference scenario) is more pronounced than the lower expenditure (CHF 0.5 billion less in 2060). These effects are again due to the indirect effects of climate mitigation measures, in particular lower wage growth. As such, the receipts are greatly affected by lower income from wage contributions.

Figure 22: Impact of climate mitigation measures on social security fund receipts and expenditure in policy scenario 1 compared to the reference scenario (in CHF bn at 2021 prices)

Part A: Development of receipts



Part B: Development of expenditure



Source: Ecoplan (2024)

Note: Negative values are synonymous with lower receipts or expenditure, positive values with higher receipts or expenditure in the policy scenario compared to the reference scenario.

The reduced federal contributions from direct federal tax and VAT are less significant in comparison, but also play a role.

The changes in wage growth caused by climate mitigation measures are also reflected on the expenditure side. As illustrated in part B of Figure 22, social security expenditure on AHV and IV pensions is lower than in the reference scenario (by around CHF 0.8 billion on average per year from 2050 onwards). At the same time, expenditure on debt interest increases, as social security is accompanied by a less favourable development of public finances than in the reference scenario.

3.4.2 Development of the budgetary balances

The difference between annual receipts and expenditure is the public budgetary balance, with negative balances corresponding to primary deficits. Table 11 shows the projected impact of climate mitigation measures on the budgetary balance at 2021 prices for all levels of government and the social security funds, in policy scenario 1 and compared with the reference scenario. It is important to note that the federal debt brake and the cantons' fiscal rules are not taken into account.

Table 11: Impact of climate mitigation measures on the budgetary balance in policy scenario 1 compared to the reference scenario (in CHF bn at 2021 prices)

Government level	2030	2040	2050	2060
Confederation	-0.4	-0.7	-1.7	-1.3
in % of Confederation total receipts, reference scenario	0.5%	0.7%	1.5%	1.0%
Cantons	-0.3	-0.4	-0.1	-0.4
in % of cantons total receipts, reference scenario	0.3%	0.3%	0.1%	0.2%
Communes	-0.2	-0.3	-0.1	-0.2
in % of communes total receipts, reference scenario	0.3%	0.4%	0.1%	0.3%
Social security funds	-0.4	-0.8	-0.9	-1.4
in % of social security funds total receipts, reference scenario	0.5%	0.9%	0.9%	1.2%
General government	-1.3	-2.1	-2.8	-3.4
in % of general government total receipts, reference scenario	0.5%	0.7%	0.8%	0.8%
in % GDP, reference scenario	0.2%	0.2%	0.3%	0.3%

Source: Ecoplan (2024)

Note: The general government budget balance is adjusted to allow for transfers between the different levels of government, including social security funds.

For the general government, the policy scenario gives a budgetary balance in 2030, resulting from changes in receipts and expenditure that is CHF 1.3 billion lower than the balance in the reference scenario. This figure rises to CHF 3.4 billion by 2060. These negative effects in the policy scenario correspond to around 0.8% of total ordinary government revenue or 0.3% of GDP in 2060. This already takes into account the fact that revenue losses from mineral oil tax, LSWA and motor vehicle tax are compensated for by replacement levies. If there were no replacement taxes, the budgetary balance in 2060 would be CHF 7.2 billion below the balance in the reference scenario. This would correspond to around 1.7% of ordinary government revenue or 0.6% of GDP. The Confederation and cantons would therefore have to expect significantly more negative effects.

The main reason for the less favourable development in the budgetary balance when there are no replacement levies is the increased loss of revenue. Compared to the reference scenario, the general government receipts would be around CHF 8.6 billion lower in 2060 (compared to CHF 5.7 billion lower with replacement levies). This only affects the Confederation and the cantons.

The general government expenditure ratio, i.e. general government expenditure in relation to GDP, would be 0.6 percentage points higher than in the reference scenario. Two opposing effects are in play here. On the one hand, expenditure growth is lower as a result of climate mitigation measures (the numerator becomes smaller, which reduces the general government expenditure ratio). On the other hand, the measures also result in lower GDP growth (the denominator becomes smaller, which increases the general government expenditure ratio). Overall, the GDP effect dominates, resulting in a slightly higher general government expenditure ratio. Similar opposing effects play out in the fiscal ratio, which consists of the ratio of tax revenue to GDP. In 2060, this is 0.2 percentage points higher for the general government in the policy scenario than in the reference scenario. Here too, the weaker GDP growth outweighs the lower income, but to a lesser extent.

As already explained, the climate mitigation measures have a negative overall effect on the Confederation's budgetary balance compared to the reference scenario. This negative difference in the balance increases to up to CHF 1.7 billion by 2050 and then decreases again slightly to CHF 1.3 billion in 2060. This corresponds to around 1% of federal receipts in the reference scenario. In the medium term, this effect is caused by a loss of revenue that exceeds the extent of the simultaneous reduction in expenditure.

The cantons and communes are significantly less affected by climate mitigation measures. The budgetary balance in 2060 is only CHF 0.4 billion and CHF 0.2 billion below the balance in the reference scenario. These amounts correspond to 0.2% and 0.3% of cantonal and communal receipts in the reference scenario in 2060.

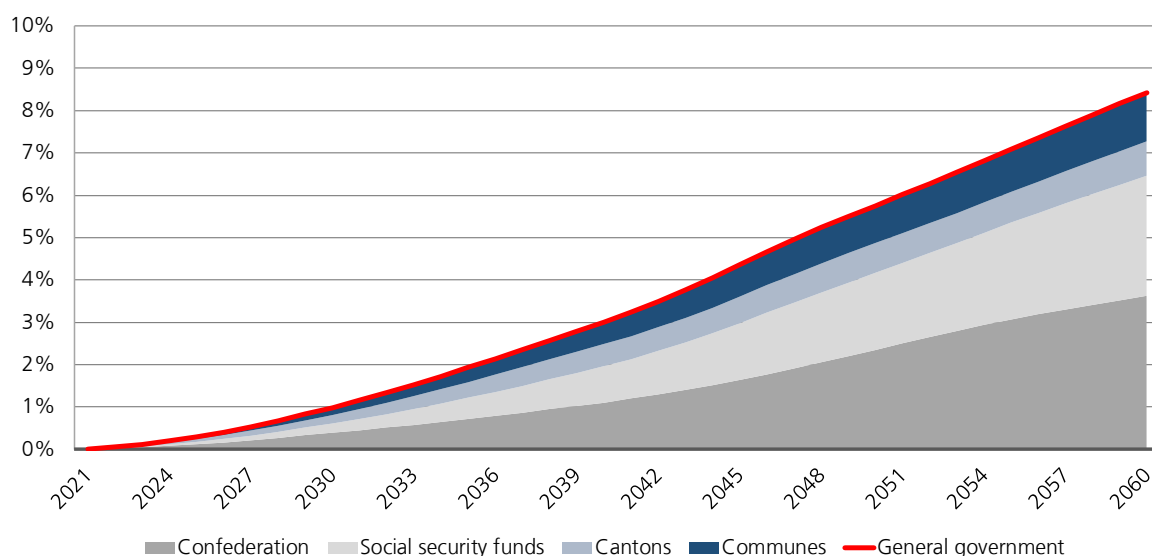
Social security funds, on the other hand, are affected more severely by climate mitigation measures. Indirect effects cause a negative balance of CHF 1.4 billion in 2060, which corresponds to 1.2% of total social security receipts.

3.4.3 Development of the debt ratio

The negative impact of climate mitigation measures on the budgetary balance affects also the debt ratio. Figure 23 shows the development of the debt ratio in the policy scenario compared to the reference scenario for all levels of government and the social security funds.

Figure 23: Impact of climate mitigation measures on the debt ratio in policy scenario 1 compared to the reference scenario (in % of GDP)

in percentage points



Source: Illustration based on Ecoplan (2024).

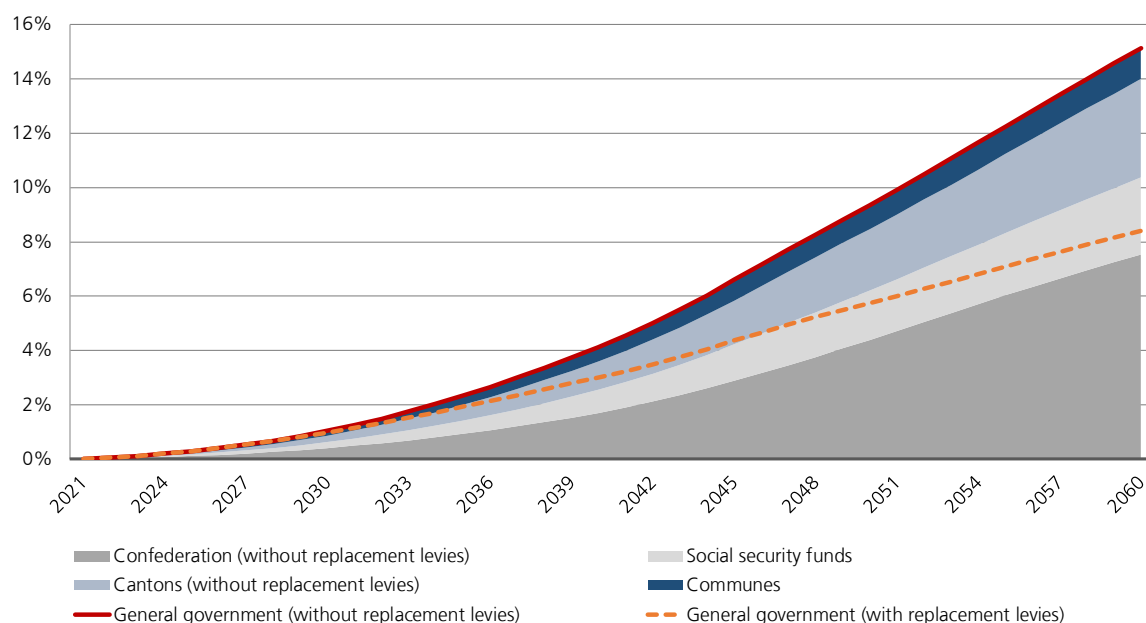
The graph shows that the debt ratio in the policy scenario is higher for all levels of government than in the reference scenario. The general government debt ratio in 2060 is around 8.4 percentage points above the level in the reference scenario. This is primarily due to the higher debt ratios of the Confederation (+3.6 percentage points) and the social security funds (+2.8 percentage points), followed by the communes with 1.1 percentage points and the cantons with 0.8 percentage points.

When analysing the development of the debt ratio, it must be remembered that the reduced federal receipts from the mineral oil tax and the LSVA and the reduced cantonal receipts from the motor vehicle tax are compensated for by replacement levies. Without the replacement levies in the transport sector, a more significant negative development of the debt ratio at the general government level should be expected (see Figure 24). In 2060, this would be 15.1 percentage points above the reference scenario (compared to 8.4 percentage points with replacement levies).

In a scenario without replacement levies, the Confederation's debt ratio would be 7.5 percentage points above the reference scenario. Moreover, at 3.6 percentage points above the reference scenario, the cantons' debt ratio would be more than four times higher than with replacement levies. In this sense, replacement levies play a central role in securing revenue in the relevant policy areas in the medium and long term despite climate mitigation measures. The development of the debt ratios of the communes and social security funds will not be impacted by the introduction of replacement levies.

Figure 24: Impact of climate mitigation measures on the debt ratio in policy scenario 1 with no replacement levies compared to the reference scenario (in % of GDP)

in percentage points



Source: Illustration based on Ecoplan (2024).

3.4.4 Comparison with other policy scenarios

This section describes the effects of the climate mitigation measures in the other policy scenarios (2 to 4) – with different weighting of incentive fees (carbon pricing), regulation and subsidies – relative to the reference scenario and compares them with the effects of policy scenario 1. Table 12 illustrates the effects on the debt ratio.

Table 12: Impact of the climate mitigation measures on the debt ratio in policy scenarios 1 to 4 compared to the reference scenario (in % of GDP)

Government level	Policy scenario 1				Policy scenario 2 (CO ₂ levy)			
	2030	2040	2050	2060	2030	2040	2050	2060
Confederation	0.4%	1.1%	2.3%	3.6%	0.4%	1.1%	2.4%	3.7%
Cantons	0.2%	0.5%	0.7%	0.8%	0.2%	0.6%	0.8%	1.2%
Communes	0.2%	0.5%	0.9%	1.1%	0.2%	0.5%	1.0%	1.3%
Social security funds	0.2%	0.9%	1.8%	2.8%	0.2%	0.8%	1.9%	3.2%
General government	1.0%	3.0%	5.8%	8.4%	1.0%	2.9%	6.1%	9.4%
Government level	Policy scenario 3 (regulation)				Policy scenario 4 (subsidies)			
	2030	2040	2050	2060	2030	2040	2050	2060
Confederation	0.4%	1.2%	2.5%	3.8%	0.7%	1.6%	3.5%	5.8%
Cantons	0.2%	0.5%	0.7%	0.9%	0.2%	0.5%	0.7%	0.9%
Communes	0.2%	0.6%	0.9%	1.2%	0.2%	0.6%	0.9%	1.2%
Social security funds	0.2%	1.0%	2.2%	3.3%	0.3%	1.1%	2.2%	3.2%
General government	1.0%	3.3%	6.4%	9.2%	1.3%	3.8%	7.4%	11.0%

Source: Illustration based on Ecoplan (2024).

Policy scenario 2: CO₂ levy on motor fossil fuels

Policy scenario 2 differs from policy scenario 1 primarily in the way it deals with motor fossil fuels such as petrol and diesel. In policy scenario 2, the net zero target in transport is achieved by means of a new CO₂ levy on motor fuels instead of achieving it with emission standards.

The results show that the stronger focus on CO₂ levies leads to a similar development of the debt ratio as in policy scenario 1. In 2060, policy scenario 2 results in a debt ratio for the general government that is 9.4 percentage points higher than in the reference scenario (8.4 percentage points in policy scenario 1). These results can be explained by the fact that the Confederation will generate additional receipts of up to CHF 900 million per year in the first few years as a result of the new CO₂ tax on motor fuels. As the decarbonisation of the transport sector progresses, revenue from the CO₂ levy on fuels will decrease again from 2040 and disappear completely by 2050.

These additional receipts are ultimately irrelevant for the effect on the federal budgetary balance because – as with the CO₂ levy on thermal fuels – all revenues are assumed to be either redistributed or transferred to cantonal funding programmes. Nevertheless, the indirect effects triggered by the levy do have an influence. On one hand, according to the Energy Perspectives 2050+, the additional levy on motor fuels leads to higher leisure consumption and thus increases welfare. On the other hand, it has a negative impact on GDP, wages and consumption. As a result, the indirect effects on tax revenues will be greater. Among other things, the losses in direct tax revenues and VAT will be higher than in policy scenario 1.

From a purely fiscal policy perspective, regulating emissions in the transport sector by means of emission standards – under the assumptions made – appears to be slightly more favourable than by means of the redistributed CO₂ levy. This distinguishes the public finance perspective from that of overall welfare, which was the focus of the Energy Perspectives 2050+ report, when studying the economic impact of reaching the net zero target. According to their result, the welfare effects of policy scenario 2, which result from the benefits of consumption and leisure, are less negative than in policy scenario 1.

Policy scenario 3: Emission standards on thermal fossil fuels

Policy scenario 3 differs from policy scenario 1 in the way it deals with thermal fossil fuels. The CO₂ levy on thermal fuels is lower, but additional emission standards will be added until 2050 to support the decarbonisation to reach the net zero target.

The results show that the debt ratio in policy scenario 3 is 9.2 percentage points higher in 2060 than in the reference scenario (8.4 percentage points in policy scenario 1).

When comparing the underlying results, it is important to discuss the role of the CO₂ levy on thermal fuels. The receipts from the CO₂ levy on thermal fuels partially disappear compared to policy scenario 1. As with the mechanism in the previous section, this has no impact on the federal budgetary balance, as the expenditure for redistribution and the cantonal building programmes are directly linked to these receipts. As such, changes in the impact on public finances are again the result of indirect effects, in particular the reduced receipts from direct taxes and VAT. These turn out slightly more negative than in policy scenario 1 and slightly more positive than in policy scenario 2 in 2060.

Policy scenario 4: Subsidies

Policy scenario 4 is characterised by additional changes on the expenditure side. Firstly, there is a total of CHF 3.2 billion in new subsidies between 2025 and 2034 as part of the Climate and Innovation Act (CIA). Secondly, from 2040 the Confederation will subsidise the acquisition of NET capacity abroad, which in the other policy scenarios is assumed to be financed by the private polluters.

As expected, these elements primarily affect federal expenditure. In 2050, the Confederation has a budgetary balance which is CHF 3.1 billion worse off than in the reference scenario. This balance is significantly more unfavourable than the budget balance in policy scenario 1 (by CHF 1.7 billion). Although the negative balance will decrease slightly in the following years, it will still amount to around CHF 2.4 billion in 2060.

In addition to the actual expenditure on subsidies, additional expenditure to finance the higher level of government debt also plays a role. At CHF 0.8 billion, the Confederation will have almost twice the amount of additional expenditure on debt interest to deal with in 2060 than in policy scenario 1, compared to the reference scenario.

There are only minor changes at the other levels of government in policy scenario 4. The indirect effects on tax revenues are similar to those in policy scenario 3.

Due to the additional expenditure at federal level, the deficit on the general government budgetary balance is CHF 4.4 billion higher in 2060 than in the reference scenario. This is the highest deficit of the four policy scenarios, leading to a debt ratio that is 11 percentage points higher than in the reference scenario (8.4 percentage points in policy scenario 1).

3.5 Comparing the results internationally

Although climate mitigation measures will lead to major structural changes in the economy, the effects on welfare, economic growth and public finances in Switzerland are rather moderate in the long term according to previous studies. They are also very likely to be significantly lower than the effects that uncontrolled climate change would inflict. This section will compare the results of the present study on an international basis.

The Federal Ministry of Finance in Austria has carried out a similar study to this report, in which it analysed the impact on public finances of climate mitigation measures to achieve the net zero target by 2050.⁵⁷ According to its estimates, climate mitigation measures will increase Austria's debt ratio by just 3.7 percentage points between 2019 and 2050. However, the path to net zero leads to considerable structural changes in economic activity. Energy prices and consumer prices are expected to rise by 2040, which will stimulate wage growth. This leads to a shift in the production structure from labour to capital and thus to slightly lower employment. From 2040 onwards, a relative improvement in employment and private consumption is expected compared to a reference scenario due to falling electricity prices. By 2050, the small initial losses in employment and consumption will be almost completely offset.

⁵⁷ See Austrian Federal Ministry of Finance (2022)

According to the 2021 report by the Office for Budget Responsibility (OBR), the path to net zero would increase the UK's debt ratio by 21 percentage points to just under 120% of GDP between 2020 and 2050.⁵⁸ This result is largely due to the decline in fuel tax revenue, which is not compensated for by replacement levies as in this study. Nevertheless, the report emphasises that early tightening of climate mitigation measures is worthwhile and that the costs of climate change would be far higher without climate change mitigation. In a scenario without climate mitigation measures, the debt ratio would rise to around 290% of GDP due to expensive adaptation measures to a warmer climate and damage caused by more frequent and more intense extreme weather events.

In its Fiscal Monitor 2023, the IMF estimates that the debt ratio of advanced economies and developing countries could be 10 to 15 percentage points higher in 2050 if climate mitigation measures are taken to achieve net zero. This compares to a scenario in which the net zero target is not achieved and in which the costs of climate change are not taken into account. This can result in an increase of up to 50 percentage points if countries introduce climate mitigation measures that are mainly based on subsidies.⁵⁹

The Coalition of Finance Ministers for Climate Action (CFMCA) has published an overview study in which it discusses initial analytical approaches with regard to methods and results for quantifying the impact of climate action on the economy and, in some cases, on public finances.⁶⁰ The report makes it clear that the path to net zero will lead to structural changes in energy production and use, agriculture, industry, transport and buildings. These effects will in turn have a direct and indirect impact on public finances. In addition, negative emissions are likely to play a key role, whether through natural or technical solutions. The report also notes that there is as yet no established methodology for analysing the long-term impact of climate change mitigation on public finances.⁶¹ This statement emphasises the pilot nature of this study.

3.6 Conclusion

Based on a pilot study, this chapter analyses the impact of climate mitigation measures to achieve the net zero emissions target on Switzerland's public finances for the first time. As the future development of climate policy is fraught with uncertainty and there is as yet no internationally established methodology for analysing the impact of climate mitigation measures on public finances, the results should be interpreted with caution.

The results of the modelling show that the path to net zero will increase the pressure on public finances, primarily through changes in the revenues. Public finances can expect to see lower receipts from VAT and direct taxes due to the additional climate mitigation measures and the associated lower growth in GDP, consumption and wages. This compares to the development in a scenar-

⁵⁸ See OBR (2021)

⁵⁹ See IMF (2023)

⁶⁰ See Tamminen et al. (2022)

⁶¹ The report emphasises that the Danish GreenREFORM model is one of the most advanced models for analysing the environmental, economic and fiscal impacts of climate policy in the next few decades. The model is developed by the Danish Research Institute for Economic Analysis and Modelling (DREAM) and the Danish Ministry of Finance. So far, the focus has been on analysing the economic impact of stylized policy changes.

io without further climate mitigation measures, in which the net zero target is not achieved. The loss of revenue from mineral oil tax and the LSVA due to the electrification of the transport sector can, however, be compensated for by the introduction of replacement levies.

Overall, climate mitigation measures are associated with increasing pressure on budgetary balances. The Confederation and the social security funds are the worst hit financially. Ultimately, it is clear that the increased use of subsidies in climate policy will further increase the pressure on public finances.

4 Closing remarks

The advancing ageing and climate change represent two key long-term challenges for public finances. The 2024 fiscal sustainability report for Switzerland shows the fiscal pressure that these two important areas will place on Switzerland in the next few decades.

If demographics and the economy develop as assumed, the analysis of the impact of ageing on public finances shows that the need for fiscal and economic policy action by the Confederation, including social security expenditure, and the cantons is pronounced. Ageing will require further reforms to the AHV at federal level at the end of the 2020s. This need for fiscal and economic policy action has become even more urgent since the adoption of the initiative for a 13th AHV pension payment, the counter-financing of which must be tackled quickly. The pressure from healthcare expenditure primarily jeopardises the sustainability of cantonal finances. This emphasises the need for reforms aimed at increased efficiency and better control of spending in healthcare. Higher economic growth will tend to make it easier to cope with the additional demographic burden on public finances.

Based on a pilot study, the impact of climate mitigation measures to achieve the net zero target on Switzerland's public finances is also being analysed for the first time. Under the assumptions made, the results show that the route to net zero will increase the pressure on public finances. This effect is primarily due to lower receipts as a result of weaker economic growth. The Confederation and the social security funds will be the hardest hit financially. The introduction of replacement levies on electric vehicles is proving to be important to compensate for the loss of revenue from the mineral oil tax and the LSVA. Moreover, the increased use of subsidies in climate policy leads to additional expenditure, which further increases the pressure on public finances, particularly at federal level.

These results indicate that public finances will come under increasing pressure in the coming decades in view of ageing and the expansion of climate mitigation measures to achieve net zero and that there is a need for reform.

From a broader perspective, healthy public finances are vital for a state's ability to act in crises. It is therefore crucial to ensure balanced public finances in the long term and thus strengthen the resilience of the Swiss economy.

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