REPUBLIC OF SLOVENIA
FISCAL COUNCIL

Financing climate transition in Slovenia: Current trends and estimated future needs

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APEGG – survey on household energy and fuel consumption

ARSO – Slovenian Environment Agency

CEF – Connecting Europe Facility

EAFRD – European Agricultural Fund for Rural Development

EE – energy efficiency

EEC – Energy Efficiency Centre

EIB – European Investment Bank

ELENA – European Local Energy Assistance

EMFF – European Maritime and Fisheries Fund

ERDF – European Regional Development Fund

ESF – European Social Fund

ETS – Emissions Trading System

EU – European Union

FC – Fiscal Council

GDP – gross domestic product

GHG – greenhouse gases

IEA – International Energy Agency

IJS – Jožef Stefan Institute

IMAD – Institute of Macroeconomic Analysis and Development

IMF – International Monetary Fund

IRENA – International Renewable Energy Agency

LIFE – L'Instrument Financier pour l'Environnement (EU's funding instrument for the environment)

NECP – National Energy and Climate Plan

OECD – Organisation for Economic Co-operation and Development

PRIMES – Price-Induced Market Equilibrium System

REACT-EU – Recovery Assistance for Cohesion and the Territories of Europe

RES – renewable energy sources

RRP – Recovery and Resilience Plan

SMEs – small and medium-sized enterprises

SORS – Statistical Office of the Republic of Slovenia

YEI – Youth Employment Initiative

Summary

Achieving the climate and energy targets will be one of the greatest challenges for fiscal policy in the coming years. As it is expected that investments in the implementation of these targets will increase significantly, one of the solutions frequently mentioned in the discussions on potential changes in fiscal rules at the EU level is the special treatment of green investments in calculating the indicators of compliance with the rules. Within this context, we have assessed how great the consequences of implementing the climate and energy targets set out in the National Energy and Climate Plan (NECP) for public finance in the period until 2030 would be. We estimate that achieving the NECP targets will require an approximately three times greater average annual volume of investments in the implementation of climate and energy targets than in 2016–2020 or approximately 4% of GDP more per year. Although the volume of dedicated resources available for this purpose in the period until 2030 will be considerably greater than in past years, we estimate that, according to the most probable scenario, there will still be a gap of nearly 2.0% of GDP per year to the necessary investment volume identified in the NECP.

In the years until 2030, meeting the NECP targets, which in many aspects already lag behind the latest EU targets, will require a considerable boost in the efforts with regard to the 15-year period since 2005, which is the base year for the majority of climate policy goals. The greatest challenges are related to decarbonisation, which includes reducing greenhouse gas emissions and increasing the share of renewable energy sources in final energy consumption. Meeting climate goals in these areas in the decade until 2030 will require twice as much effort than in the previous 15 years. This will require a considerably more consistent implementation of the existing and the introduction of new measures.

We estimate that the volume of investments contributing to the achievement of climate and energy targets in 2016–2020 at the level of national economy amounted to EUR 5 billion or on average 2% of GDP per year. Approximately three-quarters of this were private funds, which had been, to a significant extent, mobilised through targeted incentives from public funds. In the NECP, the investment requirements for meeting the targets are estimated at EUR 28.4 billion, which amounts to, on average, 6% of GDP per year.

According to our estimate, the funds available from the identified dedicated resources for investments in the 2021–2030 period amount to EUR 11.6–12.3 billion. This means a two times greater annual average than in 2016–2020. Based on this estimate, we have devised different scenarios of investment potential. According to the scenario that best reflects the current state and requires the least changes in orientations, the investment potential amounts to EUR 19.7–20.4 billion. According to this scenario, the Eco Fund would earmark a similar amount of funds for grants in the future as in the last few years, when the time of application processing has increased considerably due to the Eco Fund's limited staff and administrative capacities. The estimate also includes quite optimistic assumptions regarding the scope of mobilisation of private financial resources related to investments in buildings that were taken into account in the national strategy on energy renovation of buildings adopted last year. The gap between the investment potential envisaged in this scenario and the required volume of investments in 2021–2030 identified in the NECP amounts to EUR 8.0–8.7 billion. This represents nearly half of the average annual volume of investments of the general government in the 2016–2020 period or approximately 2.0% of GDP per year. According to the scenario in which the available funds would be spent optimally, the total gap to the investments identified in the NECP could be reduced considerably. In this scenario, the expectedly greater funds from the sale of emission

coupons would be redirected entirely to the grants provided by the Eco Fund, which would thus be about five times greater than they are currently.

In any event, the available dedicated resources will need to be used more efficiently than in the past to properly address the climate and energy challenges. This would include a considerable increase in the efficiency and ability of their use, the adoption and effective implementation of numerous new measures, and a significant strengthening of the institutional framework and capacities. Based on the nature of the necessary measures and past experience, we conclude that, regardless of the chosen investment potential scenario, the gap should probably be closed with public funds, as the private sector has not yet shown any interest in investing in what are mainly infrastructure projects and is, at least in the electricity industries, also dealing with limited financial resources considering the identified investment needs. In view of the above, the implementation of climate and energy targets presents a significant risk for the medium-term status of public finances.

1. National climate and energy policy targets until 2030

Pursuant to Regulation (EU) No 2018/1999, EU Member States had to adopt or commit to targets concerning climate policy and plans for meeting these targets. In February 2020, Slovenia adopted the National Energy and Climate Plan for the period until 2030 (NECP)[1] and in June 2021 also the Resolution on long-term climate strategy until 2050[2]. This analysis focuses on the period until 2030, for which particular targets, the measures to fulfil them and the estimates of necessary investment are more clear, based on the NECP.

In their NECPs, EU Member States had to determine targets, policies and measures for the period until 2030 for the following five dimensions of the Energy Union: (1) decarbonisation, including greenhouse gas (GHG) emissions and renewable energy sources (RES); (2) energy efficiency; (3) energy security; (4) internal energy market; and (5) research, innovation and competitiveness. Achieving the targets in these areas, as determined in the NECP, will require considerably greater efforts than in the past, which implies a more effective implementation of the existing measures and the adoption of extensive additional measures. The European Commission[3] gave a very critical assessment of the NECP, with regard to limited ambitions and the lack of concrete measures for their fulfilment, and in particular with regard to unclear financial projections for achieving the set targets.

It should be noted that the macroeconomic scenario that served as the basis for the NECP projections is quite conservative and that on a more realistic assumption regarding economic growth, even greater efforts than those envisaged in the NECP would be needed to achieve the set climate targets.[4] The adoption of the resolution until 2050 based on the even more ambitious EU plans implies the need for an additional boost to the efforts after 2030 if the goal of climate neutrality is to be achieved by 2050.[5]

Table 1.1: Overview of the key climate and energy policy targets by 2030 based on the NECP

		Emissions – total (1,000 t CO_2 equiv.)	Emissions – non-ETS (1,000 t CO_2 equiv.)	RES – final consumption share (%)	Final energy consumption (TWh)	Primary energy consumption (TWh)	R&D expenditure – total (% GDP)	R&D expenditure – public sector (% GDP)
Value	2005	20.433	11.710	19,8	59,4	84,2	1,4	0,6
	2019	17.065	10.810	22,0	56,8	77,9	2,1	0,5
	2030 target	13.077	9.368	27,0	54,9	73,9	3,0	1,0
Change	2030/2005	-36,0	-20,0	7,2	-4,5	-10,3	1,6	0,4
	2019/2005	-16,5	-7,7	2,2	-2,6	-6,2	0,6	-0,1
	2030/2019	-23,4	-13,3	5,0	-1,9	-4,0	1,0	0,5

Sources: ARSO, SORS, Eurostat, NECP, Fiscal Council's calculations.

[1] Government of the Republic of Slovenia (2020a).

[2] National Assembly of the Republic of Slovenia (2021).

[3] European Commission (2020a).

[4] Projections included in the NECP were based on the reference scenario of the European Commission from 2016, which assumed a 1.6% average annual growth of GDP in the 2021–2030 period. In its 2021 Autumn Forecast for the 2021–2023 period, IMAD assumed a 4.7% average annual growth of real GDP.

[5] Sectoral targets for GHG reduction by 2050 are available in National Assembly of the Republic of Slovenia (2021), p. 16.

1.1. Greenhouse gas emissions

With regard to GHG emissions, the goal of the NECP is by 2030 to reduce total emissions by 36% and emissions outside the trade system (non-ETS) by 20% compared to 2005 as the base year. The EU regulation only sets commitments with regard to non-ETS emissions, i.e. a reduction by 15%. The national target is thus actually more ambitious than the EU commitments. The sectoral NECP targets also indicate that the total reduction of non-ETS emissions by 2030 would be even more ambitious (by 24.5%) than the aforementioned total target. The goal of a 20% reduction in the non-ETS emissions by 2030 implies that the reduction in this decade will be almost twice as more noticeable as in the 2005–2019 period. It should be noted that during the economic recovery between 2015 and 2019, total non-ETS emissions increased by 1.5%. The European Commission estimates that by implementing the existing measures until 2030, non-ETS emissions will reduce by 10%,[6] which means that many additional measures will have to be adopted and implemented to meet the set targets.

Emissions from transport pose the greatest challenges, despite the fact the targets allow a greater quantity of emissions in 2030 than in 2005. As the increase by 2019 was more than twice higher than permitted by 2030, the emissions from transport will have to be reduced by more than one-tenth in this decade to meet the set target. This will require a significantly more consistent implementation of the existing measures, the fastest possible introduction of many new measures[7] and also the elimination of some of the existing measures. The latter applies in particular to the refund of excise duty on energy products, which has been pointed out by the European Commission[8], the Energy Efficiency Centre of the Jožef Stefan Institute (IJS-EEC)[9] and environmental non-governmental organisations.[10] In 2019, the refunds, reductions and exemptions of excise duty on energy products amounted to EUR 88 million.[11] In the NECP[12] and the Long-Term Climate Strategy Until 2050,[13] the Government committed to abolish the refund of excise duty on liquid fossil fuels by 2025 in transport and by 2030 in industry.

In other areas, similar efforts will be needed in this decade as in the 2005–2019 period to meet the targets by 2030. This means faster annual reduction in emissions than in the period of economy recovery from 2015 to 2019, when the reduction was slowed considerably, while in agriculture and non-ETS industry the emissions even increased. Considering their share in total emissions, the reduction

Table 1.2: NECP targets for GHG emissions by areas

change in %	Transport	General use	Agriculture	Waste management	Industry*	Energy*
2030/2005 (target)	+12,0	-76,0	-1,0	-65,0	-43,0	-34,0
2019/2005 (actual)	+27,9	-50,6	+0,3	-43,2	-68,2	-23,0
2030/2019 (required to meet the target)	-12,4	-51,4	-1,3	-38,3	+107,8	-26,0

*Sources: ARSO, SORS, NECP, Fiscal Council's calculations. Note: *This only includes the part of the sector that is not included in the emissions trading system, which only represents approximately 3% of all energy sector emissions and approximately one-quarter of industry emissions.*

[6] European Commission (2020a), pp. 7–8

[7] An overview of the existing and planned measures concerning transport is available in Government of the Republic of Slovenia (2020a), pp. 95–104.

[8] European Commission (2020a), pp. 3 and 17.

[9] IJS-EEC (2021), p. 17.

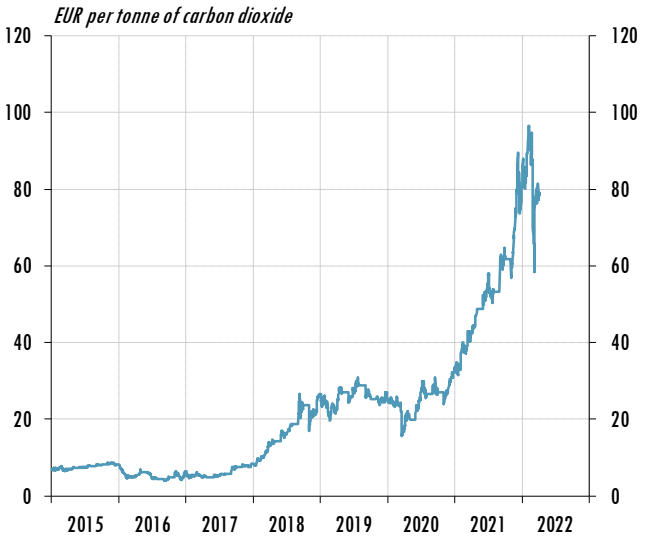
[10] Umanotera.

[11] Ministry of Finance (2021), p. 15.

[12] Government of the Republic of Slovenia (2020a), p. 77.

[13] National Assembly of the Republic of Slovenia (2021), p. 77.

Figure 1.1: Emission coupons price



Source: www.investing.com.

in the agriculture and general use sectors will be the greatest challenge. In the general use sector, this mainly applies to buildings, with regard to which the adopted measures will have to be implemented more effectively in the public sector[14] and households will have to be even more encouraged to carry out energy renovations.

In the parts of the energy and industry sectors included in the emission trading system, purchasing coupons will become increasingly difficult, due to rapidly increasing prices. In 2020, 44 installations were included in the emission trading system, which emitted 6.1 million tonnes of CO2 into the air. They were allocated 1.6 million coupons.[15] They had to cover the difference to the actual volume of emissions by buying 4.5 million coupons on the market, which posed a considerable financial challenge, even at the average price of EUR 25. The financial burden will further increase in the future, as in 2021 the price of a coupon more than doubled on average and has already increased considerably this year.[16]

1.2. Renewable energy sources

With regard to renewable energy sources (RES), by 2030 Slovenia should achieve a 27% share in the final energy consumption, which implies twice as great an increase in share than in the 2005–2019 period, both in total and by individual areas. In 2020, Slovenia reached the target of 25% share. However, this was due to the fall in consumption to the lowest level since at least 2004 as a result of the closure of many businesses at the outbreak of the epidemic. In its assessment of the NECP, the European Commission described the 2030 national target as unambitious[17] and stated that it should be 37%.

[14] A binding target since the beginning of 2014 is the renovation of 3% of total floor area owned or used by the public sector per year. Up to and including 2019, only 1.2% of floor area was renovated on average per year. For more information see IJS-EEC (2020).

[15] Ministry of the Environment and Spatial Planning (2021).

[16] The Šoštanj Thermal Power Plant has to buy the most coupons per year. It spent EUR 68 million in 2020 and approximately EUR 96 million in 2021 for this purpose. For more information see: https://www.rtvslo.si/okolje/kaj-so-emisijski-kuponi-in-zakaj-se-drazijo/608842. (Only in Slovene)

[17] European Commission (2020a), pp. 2 and 4.

Table 1.3: NECP targets for RES share in the final energy consumption

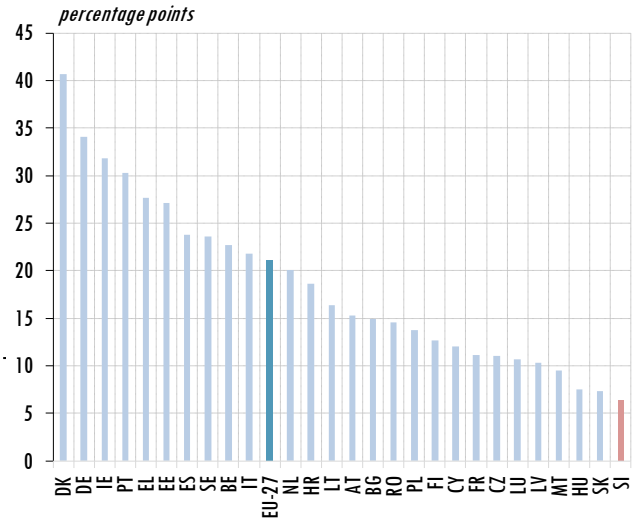
		Total	Electricity	Heating and cooling	Transport
Value	2005	19,8	28,7	26,4	0,8
	2019	22,0	32,6	32,2	8,0
	2030 target	27	43	41	21
Change	2019/2005	2,2	4,0	5,8	7,2
	2030/2019	5,0	10,4	8,8	13,0

Sources: ARSO, SORS, NECP, Fiscal Council's calculations.

In the NECP, Slovenia highlighted that in determining this national target the European Commission had not taken into account all relevant circumstances, as provided in Article 5 of Regulation (EU) No 2018/1999. Apparently, the Commission had not appropriately taken into account the following facts: that the share of energy consumption in transport, where the introduction of the RES is very difficult, in Slovenia is among the highest in the EU; that due to the extensive areas included in Natura 2000, it is more difficult to site new wind and hydro power plants; that by replacing heating and cooling devices, households are reducing the consumption of wood biomass and thus RES; and that the share of energy-intensive industry is among the greatest in the EU, where the technologies available on the market do not yet enable a greater use of RES. There were also misgivings about the adequacy of the Commissions calculations.

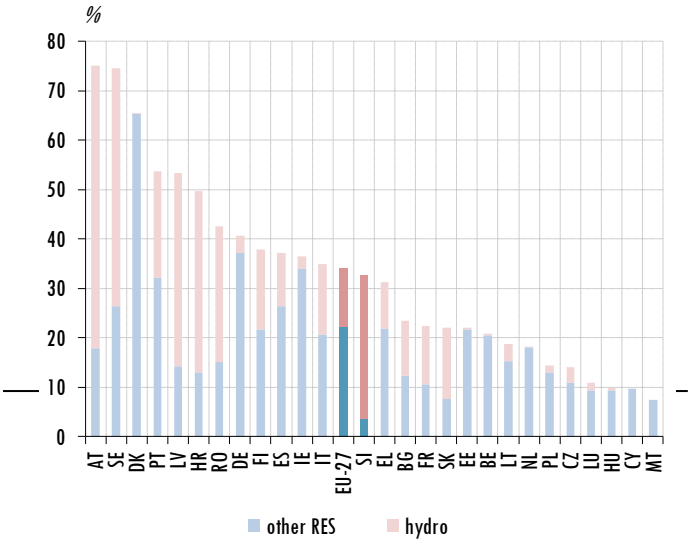
Regardless of the view on the justifiability of the aforementioned relevant circumstances, the fact is that between 2005 and 2020, the share of RES in energy consumption in Slovenia increased the least compared to other EU countries. It increased by 6.4 pps, while average increase in the EU was by 21.1 pps. Furthermore, the share of RES, excluding hydro power plants, is by far the lowest in the EU (3.6%) and more than six times lower than the average.

Figure 1.2: Change of RES share in electricity consumption 2005-2020



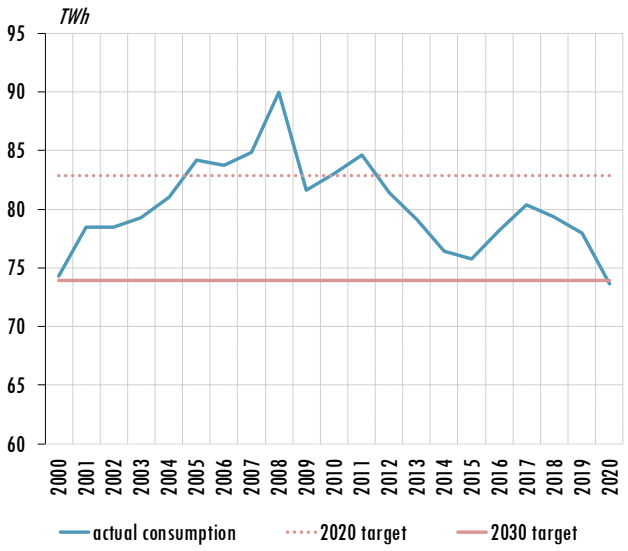
Source: Eurostat, FC calculations.

Figure 1.3: RES share in electricity consumption (2019)



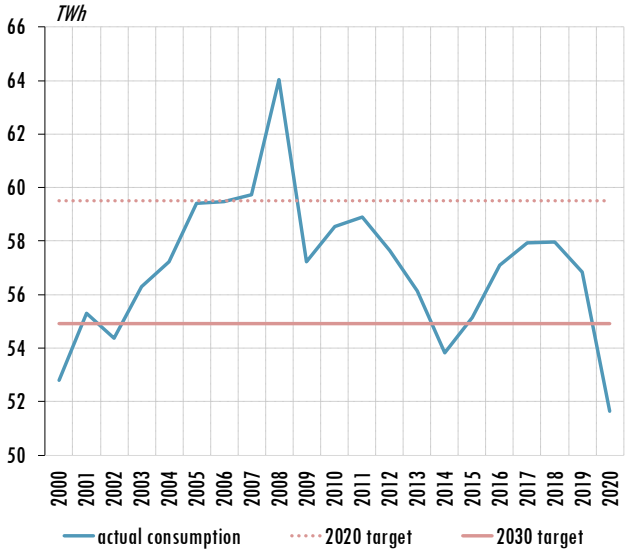
Source: Eurostat, FC calculations.

Figure 1.4: Primary energy consumption in Slovenia



Source: ARSO, SORS, NECP.

Figure 1.5: Final energy consumption in Slovenia



Source: ARSO, SORS, NECP.

1.3. Energy efficiency

The key NECP 2030 target regarding energy efficiency is a 35% reduction in primary and final energy consumption according to the reference PRIMES scenario[18] of 2007. The 2020 targets for primary and final energy consumption were met in 2009 already.[19] Thus the 2020 targets could be assessed as relatively unambitious, since energy consumption in 2020 was at a similar level as in 2005. The fulfilment of these targets was to a great extent also due to the epidemic and associated restrictions on activities, which resulted in a significant reduction in consumption in 2020. Consequently, 2020 is not the most relevant year for the assessment of the efforts that need to be made by 2030. By 2030, the consumption of primary energy should be reduced by 5.2 % and of final energy by 3.4 % compared to 2019. Considering that in the 2005–2019 period it was reduced by 5.9% and 4.5% respectively, the 2030 targets appear achievable. In its assessment of the NECP, the European Commission described the target for primary consumption as of modest ambition and the target for final consumption as of low ambition.[20] As with some other targets, the key challenge will be the transport sector, which represents almost 40% of total final energy consumption and whose consumption increased by one-third from 2005 to 2019. Conversely, in the same period, the consumption by industry and households was reduced by roughly one-fifth and one-fourth respectively.

1.4. Expenditure for research and development

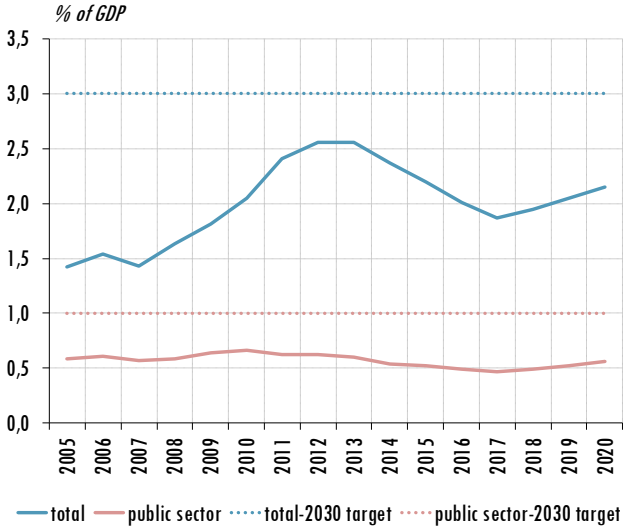
In order to meet the NECP goals, it will be important to increase the funds for research and development. These should be increased as a whole and directed more towards the projects pursuing the goals of a climate-neutral society. In view of this, the NECP goal is to increase investments in research and development to at least 3% of GDP, of which 1% of GDP will be public funds. In its assessment of the NECP, the European Commission established that the targets are clearly determined, while the policies to meet these targets and timeline for increasing investments are less so. In the

[18] PRIMES is an EU energy system model used by the European Commission to simulate energy consumption and supply. For more information on the model, see https://ec.europa.eu/clima/eu-action/climate-strategies-targets/economic-analysis/modelling-tools-eu-analysis_en.

[19] In 2010 and 2011, primary energy consumption was higher than the 2020 target.

[20] European Commission (2020a), p. 4.

Figure 1.6: Research and development expenditure in Slovenia



Source: Eurostat, NECP.

period from 2005 to 2020, the total volume of investments in research and development increased by 0.7% of GDP. This was solely due to the increase in private funds, as the amount of public funds remained the same, i.e. at 0.6% of GDP. In order to meet the NECP goals by 2030, the total amount of funds must be increased more than in the last 15 years, and public funds included in this amount must increase by 0.4% of GDP.

2. Estimated financial resources for the achievement of climate and energy targets

2.1. Financial resources for the achievement of climate and energy targets (2016–2020)

The NECP states that the investments in implementing the measures should be financed from private funds, as far as possible, and that the financing gap should primarily be bridged with EU funds. Dedicated national resources are also available, i.e. the Climate Change Fund, the contribution to support electricity production from the RES and cogeneration and the contribution for energy efficiency (EE). Government revenues related to addressing climate change also include many environmental pollution charges, which are currently part of the integral budget but should, pursuant to the strategic documents, at least in part become dedicated resources.

We estimate that in **2016–2020**, **investments in projects for the achievement of climate and energy targets** amounted to roughly EUR 5 billion (see Table 2.1). Strictly methodologically, approximately three-quarters of these were private funds, but in many cases the sources were predominantly state-owned institutions or funds, in particular the investment funds of ELES and electricity distribution companies. RES and cogeneration subsidies are also classified as private funds. The payment of contribution for this purpose has been prescribed by the state, but the subsidies are paid by Borzen, which is not classified as an institutional unit of the general government. The major part of the remaining private funds were funds from the participation in utilising the Eco Fund financial incentives and funds for building renovations that were carried out without public financial incentives, also called spontaneous building renovations. Considering the volume of investments boosted by public subsidies, public funds evidently play an important role in mobilising private funds.

One of the key public resources for financing "green" investments are EU funds available from various sources. The most important are **cohesion policy funds**, which include three funds[21] within which Slovenia had access to EUR 3.3 billion in total in the 2014–2020 period. The resources from two funds[22] within the EU agricultural and fisheries policy were also available, in total EUR 1.2 billion. Total funds available thus amounted to EUR 4.5 billion, or together with the Slovenian participation EUR 5.6 billion. Of these, EUR 1.4 billion, or EUR 1.7 billion with added Slovenian participation, was available to areas that can be considered "green"[23] (see Table 2.2). However, not all funds invested in these areas contribute directly to the achievement of climate and energy targets. A significant part (approximately 40%) is represented by projects for water supply infrastructure, flood protection, the remediation of contaminated land and similar projects. Furthermore, measures related to agriculture are included in the NECP but are not defined or evaluated within the needed investments.[24] Up to and including 2020, the volume of realised cohesion policy funds from the 2014–2020 financial perspective to finance projects contributing to the achievement of climate and energy targets amounted to EUR 280 million (with the Slovenian participation EUR 310 million). In total EUR 720 million (with the Slovenian participation approximately EUR 870 million) of EU cohesion policy funds from the 2014–2020 financial perspective should be spent on projects that according to our assessment directly contribute to the achievement of climate and energy targets. To make an

[21] European Regional Development Fund (ERDF), Cohesion Fund and European Social Fund (ESF). Funds from the Youth Employment Initiative (YEI) were also available in the 2014–2020 period.

[22] European Agricultural Fund for Rural Development (EAFRD) and European Maritime and Fisheries Fund (EMFF).

[23] The cohesion policy funds support thematic objectives, which include "Preserving and protecting the environment and promoting resource efficiency", "Promoting climate change adaptation, risk prevention and management", and "Supporting the shift towards a low-carbon economy in all sectors".

[24] Therefore we did not include the planned funds within the European Agricultural Fund for Rural Development for 2014–2020 (EUR 570 million, together with the Slovenian participation EUR 750 million), which are very likely to contribute to the achievement of climate and energy targets, in Table 2.1 in order to adequately compare past and future investments.

Table 2.1: Financial resources for investments aimed at meeting the climate and energy targets (2016–2020)

EUR million	EU funds	Public funds	Private funds	Total
Eco Fund (non-refundable)[1]		213	673	886
Eco Fund (refundable)[1]		139	679	818
Cohesion funds (EU and SI part)[2]	281	29		310
CEF[3]	123	142		265
Horizon 2020 (EU and SI part)[3]	51	11		62
Borzen			673	673
Electricity distribution companies			630	630
ELES			297	297
SID (green bond)[4, 5]		36	36	72
EIB[5]	112		112	224
Other[6]		239	510	749
Total	**567**	**809**	**3.611**	**4.987**

Sources: Borzen, CARE4CLIMATE, Slovenian Infrastructure Agency, Eco Fund, Elektro Celje, Elektro Gorenjska, Elektro Ljubljana, Elektro Maribor, Elektro Primorska, ELES, European Investment Bank, European Commission, INFRA, SID Bank, Climate Change Fund, Government Office for Development and European Cohesion Policy, Fiscal Council's estimate.

Notes:

[1] Fiscal Council's estimate regarding projects directly contributing to the achievement of climate and energy targets.

[2] Realisation by the end of 2020. Fiscal Council's estimate regarding projects directly contributing to the achievement of climate and energy targets.

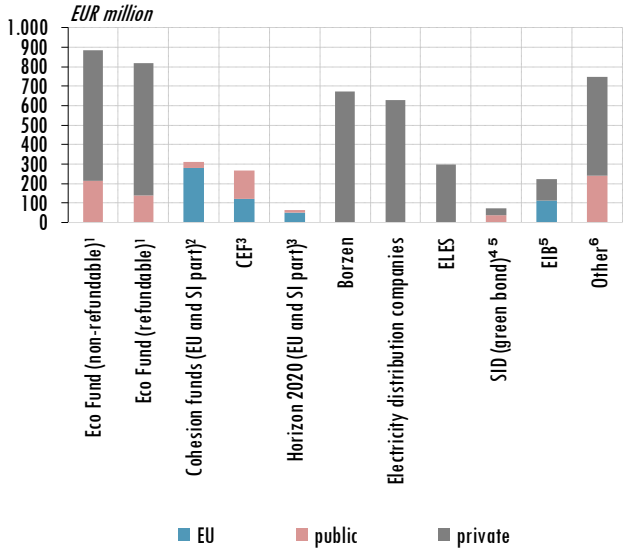
[3] Projects concluded by the end of 2020. With regard to CEF, only investments in railway infrastructure are included.

[4] Green bond loans drawn by the end of 2020.

[5] Double leverage assumed; the EIB can only finance up to half the investment value.

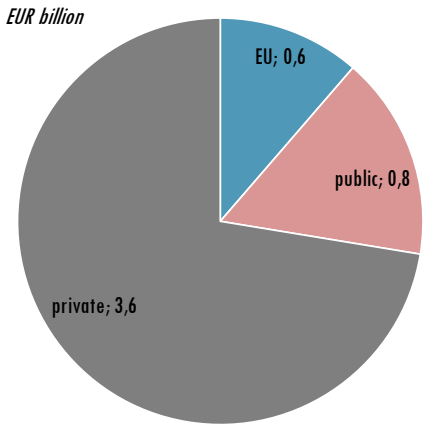
[6] Integral state budget funds, Water Fund, estimate of spontaneous household investments in energy performance of buildings financed by private funds.

Figure 2.1: Financial resources for investments aimed at meeting the climate and energy targets 2016-2020



Sources and notes: See Table 2.1.

Figure 2.2: Financial resources for investments aimed at meeting the climate and energy targets 2016-2020 by sector



Sources: See Table 2.1.

Table 2.2: Available financial resources from EU structural and investment funds (2014–2020)

EUR million	EU part		Total[1]	
	Total	"Green"[2]	Total	"Green"[2]
European Regional Development Fund (ERDF)	1.657	229	2.105	287
Cohesion Fund	914	579	1.075	681
European Social Fund (ESF)	732		912	
Youth Employment Initiative (YEI)	18		21	
European Agricultural Fund for Rural Development (EAFRD)	1.156	572	1.506	750
European Maritime and Fisheries Fund (EMFF)	22	6	29	7
TOTAL	**4.499**	**1.386**	**5.648**	**1.726**

Source: https://cohesiondata.ec.europa.eu/countries/SI#. Notes: [1] Together with the funds of Slovenian participation. [2] Covers the following thematic objectives: "Preserving and protecting the environment and promoting resource efficiency", "Promoting climate change adaptation, risk prevention and management", and "Supporting the shift towards a low-carbon economy in all sectors".

appropriate time comparison, the actual expenditure in 2021 and the planned expenditure in 2022 and 2023 were included in the funds available for 2021–2030.

In addition to cohesion policy funds, **other EU financial resources** also contribute to the achievement of climate and energy targets. The more important ones include the Connecting Europe Facility (CEF), within which EUR 349 million were granted to Slovenia, which should, together with other financial resources, promote EUR 1.1 billion worth of investments in transport infrastructure. Within this instrument, the funds contributing to the achievement of climate and energy targets are those allocated to investments in railway infrastructure (EUR 294 million).[25] Within the Horizon 2020 programme for financing research and innovation, in total EUR 380 million were granted to Slovenia, of which

Table 2.3: Available non-refundable EU funds for financing the achievement of climate and energy targets in 2014–2020

EUR million	EU part	Total[1]
Cohesion policy [2]	721	868
Connecting Europe Facility (CEF) [3]	294	832
Horizon 2020 [4]	136	169
LIFE programme	21	34
ELENA [5]	9	10
SKUPAJ	**1.182**	**1.913**

Sources: European Commission, EIB, Fiscal Council's calculations.

Notes:

[1] Together with the funds of Slovenian participation.

[2] The estimate of the Fiscal Council, which includes the realised and planned cohesion policy projects up to and including 2023 within the 2014–2020 financial perspective.

[3] Includes concluded and ongoing investments in railway infrastructure.

[4] Includes concluded and ongoing projects within the following sections: "Secure, clean and efficient energy", "Climate action, environment, resource efficiency and raw materials", "Food security and sustainable agriculture", and "Smart, green and integrated transport".

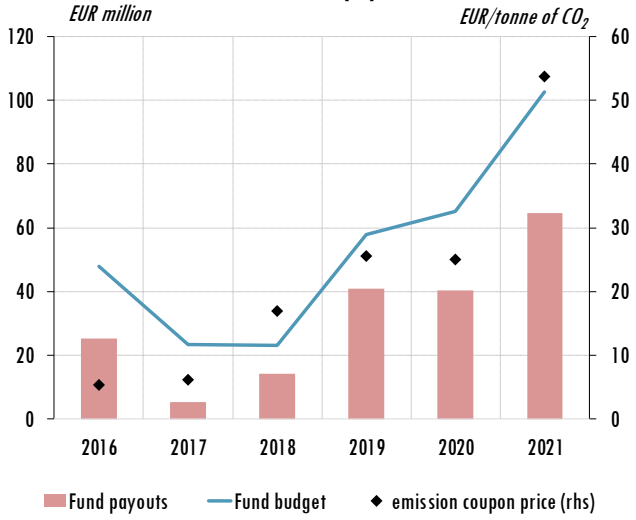
[5] Includes concluded and ongoing projects that have led or will lead to EUR 299 million of investments.

[25] European Commission (2022).

EUR 136 million were in areas relevant to meeting the climate and energy targets.[26] We also included among the EU financial instruments that potentially contribute to the achievement of these targets the funds from the LIFE programme[27], which is an instrument for financing environment and climate action, and ELENA[28], which is a joint initiative by the EIB and the European Commission for providing technical assistance in the preparation of energy efficiency and renewable energy projects. Within ELENA, technical assistance projects worth EUR 9 million were concluded in the previous period or are still ongoing, which will result in EUR 300 million of realised investments. Also among the EU funds are EIB loans, which in the areas contributing to the achievement of climate and energy targets amounted to EUR 310 million in the 2015–2021 period. The majority of these were loans to electricity distribution companies.

Among the dedicated national resources for financing the projects aimed at meeting the climate and energy targets, the NECP identifies three existing sources. The **Climate Change Fund** is a budgetary fund within the state budget and is managed by the Ministry of the Environment and Spatial Planning. It is financed with the revenue from the sale of emission coupons, which in the 2016–2020 period amounted to EUR 217 million.[29] The total amount of payouts in this period was considerably lower, i.e. EUR 126 million. The fund entered 2021 with a transfer of funds from all previous years totalling EUR 132 million. In 2021, as a result of a marked coupon price jump, the Fund's budget increased considerably (to EUR 103 million); however, the actual payouts (EUR 65 million) again remained well below the plans (EUR 120 million) despite the increase.[30] In accordance with the legislation, the competent minister can authorise a part of the Climate Change Fund resources to be used by the Eco Fund; thus the Eco Fund has been the main user of these resources in the past. In the 2019–2021

Figure 2.3: Climate Change Fund revenue and payouts



Source: Climate Change Fund (Sklad za podnebne spremembe), www.investing.com.

[26] Projects within the following sections: "Secure, clean and efficient energy"; "Climate action, environment, resource efficiency and raw materials"; "Food security and sustainable agriculture"; and "Smart, green and integrated transport".

[27] For more information, see https://cinea.ec.europa.eu/life_en.

[28] For more information, see https://www.eib.org/en/products/advising/elena/index.htm.

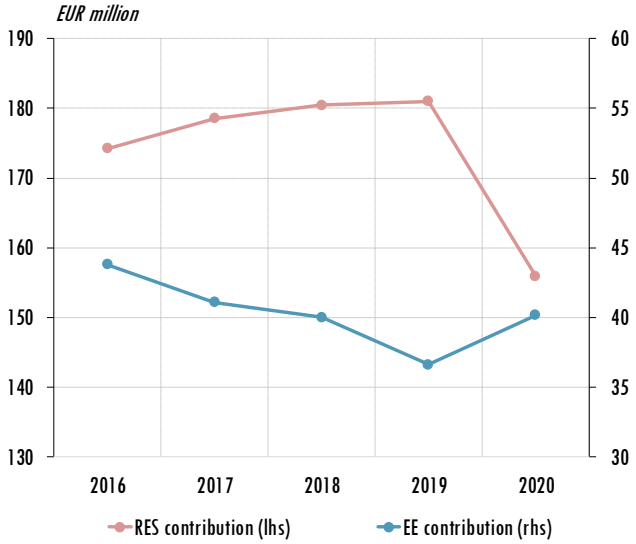
[29] Based on the Fund's information on the annual budget. There are discrepancies between the Fund's data and the data of the Court of Audit (Court of Audit of the Republic of Slovenia (2021)). For the period from 2016 to 2019, the latter being the last year included in the audit report, the Court of Audit states revenues in the amount of EUR 175 million, while the Fund's financial report indicates a total budget of EUR 152 million.

[30] Government of the Republic of Slovenia (2021b).

period, a significant part of the Climate Change Fund resources were allocated to projects that do not contribute to the achievement of climate and energy targets (financing natural disaster recovery).

The remaining two dedicated resources are the **contribution for energy efficiency (EE)**[31] and the **contribution for providing support for electricity production from RES and cogeneration**[32]. The first is the revenue of the Eco Fund and the second of Borzen. The average annual revenue from the EE contribution is approximately EUR 40 million. In the 2016–2020 period, it amounted to a total of EUR 202 million. In the same period, the revenue from the RES contribution was EUR 870 million in total, with the annual average roughly EUR 175 million. While the Eco Fund spends the entire revenue from the EE contribution for its activities, the payout of support by Borzen is lower than the revenue. In the 2016–2020 period, it amounted to EUR 135 million per year on average, totalling EUR 673 million. Borzen entered 2021 with EUR 240 million of transferred funds from the RES contributions received over past years; these are a potential source for financing the achievement of climate and energy targets in the future.

Figure 2.4: Revenue from EE (Eco fund) and RES (Borzen) contributions



Source: Eco fund, Borzen.

The pursuance of climate and energy targets is also financed with **refundable funds**, in particular the loans provided by the Eco Fund, the Slovenian Export and Development Bank (SID Bank) and the European Investment Bank. In the analysed period between 2016 and 2020, the Eco Fund granted in total approximately EUR 140 million of loans, which promoted roughly EUR 820 million of investments in projects aimed at meeting the climate and energy targets. In December 2018, the SID Bank issued the green bond, within which it granted EUR 79 million of loans by the end of 2020, of which EUR 43 million had been drawn by that time.[33] The SID Bank also finances projects contributing to the achievement of climate and energy targets with other products, but there are no data available on their volume. According to the EIB, in the 2015–2021 period, it granted EUR 440 million of loans related to "green" policies in Slovenia, the majority to electricity distribution companies. Considering that the EIB can finance up to 50% of project value, the value of investments co-financed with EIB loans should be at least twice this amount.

[31] For more information, see https://www.energetika-portal.si/podrocja/energetika/prihranki-energije/prispevek-za-energetsko-ucinkovitost/. (Only in Slovene)

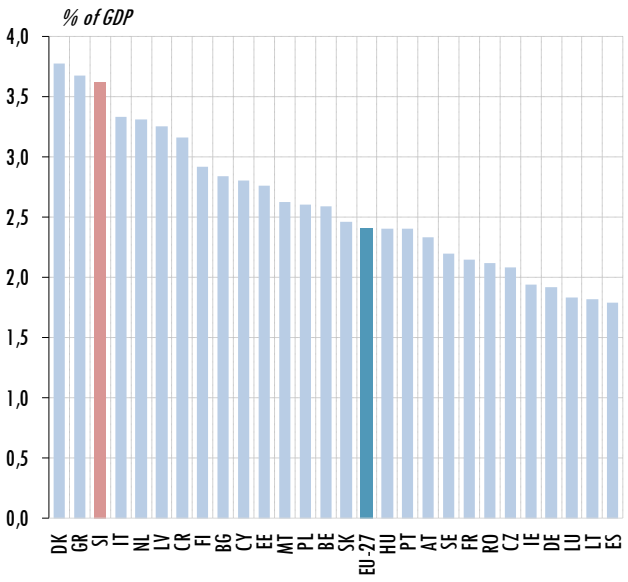
[32] For more information, see https://www.energetika-portal.si/podrocja/energetika/prispevek-za-obnovljive-vire/. (Only in Slovene)

[33] SID Bank (2021).

Box 2.1: Potential additional dedicated public resources

The general government sector revenues include many revenues derived from activities polluting the environment that are not dedicated revenues but a part of the integral budget. These are environmental taxes, whose tax base is a physical unit that has a proven adverse impact on the environment and which are defined as taxes according to the ESA methodology.[1] In Slovenia the average revenues from environmental taxes in the last decade amounted to 3.6% of GDP per year, which was the third highest share in the EU. High revenues from environmental taxes are mainly due to high revenues from energy taxes. These are primarily due to the high fuel consumption in road transport, which is the fourth highest in the EU in terms of contribution to energy intensity.[2] Since 2018, the growth of these revenues has abated due to the reduction in excise duty. IMAD estimates that the price deregulation of petroleum products in 2020 reduced the room for manoeuvre for raising excise duties on energy products in the future if the rises are not part of the synchronised policies of bordering countries.[3] The potential of these revenues for financing the implementation of climate and energy targets is thus restricted, even if these funds later become dedicated resources. The NECP also defines the revenue from the tax on CO2 pollution as a potential dedicated resource. Amounting to roughly 0.3% of GDP, this revenue is considerably lower than the revenue from excise duties (annual average in 2011–2020: 2.6% of GDP). The development documents do not contain any timelines or measures that would actually transform these revenues into dedicated resources.

Figure: Environmental tax revenues 2011-2020



Source: Eurostat.

[1] https://ec.europa.eu/eurostat/cache/metadata/en/env_ac_tax_esms.htm.

[2] IMAD (2021), p. 173.

[3] IMAD (2021), p. 85.

2.2. Financial resources for the achievement of climate and energy targets (2021–2030)

Based on the currently available information regarding the plans for drawing EU funds and on the projections for revenues from dedicated resources, between EUR 9.7 billion and EUR 10.4 billion will be **available in the 2021–2030 period** to finance the investments aimed at meeting the NECP goals (see Table 2.4). Slovenian participation in terms of EU funds will add approximately EUR 1.8 billion, making the final amount EUR 11.6–12.3 billion. This is on average twice the amount of funds per year than in 2016–2020. In order to meet the goals, it will be important to efficiently use EU funds, which will be available in greater volume than in the past due to the introduction of new financial instruments. The projections for revenue from dedicated resources depend on many assumptions and are quite uncertain. The increase in their contribution to the achievement of targets with regard to the past period will depend primarily on how much the efficiency and ability of their spending are improved.

Among **EU funds**, the funds of the past and future financial perspectives and the funds within the Recovery and Resilience Plan (RRP) and the Just Transition Fund and REACT-EU will be available for financing investments aimed at meeting the climate and energy targets. Within the past financial perspective, EUR 105 million (together with the Slovenian participation EUR 178 million) were spent in 2021 on projects for achieving climate and energy targets. For 2022 and 2023, expenditure of EUR 336 million (with the Slovenian participation EUR 380 million) is planned. The plans for utilising funds in the 2021–2027 financial perspective are still quite vague. However, based on the first draft of the EU Cohesion Policy Programme for 2021–2027[34], EUR 1.3 billion will be available for three priorities that can be associated with projects that could contribute to the achievement of the NECP goals.[35] Similarly to the past perspective, the planned funds within these three priorities will probably not all be allocated to the projects that will contribute to the achievement of climate and energy targets.[36] Within the new Recovery and Resilience Facility, approximately EUR 930 million is earmarked for projects that we assess could contribute to the achievement of the NECP goals. This is slightly less than is officially earmarked for the pursuance of the climate targets (EUR 1,054 million), but our estimate does not include projects that will not contribute directly to the achievement of the NECP goals (these are mostly projects for reducing flood risk). The funds of the Just Transition Fund in the amount of EUR 258 million will be allocated to the Savinjsko–Šaleška and Zasavska regions. According to the current information, roughly EUR 75 million of approximately EUR 280 million funds available under the REACT-EU programme will be allocated to projects that will contribute to the achievement of climate and energy targets.[37] The funds of the Connecting Europe Facility (CEF)[38] and Horizon 2020[39] will still contribute to the investments until 2030 within the approved projects that are still ongoing. The same applies to the projects within the ELENA programme. Funds will also be available from the new perspective for the Horizon and LIFE programmes, although it is difficult to estimate their volume in advance.

[34] Government Office for Development and European Cohesion Policy (2022a).

[35] These three priorities are: "Green transformation for climate neutrality"; "Sustainable urban mobility"; and "Sustainable (cross)regional mobility and connectivity".

[36] We estimate that under the 2014–2020 financial perspective, 60% of the funds within the "green" priority axes were actually allocated to the projects that contribute to the achievement of climate and energy targets.

[37] Approximately two-thirds of the funds for the projects for improving energy efficiency, the remaining part for environment-friendly production processes in SMEs. For more information, see https://cohesiondata.ec.europa.eu/stories/s/REACT-EU-Fostering-crisis-repair-and-resilience/26d9-dqzy/.

[38] For more information on the projects, see European Commission (2022).

[39] For more information on the projects, see https://webgate.ec.europa.eu/dashboard/sense/app/a976d168-2023-41d8-acec-e77640154726/sheet/d23bba31-e385-4cc0-975e-a67059972142/state/analysis.

Table 2.4: Financial resources for the achievement of climate and energy targets (2021–2030)

EUR million	EU	Total
Cohesion funds 2014–2020[1]	440	558
Cohesion funds 2021–2027[2]	1.326	1.727
Recovery and Resilience Plan[3]	933	1.823
Just Transition Fund	258	258
REACT-EU	76	76
CEF[4]	171	567
Horizon 2020[4]	74	92
EU funds – total	**3.277**	**5.100**
RES – cogeneration scheme contribution[5]		1.883
EE contribution (7% per year)[5]		560
Climate Change Fund – transfer[6]		64
Eco Fund – refundable financial incentives[7]		400
Borzen – transfer		240
ELES[8]		588
Electricity distribution companies (including loans)[9]		1.475
SID (green bond)[10]		66
Revenue from the sale of emission coupons – price EUR 50[11]		1.179
Revenue from the sale of emission coupons – price EUR 80[12]		1.886
Total (coupons 50)		**11.556**
Total (coupons 80)		**12.263**
CO_2 tax[13]		1.829
Total with CO2 tax (coupons 50)		**13.385**
Total with CO2 tax (coupons 80)		**14.092**

Sourced: Borzen, IJS-EEC, ELES, European Commission, Climate Change Fund, SID Bank, SODO, Government Office for Development and European Cohesion Policy, Recovery and Resilience Office, Fiscal Council's estimate.

Notes:

[1] Actual spending in 2021 and planned spending in 2022 and 2023. Fiscal Council's assessment of which projects directly contribute to the achievement of climate and energy targets.

[2] Total planned funds in priority areas 3–5.

[3] Fiscal Council's assessment of which projects directly contribute to the achievement of climate and energy targets.

[4] The value of approved ongoing projects. With regard to CEF, only investments in railway infrastructure are included.

[5] IJS-EEC's projection in the NECP.

[6] Fiscal Council's estimate, taking into account the payment of energy vouchers from the Climate Change Fund.

[7] Fiscal Council's estimate based on the average in 2016–2020.

[8] Fiscal Council's estimate based on the ELES plans for 2021–2025.

[9] SODO's estimate.

[10] The difference between the granted and drawn loans within the green bond with a double leverage.

[11] Average price in 2021 was EUR 54 per tonne of CO_2.

[12] Average price in 2022 is EUR 84 per tonne of CO_2.

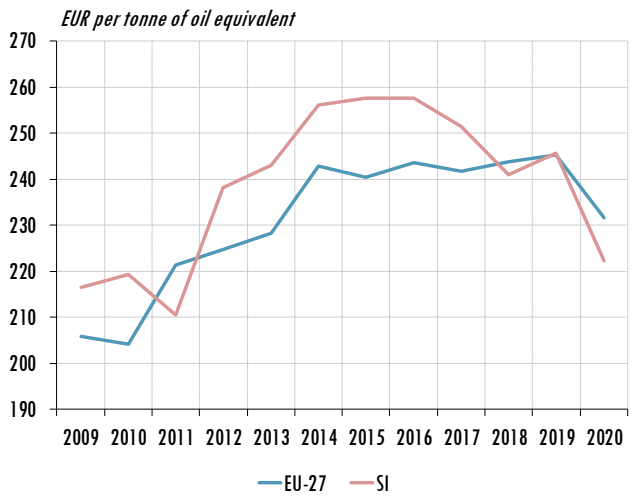
[13] The tax on CO_2 air pollution is not a dedicated resource.

With regard to domestic sources, the greatest uncertainty is related to the projection for the **revenues of the Climate Change Fund**, as the price of emission coupons is very unpredictable. In 2021, the average price more than doubled and in the early part of this year it further increased by half, while also fluctuating markedly. The revenue projection can also be affected by potential change in the EU policy regarding the number of allocated coupons. Under current policies, the number of coupons available to a country depends on the mechanism for transferring coupons to the market stability reserve, which for Slovenia means roughly half a million coupons less per year.[40] Furthermore, as of and including 2021, the annual volume of issued coupons is reduced by 2.2% each year, which is in accordance with the goal of reducing GHG emissions by at least 40% by 2030.[41] On the assumption that the average price of an emission coupon is EUR 50–80 per tonne of CO2, the revenue from emission coupons should amount to a total of EUR 1.2–1.9 billion by 2030. This is considerably more than in the past period, despite the faster reduction in the number of available coupons. Unused past funds should also be added to this. However, these are considerably smaller than they could have been without the decision to finance energy vouchers from these funds.[42] Funds earmarked for energy vouchers amount to EUR 106 million, which, if spent for the Eco Fund incentives, would have promoted at least EUR 400 million of investments in projects that would have directly contributed to the achievement of climate and energy targets but will now be spent inappropriately.

According to the NECP projections, the **revenue from the RES contribution** in this decade should be at the same level as in past years. In total, EUR 1.9 billion should be available from this source in the 2021–2030 period. The payment of grants under the Borzen scheme to support the production from RES and cogeneration lags behind the revenue. As a result, EUR 240 million of past revenue was transferred to 2021. Thus total funds available from these source amount to roughly EUR 2.1 billion.

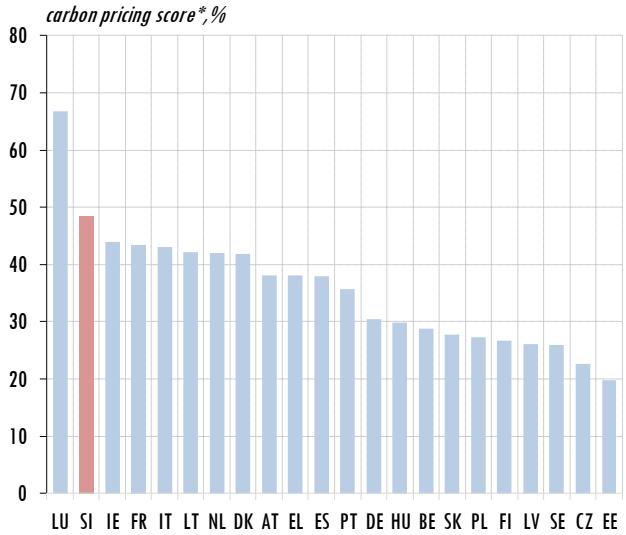
With regard to the **revenue from the EE contribution**, the NECP projections assume a gradual increase in the contribution by 7% per year. The assumption regarding the revenue from the CO2 tax,

Figure 2.5: Implicit tax rate on energy*



*Source: Eurostat. Note:*The ratio between energy tax revenues and final energy consumption.*

Figure 2.6: Effective carbon rates 2018



*Source: OECD. Note:*120 EUR per tonne of CO_2 as a central estimate of the carbon costs in 2030.*

[40] Government of the Republic of Slovenia (2020b), pp. 6–7.

[41] For more information, see https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve_en.

[42] Paragraph five of Article 2 of the Act Determining the Measures to Mitigate the Consequences of Rising Energy Prices – ZUOPVCE (Official Gazette of the Republic of Slovenia (2022)).

which is not a dedicated resource, is an increase in contribution by 5% per year. The increase is justified by the aim for both contributions to gradually come closer to the price of an emission coupon. No measures have yet been adopted that would lead to the increase in these charges. Based on these assumptions, approximately EUR 550 million will be collected from the EE contribution and EUR 1.8 billion from the CO2 tax in the ten years until 2030. It should be noted that the implicit tax on energy[43] in Slovenia is the highest in the EU, despite the reduction in the 2018–2020 period. On the other hand, the effective carbon price[44] still lags behind by almost one half in pursuing the 2030 target price which would lead to full decarbonisation by the middle of the century, and this lag is among the smallest in the EU.[45] Comparatively high current price means that there is not as much leeway to obtain additional financial resources by raising charges as in other countries, although the leeway is still considerable in view of the still substantial lag of the current price behind the target price for achieving climate goals. In the future, the dynamics of the increase in charges in relation to other countries will be crucial in view of the need to maintain the competitiveness of the economy.

Other available funds that can be identified as supporting the achievement of climate goals primarily include the investment funds of electricity distribution companies and ELES. The electricity distribution system operator (SODO) estimates that for the 2021–2030 period, the five distribution companies have at their disposal own funds to finance investments in the total amount of EUR 835 million and, in addition, a possibility of raising loans in the amount of EUR 640 million. With this amount of funds, the annual volume of their investments in the next decade would be only slightly higher than the average in the 2016–2020 period. In order to meet the NECP goals, it should be more than three times higher. In the next decade ELES is planning investments in a similar annual volume as in the past period, i.e. approximately EUR 50 million per year. The estimated total also includes a volume of Eco Fund's refundable financial incentives similar to the volume in recent years (approximately EUR 40 million per year). The available funds also include the SID Bank's green bond funds, which have been granted but as of the end of 2020 have not yet been drawn. However, the estimate does not include other funds of the EIB and the SID Bank that will be used in the next decade to co-finance projects for meeting the climate and energy targets. Data for the past period indicate that without enhancing the financing, these two sources will not contribute significantly to filling the gap between the available dedicated resources and investment requirements. In addition to the aforementioned financial resources, it should be taken into account that a part of projects will be co-financed from the integral budgetary resources, in particular within the Slovenian participation in financing the cohesion policy and RRP projects, which was included in the estimate of available resources.

[43] Measured as the ratio of energy tax revenue to the final energy consumption. More at https://ec.europa.eu/eurostat/databrowser/view/ten00120/default/table?lang=en.

[44] As calculated by the OECD as the sum of the value of emission coupons, carbon tax and excise duty (for more information see OECD (2021)).

[45] According to main estimates, the target carbon price in 2030 necessary to achieve decarbonisation by mid-century is EUR 120 per tonne of CO_2. In 2018, Slovenia reached 48% of this price. Since then, the price of emission coupons has increased significantly. However, excise duty has been reduced.

3. Estimated gap in the financing of required investments in 2021–2030

The NECP includes an estimate of investments **necessary to meet the climate and energy targets by 2030.**[46] The estimate for the 2021–2030 period is EUR 28.4 billion, which represents, on average, 6% of GDP per year. For comparison, the total volume of gross fixed capital formation at the national economy level in the last decade was 19% of GDP on average. Approximately half of the investments, i.e. EUR 14 billion, will be needed for buildings, of which almost two-thirds will be at the household level. Next in terms of volume are investments in the transport sector, amounting to EUR 6.6 billion, the majority in rail transport. EUR 4.2 billion needs to be invested in electricity distribution. Investments in all other areas are expected to be smaller, totalling EUR 3.5 billion.

In Section 2.1 the volume of investments in **the implementation of climate and energy targets in the 2016–2020 period** was estimated at EUR 5.0 billion (this only includes the concluded investments in rail infrastructure) or approximately 2% of GDP per year.[47] In this period, the volume of investments has been gradually increasing, but the comparison with the estimate of required investments by 2030 shows that the average annual volume of investments aimed at meeting the NECP goals in the next decade should be almost three times higher than in the last five years. This means that it should be increased on average by roughly 4% of GDP per year. The increase in investments in Slovenia should thus be slightly greater than shown by various international studies of investment needs at the EU and global levels (see Box 3.1).

Table 3.1: Investments aimed at meeting the climate and energy targets

EUR million	2016–2020 realisation (Fiscal Council's estimate)	2021-2030 requirements (NECP)
Buildings	2.173	14.171
Road transport and sustainable mobility	211	2.673
Rail transport	446	3.884
RES	901	1.363
Electricity distribution	635	4.203
Electricity transmission	297	407
Central supply (large hydro and thermal power plants)	154	358
Industry	98	1.148
Other	72	180
Total	**4.987**	**28.387**

Sources: Borzen, Slovenian Infrastructure Agency, Eco Fund, Elektro Celje, Elektro Gorenjska, Elektro Ljubljana, Elektro Maribor, Elektro Primorska, ELES, European Investment Bank, European Commission, INFRA, SID Bank, Climate Change Fund, Government Office for Development and European Cohesion Policy, Fiscal Council's estimate.

Based on the estimate of available financial resources in the 2021–2030 period (see Table 2.4), we have outlined **different scenarios of investment potential to meet the NECP climate and energy targets.** Each of the presented scenarios has two versions depending on the assumed price of emission coupons. The revenue from emission coupons will amount to approximately EUR 1.2 billion if the average price of coupons is similar to that in 2021 (EUR 50 per tonne of CO2) and to approximately

[46] Government of the Republic of Slovenia (2020a), pp. 216–218.

[47] The estimate is based on the value of investments promoted by refundable and non-refundable financial incentives of the Eco Fund, which are financed from the EE contribution, and resources of the Climate Change Fund, other expenditure of the Climate Change Fund, paid grants for RES by Borzen based on the revenue from the RES contribution, EU cohesion policy funds, resources from the CEF and Horizon 2020 programmes, investments of ELES and five electricity distribution companies, investments in railway infrastructure based on the data of the Slovenian Infrastructure Agency, and the investments in the Brežice hydro power plant. It also includes the funds paid within the green bond of the SID Bank, the estimate of EIB loans and the estimate of spontaneous building renovations by households.

EUR 1.9 billion if it is similar to the price this year (EUR 80 per tonne of CO2). All the presented scenarios include the EUR 6.5 billion of assumed available private resources for spontaneous investments in the energy renovation of buildings. This assumption is included in the long-term strategy for the energy renovation of buildings by 2050 and is, according to our estimate, relatively optimistic.[48]

The **basic scenario** or scenario 1 assumes that the Eco Fund would only finance grants with the expected revenue from the EE contribution. This would mean that the annual volume of financial incentives would be similar to that in 2019 and 2020, when the time of application processing increased due to the staff and administrative capacities at the time. According to this scenario, the investment potential amounts to EUR 19.7–20.4 billion. In **scenario 2**, the taxes on CO2 pollution actually become a dedicated resource, as stated in the NECP. In this case, and assuming that the tax increases by 5% per year as envisaged in the NECP, the investment potential could increase by EUR 1.8 billion. In **scenario 3**, the Eco Fund also finances grants with all the envisaged revenues of the Climate Change Fund, which due to the higher price of emission coupons would be considerably larger than in the past. This would achieve the greatest multiplicative effect of the collected dedicated resources. However, it would also mean that the average annual volume of Eco Fund grants would be four to five times greater than the average of the 2016–2020 period (see Box 3.2).

Table 3.2: Different investment potential scenarios in the 2021–2030 period based on the estimate of available financial resources

EUR million	a (coupon EUR 50)[1]	b (coupon EUR 80)[1]
Scenario 1 (Eco Fund – EE)[2]	19.693	20.400
Scenario 2 (scenario 1 and CO_2 tax)[3]	21.522	22.229
Scenario 3 (scenario 1 and Eco Fund – coupons)[4]	23.420	26.249

Source: Fiscal Council's estimate.

Notes:

[1] The difference between a and b results from different assumptions about the price of emission coupons, where a reflects the average price of EUR 50 and b EUR 80 per tonne of CO_2.

[2] The Eco Fund promotes investments with a quadruple leverage using the revenue from the EE contribution.

[3] In addition to [2], CO_2 tax becomes a dedicated resource.

[4] In addition to [2], the Eco Fund uses all past and future revenues of the Climate Change Fund to promote investments with a quadruple leverage.

According to scenario 1, which best reflects the current state and requires the least changes, the **gap between the necessary investments under the NECP and the estimated investment potential** amounts to EUR 8.0–8.7 billion. According to this scenario, the EE contribution should increase annually in accordance with the NECP projections, all available cohesion policy funds for "green" priority areas should actually be directed towards meeting the climate and energy targets, and the capacities of the Eco Fund should, at least to some extent, be improved so that applications could be processed faster. In the more ambitious scenario 3, according to which the available dedicated financial resources would

[48] This is the estimate of available private resources that are not related to the dedicated resources. This estimate implies that the investments of households in the energy renovation of buildings represent roughly three-quarters of all household investments in residential buildings, that private companies will recognise the benefit and finance most of the necessary investments with their own funds, and that renovations in the public sector will strengthen the role of public–private partnerships. For more information on the expert bases for the strategy, see CARE4CLIMATE (2021b) and CARE4CLIMATE (2021c).

Table 3.3: Gap between the required investments under the NECP and different investment potential scenarios in the 2021–2030 period based on the estimate of available financial resources

EUR million	a (coupon EUR 50)[1]	b (coupon EUR 80)[1]
Scenario 1 (Eco Fund – EE)[2]	8.694	7.987
Scenario 2 (scenario 1 and CO_2 tax)[3]	6.865	6.158
Scenario 3 (scenario 1 and Eco Fund – coupons)[4]	4.967	2.138

Source: Fiscal Council's estimate.

Notes:

[1] The difference between a and b results from different assumptions about the price of emission coupons, where a reflects the average price of EUR 50 and b EUR 80 per tonne of CO_2.

[2] The Eco Fund promotes investments with a quadruple leverage using the revenue from the EE contribution.

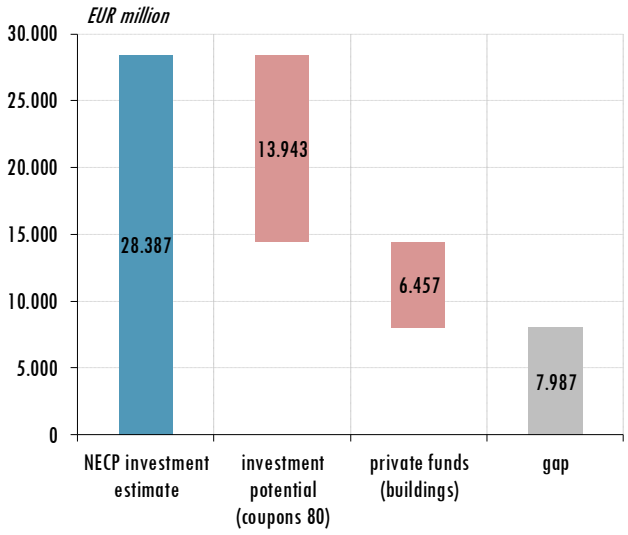
[3] In addition to [2], CO_2 tax becomes a dedicated resource.

[4] In addition to [2], the Eco Fund uses all past and future revenues of the Climate Change Fund to promote investments with a quadruple leverage.

be spent in the optimal way, the gap to the necessary investments under the NECP would be reduced significantly (to EUR 2.1–5.0 billion). However, such a scenario would require a significant adjustment of working conditions and the strengthening of the Eco Fund's capacities. Under any of the aforementioned scenarios, a part of the financial gap could to a greater extent than to date be filled by the financial instruments of the SID Bank and the EIB.

The estimated gap poses a significant challenge to public finances in the medium term. Considering the nature of the necessary measures, we assess that they will largely be financed from public funds. The private sector has not shown interest, at least until now, in investing in mainly infrastructure projects and, based on the estimated financial resources, the electricity sector also does not have sufficient resources available to finance the necessary investments. Filling the gap can affect public finance in the form of direct expenditure or potential guarantees. In both cases the public debt would increase. According to scenario 1, which requires the least effort given the current situation, the estimated financial gap represents approximately 2.0% of GDP per year or nearly half of the average annual volume of investments of the general government in the 2016–2020 period. Under

Figure 3.1: Investment gap estimate for meeting NECP 2021-2030 goals according to scenario 1b



Source: FC estimate.

scenario 2, the gap would be smaller if the revenue from the tax on CO2 air pollution actually becomes a dedicated resource. However, this would increase the risk for the financing of other government spending. Considering the volume of investments in the past period, the challenges will be the greatest in the areas of buildings, transport and electricity distribution.

Implementing the investments **in buildings** envisaged in the NECP will be one of the greater challenges given the past trends. We estimate that in the past five years, EUR 2.2 billion of investments in improving the energy performance of buildings were realised through dedicated non-refundable and refundable resources and private spontaneous renovations. The bulk of this are Eco Fund financial incentives, which are oriented mostly towards the incentives for households. Some refundable financial incentives are also granted for buildings where the investor is a legal person. Cohesion policy funds were mostly allocated to projects in the public sector. The estimate of the financial gap in the future also depends on the estimate of the volume of investments without incentives from dedicated resources. The long-term strategy for the energy renovation of buildings by 2050 was based on the assumption that in the case of residential buildings, the ratio of investments promoted by dedicated resources to investments in spontaneous renovations was 1:4.[49] In the assumptions applied in the strategy, this ratio is halved, but the strategy still assumes a considerable boost to activities, which seems to be difficult to achieve without additional measures to mobilise private financial resources.[50] The strategy's assumption of the mobilisation of approximately EUR 1 billion of businesses' own funds for the energy renovation of buildings seems similarly ambitious.[51] High fuel prices can be a strong incentive for the mobilisation of private resources, as shown by the extremely increased interest in Eco Fund incentives in recent months. In the long term, it would be more reasonable for the state to increase subsidies for investments leading to lower energy consumption in the long term instead of subsidising the increased costs resulting from the rising fuel prices.

One of the greater challenges will also be the implementation of projects in the **transport** sector, where we estimate that the annual volume of investments in the decade until 2030 should be approximately five times greater than in the average across the 2016–2020 period. In view of this, the NECP goals seem, at least in terms of the volume of necessary investments, achievable in rail transport, while the funds for measures in road transport and sustainable mobility should be increased considerably compared to the past period. Based on the data of the Slovenian Infrastructure Agency[52], Slovenske železnice and 2TDK, we estimate the value of projects regarding railway infrastructure that are ongoing or under preparation at roughly EUR 3.6 billion.[53] However, it is uncertain whether the measures included in this estimate will actually contribute to the achievement of the NECP climate goals. In recent years, in the area of road transport and sustainable mobility, Eco Fund financial incentives have mainly been used to co-finance the purchase of electric vehicles and the cohesion policy funds for the construction of cycling connections. In order to meet the NECP goals, the efforts in these two areas, which, due to the nature of the necessary investment projects, constitute a great fiscal risk, will have to be enhanced considerably.

[49] The estimate is based on the survey on household energy and fuel consumption (APEGG) in CARE4CLIMATE (2021c). A potential deficiency of the estimated ratio is that it was made on the basis of the share of projects financed with the Eco Fund's resources and implicitly assumes that the value of energy renovation projects is equal or similar whether financed from own resources or with Eco Fund incentives. The fact that total investments in energy renovations represent nearly three-quarters of all household investments in residential buildings in the 2015–2019 period indicates that the estimated value of spontaneous energy renovations in households could be exaggerated.

[50] Assumptions regarding household investments in energy renovation of buildings in the long-term strategy for the energy renovation of buildings by 2050 (Government of the Republic of Slovenia (2021a)) imply that the annual average of investments promoted by dedicated funds in the coming decade will be twice as great as in the 2016–2019 period.

[51] According to our information, there are no available data on the volume of such investments implemented to date.

[52] See http://www.krajsamorazdalje.si/. (Only in Slovene)

[53] The estimate includes ongoing investments in the amount of EUR 620 million, investments under preparation in the amount of EUR 1.6 billion, purchases of new block trains in the amount of EUR 400 million and the second track of the Divača–Koper railway line project estimated at approximately EUR 1 billion.

The third major challenge in meeting the NECP goals is the estimated necessary volume of investments in the **electricity distribution network**. Based on the projections of SODO, the gap between the available own funds and credit potential on the one hand and the estimated investment needs on the other in the 2021–2030 period amounts to EUR 2.7 billion. Within RRP, in total EUR 80 million is earmarked for the projects strengthening the distribution network. Thus the gap is still extremely large.

Box 3.1: International estimates of decarbonisation costs

The estimates of additional investments necessary to achieve decarbonisation in the next decades are very uncertain and depend on many assumptions. The key assumptions affecting the estimates are related to different climate scenarios and the set of policies and tools used to meet the goals, including the assumptions regarding the cost of carbon.

The European Commission estimates that in the next decade the investments in the EU should increase by 2.2–3.0% of GDP per year with regard to the past decade, depending on the target scenario.[1] The IMF estimates that under the scenario of limiting the rise in global temperature to 1.5°C, the investments in developed economies need to be increased by 1.4–1.8% of GDP per year.[2] The IEA estimates that in order to achieve decarbonisation, investments in the energy sector should increase from roughly 2.5% of GDP in the last few years before 2030 to 4.5% of GDP in 2030.[3] The International Renewable Energy Agency (IRENA) estimates that in order to realise the scenario of limiting the rise in global temperature to 1.5°C, investments (excluding fossil fuels) at the global level should increase from the current 0.9% of GDP to 4.4% of GDP in 2030.[4]

[1] European Commission (2020c).
[2] IMF (2021).
[3] IEA (2021).
[4] IRENA (2021).

Box 3.2: Role of the Eco Fund in meeting the NECP goals

Due to its experience in granting financial incentives, the Eco Fund could play a key role in meeting the climate and energy targets. In the 2016–2020 period, the Fund granted approximately EUR 350 million worth of refundable and non-refundable financial incentives promoting investments that contributed to the achievement of climate and energy targets, which amounted to EUR 1.7 billion. The average leverage was quadruple in non-refundable and sextuple in refundable financial incentives. The volume of incentives granted and consequently the number of applications have gradually increased in recent years and in 2020 were three times greater than in 2016. The rise in the number of Eco Fund's staff in this period (by roughly 20%) has been slower. As a result, the number of applications per employee and the time of processing have increased. The Eco Fund finances non-refundable incentives with the revenue from the EE contribution and the funds of the Climate Change Fund.[1] Considering that the revenues of the Climate Change Fund will probably be much greater than in the past due to the price of emission coupons, the volume of incentives financed by the Eco Fund could also be increased considerably. If all the revenues of the Climate Change Fund are allocated to Eco Fund incentives, the Eco Fund could have at its disposal EUR 1.8–2.5 billion in this decade (Table 2.4). In this case, many changes would have to be made in the manner of granting incentives and the administrative and staff capacities of the Fund would have to be improved substantially.[2]

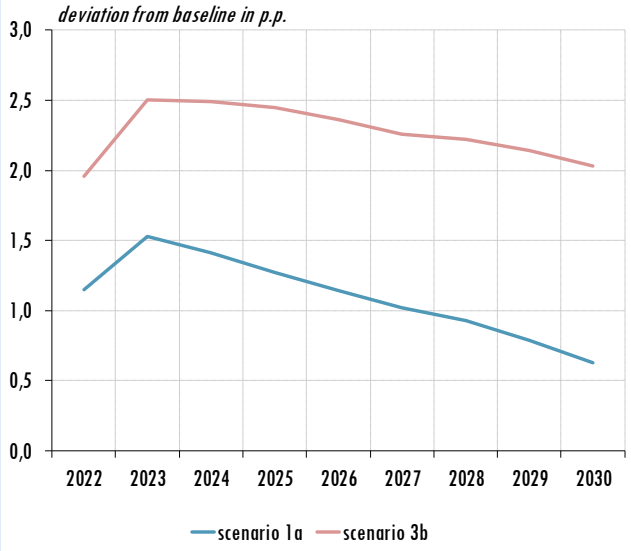
[1] According to the data of the Climate Change Fund, in total EUR 65 million in the 2016–2020 period.
[2] For more information on the estimate of incentives by the Eco Fund with the recommendations for improvement, see CARE4CLIMATE (2021a).

Box 3.3: Macroeconomic impact of the estimated investment potential for meeting the climate and energy targets

By applying a structural macroeconomic model,[1] we assessed the impact of different investment potential scenarios from Table 3.2 on the changes in GDP and general government financial balance. The simulations took into account different ratios of private to public investments, which depended on scenarios presented in Table 3.2. Based on the realisation to date, within private investments we assumed the 60:40 ratio of investments in buildings to other investments, as the multiplicative effects vary in different types of investments in the model.

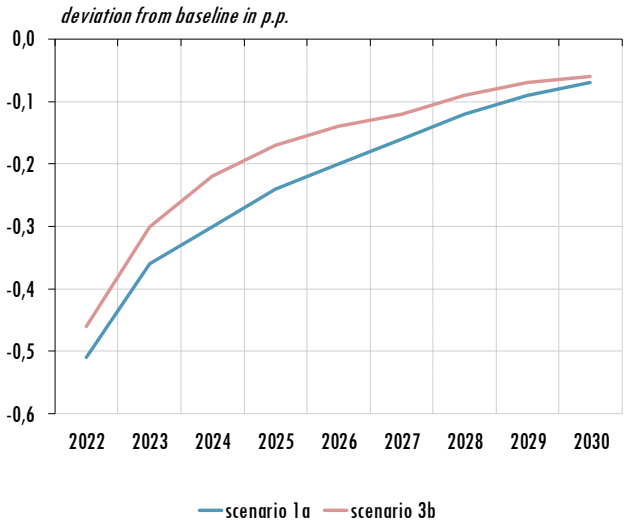
In such a simulation with the given assumptions, the GDP would differ from the basic scenario by 1.1–2.3% per year on average,[2] where the lowest value in the range reflects scenario 1a, according to which the Eco Fund would only finance non-refundable financial incentives with the revenue from the EE contribution, while the highest value in the range reflects scenario 3b, according to which the Eco Fund would finance non-refundable financial incentives with the revenue from the EE contribution and all the revenues of the Climate Change Fund on the assumption of a higher average price of emission coupons. In both extreme investment potential scenarios, the general government financial balance would be on average 0.2 pp of GDP per year lower than in the basic scenario. In both cases, the estimate of investment potential includes the estimate of available private financial resources for investments in improving energy performance of buildings, which we consider very optimistic. In all

Figure 1: Impact of estimated investment potential on GDP level



Source: FC estimate.

Figure 2: Impact of estimated investment potential on



Source: FC estimate.

Table: Deviation of different scenarios of investment increase in 2021–2030 based on the estimated realisation in 2016–2020[1]

annual average in % of GDP	Public	Private	Total
Scenario 1a (Eco Fund – EE, coupon 50)	0,9	1,2	2,2
Scenario 1b (Eco Fund – EE, coupon 80)	1,1	1,2	2,3
Scenario 2a (scenario 1 and CO2 tax, coupon 50)	1,3	1,2	2,6
Scenario 2b (scenario 1 and CO2 tax, coupon 80)	1,5	1,2	2,7
Scenario 3a (scenario 1 and Eco Fund – coupons, coupon 50)	0,9	2,1	3,0
Scenario 3b (scenario 1 and Eco Fund – coupons, coupon 80)	1,1	2,5	3,6

Source: Fiscal Council's estimate.

Note: [1] Average annual deviation of investments in GDP share according to different scenarios of investment increase from the estimated actual realisation in 2016–2020. See also Table 3.2.

simulations, the impact on GDP and the public balance is decreasing over time, as the model incorporates, in addition to the reaction function of fiscal policy, also the reaction, in particular of the private sector, on the rise in financing cost as a result of the investment "shock" of the (private and in particular public) sector. This implies, among other things, the incorporated model assumption of restricted absorption capacities of the economy.

[1] The model enables medium-term analyses and has a similar structure to that of the SVAR (Structural Vector Autoregression) model. Models of this type include a strong dynamic component (VAR models), limited by the theoretical restrictions of the signs of the coefficients entered into behaviour formulas. An important characteristic of this model is the inclusion of a risk indicator, which is endogenous to modified key macroeconomic aggregates, including general government balance; however, it does substantially affect private investments. From the perspective of analysing fiscal policy effects, an essential characteristic of the model, which includes both the production and consumption side of GDP (aggregate supply and demand), is the implicitly integrated reaction function, which in the basic version of the model reflects the response of the fiscal policy (partial or estimated based on historical links) to potential deviations from the basic scenario.

[2] The order of magnitude of implied investment multiplication factors is thus similar to the one determined in Battini et al. (2021). The authors of this analysis note that the order of magnitude of multiplication factors of "green" investments is roughly twice as great as of multiplication factors of ordinary investments; however, their assessment is exposed to considerably greater uncertainties.

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