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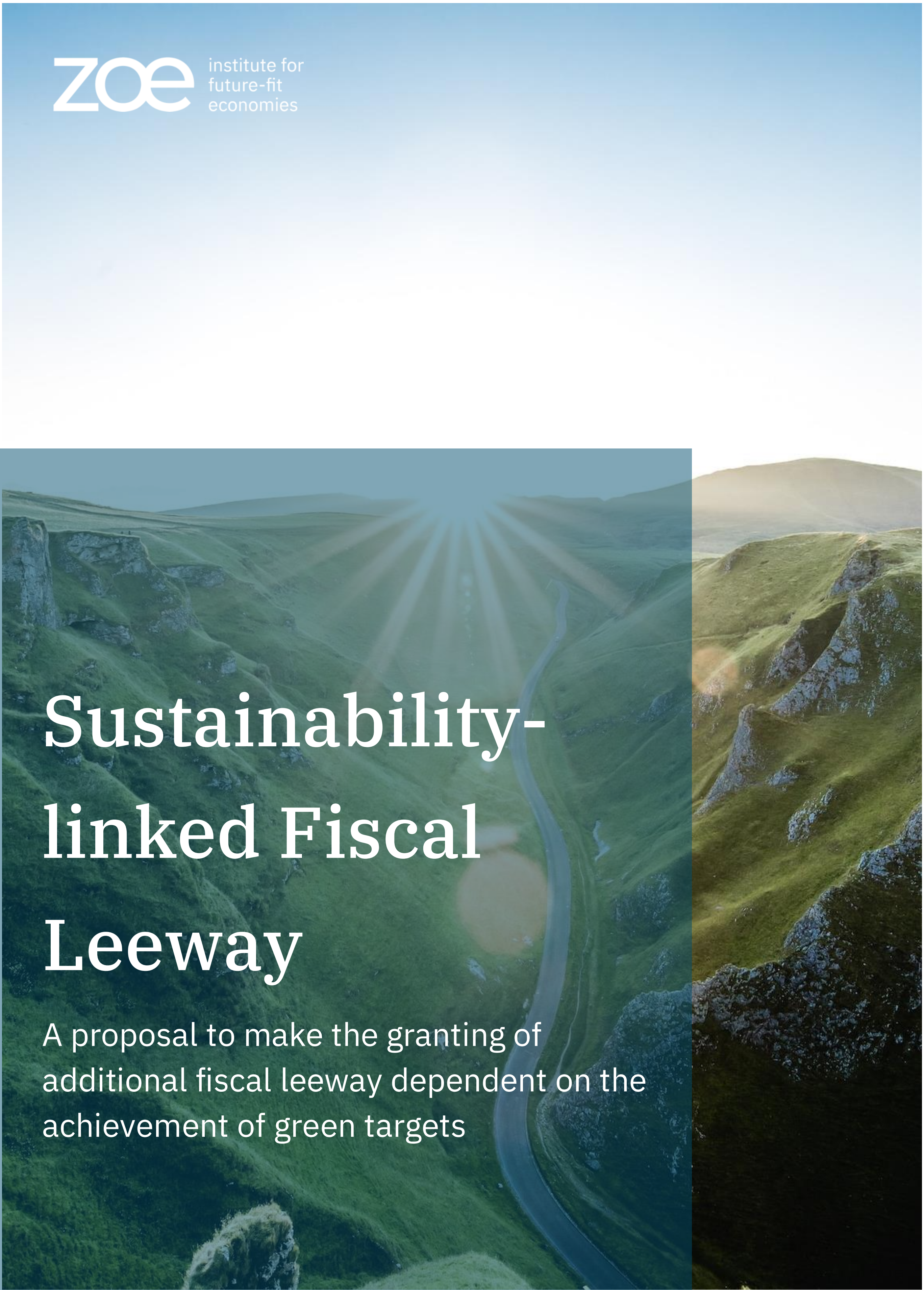

Sustainability-linked Fiscal Leeway

A proposal to make the granting of additional fiscal leeway dependent on the achievement of green targets

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Sustainability-linked Fiscal Leeway: A proposal to make the granting of additional fiscal leeway dependent on the achievement of green targets

Summary

- This paper describes a way to **reconcile the need for effective green investment with ensuring budgetary control and minimal administrative burden**: Sustainability-linked Fiscal Leeway.

- This is to be achieved by **linking the granting of additional fiscal leeway to the achievement of green goals**.

- The achievement of the green targets is monitored ex-post. Thus, **no ex-ante definition of green investments is needed**. Governments do not have to submit comprehensive and binding investment plans, but only formulate targets, e.g., greenhouse gas emission reduction paths.

- In case of non-compliance, the additional fiscal leeway can be withdrawn. As such, **effectiveness of green public investments is guaranteed whilst allowing long-term planning and leaving flexibility** to governments, as well as avoiding over-bureaucratisation.

- By ensuring effective climate change mitigation and adaptation while limiting the increase in public expenditure, **environmental sustainability and debt sustainability are reconciled**.

- As such, Sustainability-linked Fiscal Leeway **ensures that fiscal leeway is used in an effective and efficient manner to achieve green goals, while bureaucratic burden is reduced and budgetary control and debt sustainability are ensured**.

1. Introduction

"[The] most important [step is] to look at what the project delivers, in terms of outcome and even better, impact. We can build a road with 0% error rate but if it goes nowhere, it is still a road to nowhere, and it is a 100% waste of our taxpayers' money."

Kristalina Georgieva, former Vice-President of the European Commission[1]

The public sector plays a decisive role in providing the required investments for a green transformation of our economies (D'Aprile et al., 2020). Besides sufficient fiscal leeway for green investments, a necessary condition for a successful green transformation is for these investments to bring about the desired outcomes. Otherwise, ineffective public green investment would not only fail to achieve environmental sustainability but would also threaten debt sustainability. To simultaneously ensure environmental sustainability and debt sustainability, public green investment needs to be both effective and efficient.

Existing proposals for incentivising green public investment, such as a green golden rule, do not focus on the achieved outcomes but rather the means. Hence, effectiveness and efficiency are at risk. Investments that are ex-ante classified as green may not necessarily lead to the desired outcomes, e.g., due to rebound effects. Moreover, they do not necessarily ensure the most efficient use of public funding to achieve the desired outcomes.

To address these concerns, this paper presents the "Sustainability-linked Fiscal Leeway"[2] (SLFL) proposal, an approach that focuses on the achievement of outcomes instead of the employed means. By doing so, it minimises administrative burden, ensures effectiveness and efficiency, and thus reconciles environmental and fiscal sustainability.

While this paper focuses on applying the sustainability-linked principle to fiscal leeway, it can be relevant for a variety of other contexts. For instance, it has already seen success in bond financing instruments. Sustainability-linked bonds are borrowing instruments where financial and structural characteristics are based on whether the issuer achieves green performance indicators within a given timeframe (ICMA, 2020). The issuer pays a higher premium if it does not meet those goals. There is a growing market for corporate

[1] From a speech at the 'EU Budget Focused on Results' conference held on 22 September 2015 (European Commission, 2017, p. 18).

[2] This paper defines fiscal leeway as the amount a subordinate government is allowed to spend under a supranational economic governance framework. The most common example is the economic governance framework of the EU, which notably constrains fiscal leeway through the fiscal rules of the Stability and Growth Pact (SGP). Yet, the fiscal rules are not the only determinant of the fiscal leeway of a member state. There are also central funding opportunities, such as cohesion policy funds, the Recovery and Resilience Facility (RRF) and other EU transfers. These too can provide additional leeway as long as they are exempted from the budgetary ceilings specified in the fiscal rules.

sustainability-linked bonds, while Chile and Uruguay issued the first sovereign sustainability-linked bonds in 2022 (Lehmann & Martins, 2023). Yet, sovereign sustainability-linked bonds only concern the quality of public finance and do not create additional fiscal leeway. By applying the sustainability-link to fiscal leeway, both the quality and the quantity of public finance can be brought in line with the demands of the green and just transition.

The following chapter presents five hurdles of securing effective and efficient green investments and how SLFL addresses them. The third chapter describes the SLFL proposal with its different steps in detail. The fourth chapter concludes and gives an outlook for concrete implementation.

2. How Sustainability-linked Fiscal Leeway addresses hurdles of securing investment for the green transition

Incentivising green investments faces significant challenges and important unresolved issues related to the definition of green investments, effectiveness, bureaucracy, efficiency, and debt sustainability. These are the often-heard objections to any economic governance framework that aims to categorically exempt green investment, such as a green golden rule, and may explain why such framework never reached a political breakthrough (Smith-Meyer, 2022). Likewise, the recent implementation of the Recovery and Resilience Facility (RRF), which granted fiscal leeway by means of central funding, suffers from bureaucracy and inefficiency (Darvas & Welslau, 2023). EU funds that are not linked to concrete results face the objection that they may be wasted on useless projects such as a "road to nowhere" (European Commission, 2017, p. 11). SLFL addresses these challenges as shown in the overview in Figure 1 below. This chapter explains in more detail common challenges in incentivising green public investments and how SLFL solves these.

	Definition	Effectiveness	Bureaucracy	Efficiency	Debt Sustainability
Challenges	• No suitable basis for an ex-ante classification of green investments	• There is a risk that green investments are not effective (e.g. emissions are not reduced because of rebound effects)	• Drafting, reviewing, and assessing investment plans requires large bureaucratic effort	• Incentives to use green investment most efficiently needed • Investment plans leave little flexibility to adapt to changes (e.g. technology)	• Both the costs of action and the costs of inaction with respect to the green transiton put pressure on public budgets
Sustainability-linked Fiscal Leeway	• Achievement of targets is controlled ex-post → Ex-ante definition of green investments not needed	• Additional fiscal space depends on the effectiveness of green investments in that they attain targets	• No investment plans needed	• Review mechanism disciplines governments to use funds efficiently • Long-term framework leaving room for adaption	• Effective and efficient green investments mitigate climate change and limit the increase in public expenditure

Figure 1: Presentation of the challenges for green public investments and how SLFL addresses them

2.1. Definition challenge

Problem definition	Many proposals for providing fiscal leeway for green investments rely on an ex-ante definition of the types of items in public expenditure that can be classified as green. However, there is no suitable regulatory definition that can be used for such a purpose[3]. Previous debates on, for example, the EU taxonomy have shown that member states' views on what constitutes "green" activities differ widely.
SLFL approach	SLFL controls the achievement of targets in an ex-post review mechanism and thus, an ex-ante definition of green investment is not required. This avoids political discussions about which expenditures can be classified as green. It also gives governments the opportunity to consider expenditures that are effective but do not necessarily fall under existing categorisations of green investments, such as expenditures for developing green skills.

[3] On 9 March 2022, the Commission adopted a Delegated Act (European Commission, 2022) setting out technical screening criteria for “economic activities in certain energy sectors”, namely nuclear energy and natural gas, in relation to climate change adaptation and climate change mitigation. This document effectively allows the use of natural gas and nuclear energy as ‘transitional’ energy sources. As such, the taxonomy is weakened as a tool to define green economic activities.

2.2. Effectiveness challenge

Problem definition	Undertaking green investments alone does not ensure that the investments have an effective impact on green targets, for example, the reduction of greenhouse gas (GHG) emissions. If green investments are accompanied by other non-green policies or if their impact has been overestimated initially, they might not lead to the desired outcome. Moreover, rebound effects can reduce the effectiveness of green investments[4].
SLFL approach	The ex-post review mechanism accounts for these problems, as the focus shifts to the effectiveness of the outcomes of climate-related investments. Hence, governments are incentivised to undertake investments (and other policies) that have a large impact on, for example GHG reduction, and are discouraged to invest in activities that harm the environment. Thus, a long-term view of the impacts of public investments on green targets is encouraged.

2.3. Bureaucracy challenge

Problem definition	Some proposals of a green golden rule require member states to prepare comprehensive investment plans specifying the items to be excluded from fiscal rules (Darvas, 2023). Other existing approaches to promoting green investment, for example the RRF, also prompt the drafting of investment plans. These investments plans, in turn, need to be reviewed and assessed by the European Commission to identify which of these items are eligible for public funding. All in all, this exacerbates bureaucratic efforts for member state governments as well as for EU institutions.
SLFL approach	Governments do not have to submit comprehensive and binding investment plans, but only formulate interim targets for the path achievement[5], e.g., GHG emission reduction paths. Thus, governments have less administrative burden. In contrast to other

[4] For instance, public investments into energy-efficient technologies make them relatively cheaper for private firms and households, which can lead to an increase in their usage, thus offsetting the energy-saving effect. For instance, it is estimated that energy-efficiency increases in German industry would yield an overall rebound effect of 7–12% (Lutz et al., 2022).

[5] The various interim targets might also be formalised in a plan. However, in contrast to investment plans, these plans would only contain the targets and not the measures intended to achieve the targets.

	proposals, even an ex-post change of policies would not require additional bureaucratic effort because only the achievement of the target is binding, rather than the measures to achieve it[6].

2.4. Efficiency challenge

Problem definition	Both a green golden rule and pre-defined investment plans pose challenges for efficiency. A green golden rule, by excluding a category of expenditures wholly from budgeting calculations, relieves governments from the pressure to spend this money efficiently. Sub-efficient allocations can be the result. Moreover, there is the problem of neglecting important investments that do not straightaway classify as green or as investment (e.g., developing green skills) but would be the more efficient choice (Bénassy-Quéré, 2022). The lack of efficiency has also been problematised in the context of the National Recovery and Resilience Plans (NRRPs), which are criticised for relying too much on input indicators rather than result indicators (Darvas & Welslau, 2023). Comprehensive investment plans that are set ex-ante and green golden rules that define which investments receive preferential treatment ex-ante leave little flexibility to adapt to changes. Therefore, they fail to consider more efficient solutions that only become available later, for example, thanks to technological developments.
SLFL approach	SLFL ensures the efficiency of green public investments by limiting the granted fiscal leeway to the amount needed for the achievement of targets. It also holds governments accountable to the achievement of targets. The budget constraint thus disciplines governments retroactively. Moreover, governments get the flexibility to react to changing circumstances, such as the availability of new technologies, easily without having to change pre-defined investment plans or being restricted by outdated definitions of green investments.

[6] For example, under the RRF, adopting new investments requires updating the initial plan.

2.5. Debt Sustainability Challenge

Problem definition	Climate change and other environmental crises can threaten debt sustainability for various reasons. First, transition risks lead to an increase in public expenditure for the green and just transition. Second, the physical risks of climate change similarly lead to increased public expenditures (Gourdel et al., 2022). Third, borrowing costs are set to rise as a result of climate change and the increased public expenditure, unless effective climate policy is in place (Bylund & Jonsson, 2020).
SLFL approach	While other proposals for providing leeway for green investments do not guarantee improved environmental outcomes, SLFL makes debt-financed expenditure conditional on the attainment of green targets. Hence, it has the potential to offset pressures on public budgets and decrease borrowing costs by effective mitigation of climate change and other environmental crises. Additionally, in contrast to a green golden rule, the budgetary control and the incentives for efficient public expenditure limit the increase in public expenditure.

The next chapter will give an overview of the principles for the selection of targets and the identification for the required additional fiscal leeway, as well as present the logic of the review mechanism.

3. The principles of Sustainability-linked Fiscal Leeway

The mechanism is applicable in a supranational context, where fiscal leeway is set for subordinate governments. One example is the case at EU level: With the Maastricht treaty and the Stability and Growth Pact (SGP), which comprise the cornerstones of the EU fiscal framework, member states have committed to a set of common fiscal rules and minimum requirements for national fiscal governance, as well as to the coordination of their national budgetary policies. As such, the EU fiscal rules restrict member states in their fiscal leeway they have at hand. But the mechanism could also be applied at the national level where the government sets the fiscal leeway for regional governments.

SLFL seeks to ensure that additional fiscal leeway for green investments successfully brings about improved environmental outcomes[7]. As Figure 2 demonstrates, governments receive the precise additional fiscal leeway needed to achieve their target(s). The granting of this additional fiscal leeway is dependent on the achievement of legally binding environmental

[7] While this paper presents an approach focused on environmental targets, it could also be applied to other measurable targets.

targets. Failure to meet the targets can lead to the withdrawal of the additional fiscal leeway. In this way, governments receive trust in advance to meet the targets. However, a regular review mechanism with the possibility to withdraw the additional fiscal leeway ensures control (see section 3.3).

The achievement of the environmental targets is monitored ex-post. Thus, no ex-ante definition of green investments is needed. Governments do not have to submit comprehensive and binding investment plans, but only formulate interim targets for the path achievement, e.g., GHG emission reduction paths. Thus, governments have less bureaucratic burden. Within this framework, governments have maximum flexibility because only the achievement of the target is binding, not the measures to achieve it. In addition, this approach strongly incentivises policy coherence across sectors[8].

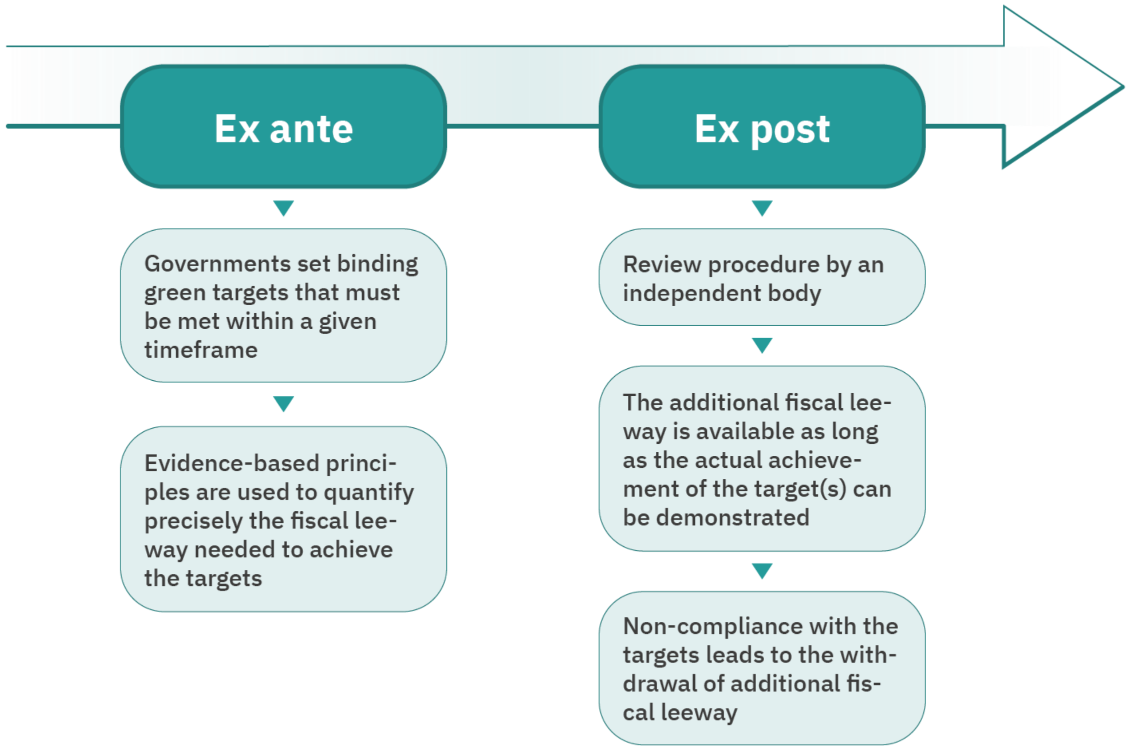

Figure 2: Overview of the mechanism of SLFL

3.1. The selection of targets

The efficacy of SLFL hinges on the selection of one or more green targets[9]. To enhance legitimacy, governments must have a legal commitment to reaching the target within a certain time frame. These targets must be coherent with national and supranational sectoral

[8] As all sectors can contribute to achievement of targets, a whole-of-government approach that untaps the potential for sustainability improvements in all sectors is incentivised.

[9] While this paper presents an approach focused on environmental targets, the same mechanism could also be applied to other democratically agreed targets that fulfil the conditions outlined in the box below (for example social targets).

targets. SLFL gives governments a long-term framework within which they have the flexibility to adjust to changing circumstances and strategies. Thus, it is critical that targets leave room for adaptation and do not prescribe a detailed agenda, for instance by looking at national GHG emissions rather than sub-sectoral efficiency goals. To ensure that governments use the additional fiscal leeway in an efficient way, it is critical that the targets are ambitious[10].

An ex-post review mechanism that controls the achievement of the target(s) on a regular basis (see 3.3) requires short-term targets or long-term targets with short-term milestones. For example, suited targets can be reduction of GHG emissions by 55 percent until 2030 including a reduction path with sub-targets for every 2 years.

Selected green targets should be:

- Ambitious
- Broken down to credible sub-targets that can be observed in a short time period
- Measurable and quantifiably with existing data
- Externally verifiable
- Coherent with national (sectoral) targets

3.2. Calculation of the required additional fiscal leeway

SLFL grants additional fiscal leeway for the achievement of selected targets. The size of the additional fiscal leeway that is required for the achievement of targets is defined ex ante, through evidence-based assessments of public investment needs[11]. For this purpose, it is advisable to build on existing research for the quantification of investment needs. The assessments of the required fiscal leeway shall be consistent with existing national sectoral analysis and policy planning. Hence, this will require a whole-of-government approach to ensure rigour and policy consistency.

[10] If targets are not sufficiently ambitious, governments might lack incentives to achieve them by using the fiscal leeway efficiently, perhaps leaving space to use part of the fiscal leeway for purposes that counteract environmental and debt sustainability.

[11] For instance, at EU level, the European Commission and Independent Fiscal Institutions (IFIs) can assess the required fiscal leeway for member states, using evidence from research about national green investment needs.

In summary, the quantification of required additional fiscal leeway should be:

- Objectively measurable
- Based on evidence of public investment needs
- Coherent with sectoral analyses to quantify investment gaps

As a next step, the government shall be granted the fiscal leeway that is necessary to achieve the defined target(s) for a certain period of time, in the form of a relaxation of the fiscal rules[12] or by providing additional central funding. The additional fiscal leeway should be available as long as an independent review procedure can determine the actual achievement of the target(s).

3.3. Review mechanism

The verification of compliance with pre-set targets requires supervisory bodies to conduct a regular review process at the end of every period that examines the achievements of the pre-defined sub-targets. This process extends over several instances, with the ultimate possibility that the additional fiscal leeway can be withdrawn, if the targets have not been achieved[13].

Step 1: Regular review process

In regular review processes, supervisory bodies shall verify whether the pre-set targets have been met within the specified time period. If the targets are met, there is a further advance to provide additional fiscal leeway for meeting the targets in the next period. The national parliaments would be called upon in their mandate to control the budget and thus ensure transparency in the use of public funds.

Step 2: Non-compliance with targets

Supervisory bodies shall be mandated to decide on a case of non-compliance of governments with their pre-defined targets. As a cornerstone of the application of the SLFL proposal, an initial definition of what constitutes non-compliance is always necessary. On

[12] For example, at the national level where often debt brakes are enshrined in constitutional law and are therefore difficult to change, fiscal leeway that contributes to meeting pre-set environmental targets could be exempted from debt brakes.

[13] For instance, at EU level, the European Commission can carry out the review process, which might be integrated into the European Semester and the SGP. Additionally, the mandate of existing bodies, such as national IFIs can be extended. If the IFIs themselves do not have the necessary capacity to make a sound assessment of target achievement and formulate recommendations for action, an independent panel of experts should support the work of the IFIs.

the one hand, failing to meet any of the pre-defined targets could automatically be considered as non-compliance. On the other hand, missing the targets could still be considered as compliance if governments can credibly demonstrate that the achievement of the targets was beyond their control[14].

Both options come with strengths and weaknesses[15] which must be weighed according to political preferences. A combination of these two approaches could also be chosen.

Step 3: Withdrawal of additional fiscal leeway

In the case of non-compliance, the additional fiscal leeway can be either withdrawn or reduced. Access to the withdrawn or reduced additional fiscal leeway is frozen as long as the government does not comply with the conditions for regaining fiscal leeway[16] within a set deadline.

Step 4: Regaining fiscal leeway after withdrawal

As soon as governments are compliant again, there is again an entitlement to the granting of the additional fiscal leeway. The review process re-starts at the end of each period.

4. Conclusion

The SLFL proposal fills the gaps, which other proposals for providing fiscal leeway for green investments leave unaddressed. Its key idea is that fiscal leeway for green investments is not allocated based on ex-ante eligibility but on ex-post compliance with green targets. Thus, SLFL tackles many of the fundamental challenges with green public investments.

First, it overcomes the definitional challenge and renders an initial definition of green investments superfluous. Second, it ensures the effectiveness of green public investment, as it incentivises governments to reach their green targets. Third, it relieves governments of the bureaucracy burden involved in the drafting and review of binding investment plans and

[14] In the latter case, governments could be obliged to first put forward a detailed explanation for the non-compliance with the targets. The supervisory bodies could evaluate the explanation and formulate recommendations. Governments could have to comply with recommendations within a given deadline, which might be shorter for governments that have failed to comply with the targets before. Once the deadline has passed, the supervisory body could assess the action governments have taken. If governments are back on track regarding their climate-target achievement, the review process could be ended, and governments could be entitled for regaining additional fiscal leeway in the following period. If the supervisory body assesses insufficient action, they could be able step the review process up.

[15] For example, compared to the former option, the latter allows to account for exceptional circumstances but also requires some bureaucratic effort as explanations would have to be submitted and evaluated.

[16] Depending on the compliance process chosen under 2), these can either be complying with the recommendations of the supervisory bodies or meeting the pre-defined emissions targets. If the withdrawal or reduction of fiscal leeway makes achieving the targets unrealistic, the targets for regaining fiscal leeway could be less ambitious than the initial target. For instance, a proportional approach could imply that with fiscal leeway being reduced to 50% of the initial amount, only 50% of the initial emissions reduction target need to be achieved to regain fiscal leeway.

grants them the flexibility to choose the measures they regard as most applicable. Fourth, the ex-post disciplining mechanism ensures that governments spend their money on the green transition most efficiently and leaves them the flexibility to adapt to new, more efficient solutions. Lastly, compared to other proposals, the government debt incurred for financing the green transition is likely to be lower and more sustainable, as the mitigation of environmental risks reduces future strain on governments budgets and is likely to stabilise borrowing costs.

The proposal is envisioned to apply to the supranational level or at national or regional level. It is compatible with the European Commission's recent proposal on reforming the economic governance framework. Here, additional fiscal leeway would take the form of an extension of the budgetary adjustment paths. Moreover, future central funding facilities can be modelled after SLFL, such as the calls for a permanent RRF (Allemand et al., 2023; ECCO, 2023; Heimberger & Lichtenberger, 2023; Van den Noord, 2023) or the European Sovereignty Fund to be proposed by the Commission this summer (Allenbach-Ammann, 2022). Overall, SLFL makes a relevant contribution to shaping a fiscal and budgetary policy that is fit for the challenges of the future and at the same time leaves ample room for its practical implementation.

References

Allemand, F., Creel, J., Leron, N., Levasseur, S., & Saraceno, F. (2023). *Making Next Generation EU a permanent tool* [Policy Study]. Foundation for European Progressive Studies. https://feps-europe.eu/wp-content/uploads/2023/03/Making-Next-Generation-EU-a-permanent-tool.pdf

Allenbach-Ammann, J. (2022, December 14). Commission President: EU Sovereignty Fund will be proposed in summer. *Euractiv*. https://www.euractiv.com/section/economy-jobs/news/commission-president-eu-sovereignty-fund-will-be-proposed-in-summer/

Bénassy-Quéré, A. (2022, May 6). How to ensure that European fiscal rules meet investment. *VoxEU*. https://cepr.org/voxeu/columns/how-ensure-european-fiscal-rules-meet-investment

Bylund, E., & Jonsson, M. (2020). *How does climate change affect the long-run real interest rate?* (Economic Commentaries No. 11). Sveriges Riksbank. https://www.riksbank.se/globalassets/media/rapporter/ekonomiska-kommentarer/engelska/2020/how-does-climate-change-affect-the-long-run-real-interest-rate.pdf

D'Aprile, P., Engel, H., Van Gendt, G., Helmcke, S., Hieronimus, S., Nauclér, T., Pinner, D., Walter, D., & Witteveen, M. (2020). *Net-Zero Europe: Decarbonization pathways and socioeconomic implications*. McKinsey. https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/how%20the%20european%20union%20could%20achieve%20net%20zero%20emissions%20at%20net%20zero%20cost/net-zero-europe-vf.pdf

Darvas, Z. (2023, February 3). A European climate fund or a green golden rule: Not as different as they seem. *Bruegel Blog*. https://www.bruegel.org/blog-post/european-climate-fund-or-green-golden-rule-not-different-they-seem

Darvas, Z., & Welslau, L. (2023). *First lessons from the Recovery and Resilience Facility for the EU economic governance framework* (PE 741.478). Economic Governance and EMU Scrutiny Unit. https://www.europarl.europa.eu/RegData/etudes/IDAN/2023/741748/IPOL_IDA(2023)741748_EN.pdf

ECCO. (2023). *A macroeconomic governance framework for the climate transition* [Policy Paper]. https://eccoclimate.org/wp-content/uploads/2023/03/Una-governance-macroeconomica-per-il-clima-en-GB.pdf

European Commission. (2017). *EU budget focused on results: Summary of the 1st annual conference held on 22 September, 2015*. Directorate-General for Budget. https://doi.org/10.2761/900943

European Commission. (2022). *Commission delegated regulation (EU) 2022/631*. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=PI_COM:C(2022)631&from=EN

Gourdel, R., Monasterolo, I., Dunz, N., Mazzocchetti, A., & Parisi, L. (2022). *The double materiality of climate physical and transition risks in the euro area* (Working Paper No. 2665). European Central Bank. https://www.ecb.europa.eu//pub/pdf/scpwps/ecb.wp2665~622858d454.en.pdf

Heimberger, P., & Lichtenberger, A. (2023). *RRF 2.0: A permanent EU investment fund in the context of the energy crisis, climate change and EU fiscal rules* (Policy Notes and Reports No. 63). Vienna Institute for International Economic Studies. https://wiiw.ac.at/rrf-2-0-a-permanent-eu-investment-fund-in-the-context-of-the-energy-crisis-climate-change-and-eu-fiscal-rules-dlp-6425.pdf

ICMA. (2020). *Sustainability-linked bond principles*. International Capital Market Association. https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2020/Sustainability-Linked-Bond-Principles-June-2020-171120.pdf

Lehmann, A., & Martins, C. (2023). *The potential of sovereign sustainability-linked bonds in the drive for net-zero* (Policy Brief No. 07/2023). Bruegel. https://www.bruegel.org/sites/default/files/2023-03/PB%2007%202023_2.pdf

Lutz, C., Banning, M., Ahmann, L., & Flaute, M. (2022). Energy efficiency and rebound effects in German industry – evidence from macroeconometric modeling. *Economic Systems Research*, *34*(3), 253–272. https://doi.org/10.1080/09535314.2021.1937953

Smith-Meyer, B. (2022, January 14). EU budget offers debt loophole to battle climate change. *Politico*. https://www.politico.eu/article/eu-budget-climate-change-greenhouse-gas-emissions-fossil-fuels/

Van den Noord, P. (2023). *A targeted golden rule for public investments? A comparative analysis of possible accounting methods in the context of the review of the SGP* (PE 733.740). Economic Governance and EMU scrutiny Unit (EGOV). https://www.europarl.europa.eu/RegData/etudes/STUD/2023/733740/IPOL_STU(2023)733740_EN.pdf