Bridging the Action Gap: Evaluating Climate Policy Progress through Integrated Input-Output Monitoring Frameworks

Author: Dr. Guido Ropers (Arepo GmbH)

As more governments and authorities at all levels commit to net-zero emissions (NZE) targets, these commitments are typically accompanied by climate strategies and action plans. However, in practice, such plans often resemble a "basket shop" of loosely connected measures – well-meaning but lacking the quantification, internal coherence, actionable depths, and monitoring systems necessary to determine whether they are sufficient to meet their stated goals. As evaluators, we are frequently asked to assess the sufficiency of these climate action plans and suggest measures for improvement. When working with policymakers in Germany, a recurring challenge emerges: limited knowledge and transparency regarding the actual impact of proposed policy measures on emissions reductions. Based on practical work with German state governments, this paper identifies three key structural challenges and proposes frameworks to improve the design, monitoring, and effectiveness of climate policy action plans.

The first challenge concerns the **lack of transparency and accountability due to methodological fragmentation in GHG inventory systems**. Greenhouse gas inventories are essential tools for tracking emissions and informing climate action, but a multitude of co-existing standards at national, subnational, and municipal levels creates inconsistencies and hinders comparability. At the national level, Germany uses a modified version of the Common Reporting Format (CRF), the standardized framework under the UNFCCC. While the CRF is comprehensive and internationally aligned, it is also complex, resource-intensive, and subject to time lags. Its aggregation at the national level can obscure local variations and sectoral accountability – e.g., emissions from electricity used in buildings are reported under energy supply, not the building sector, limiting direct attribution.

At the subnational level, municipalities predominantly use the BISKO ("Bilanzierungs-Systematik Kommunal") standard. BISKO focuses on emissions from final energy consumption within municipal boundaries and uses a consumption-based approach for electricity and heat. While BISKO has become the de facto standard for German municipalities, it omits key sectors such as agriculture. Moreover, its hybrid accounting approach – partly territorial, partly consumption-based – limits compatibility with national and international inventories. The result is a system that does not fully reflect local emission sources and offers limited scope for aggregating or comparing data across levels of government.

The GHG Protocol, including its Global Protocol for Community-Scale GHG Emission Inventories (GPC), offers a more comprehensive framework for cities and organizations. It introduces the concept of Scopes (1, 2, and 3), allowing for the inclusion of indirect emissions, such as those from purchased electricity or value chain activities. However, the GHG Protocol is primarily guidance-based, leading to inconsistent implementation and difficulties in cross-jurisdictional comparison. ISO 14064-1:2018 offers a rigorous alternative for organizational inventories and is often used for verification, but its applicability for the public sector remains disputed.

The fragmentation between these methodologies leads to blind spots and undermines policy coherence. In particular, the lack of harmonized inventory frameworks makes it difficult to assign responsibility for action or track progress toward NZE goals at the subnational level. To address this, we propose and use **scenario modeling approaches** that estimate future emissions trajectories under current and planned policies. These models allow the identification of an "action gap" – the shortfall between projected outcomes (based on national-level policies) and (subnational) NZE targets – and enable translation into required activities, such as insulation rates, phase-out of fossil fuel heating systems, or shifts in modal transport shares.

The second challenge lies in the **failure to sufficiently link climate policy measures with expected emissions outcomes**. Many climate action plans contain a long list of mitigation measures without quantifying how these interventions will affect emissions in line with the GHG inventory system used to define the NZE. To ensure policy sufficiency, it is crucial to translate qualitative measures into quantitative output indicators and model their impact on GHG emissions over time. This **output-based monitoring** helps to determine whether proposed measures are likely to close the action gap. Furthermore, climate policy rarely works in isolation – barriers such as regulatory lock-in, financial constraints, or behavioral inertia mean that single measures are rarely enough. It is therefore important to consider **policy bundles** that address these barriers systematically. Systematic approaches for barrier and stakeholder analyses such as the "Theory of No Change" (TONC) provide useful tools for identifying such barriers and developing effective combinations of instruments.

The third challenge is the **limited transparency regarding how fiscal policy and broader government measures – many of which are not explicitly covered in climate strategies – affect NZE targets**. This is especially relevant when trade-offs exist between different policy objectives. For instance, subsidies for fossil fuel-intensive sectors may counteract emissions reductions elsewhere. Green budgeting offers a complementary governance tool to address this issue by aligning financial planning with climate objectives. Green budgeting involves integrating climate and environmental considerations into public financial management, typically through instruments like budget tagging, climate impact assessments, and climate-informed spending reviews. Budget tagging categorizes expenditures according to their expected impact on climate goals (positive, negative, or unclear). While tagging offers a useful entry point, it provides limited insight in the absence of quantitative emissions data. Ideally, green budgeting should also estimate the GHG impact of budget measures to directly assess their contribution to NZE targets. Although still emerging in Germany, green budgeting has gained traction at the municipal level, and there is growing interest – most recently by the Federal Audit Office ("Bundesrechnungshof") – in expanding its use at the national level.

Based on our practical experience and evaluation research, we argue that an **integrated monitoring approach** is necessary to ensure effective climate policy implementation. This includes two key components: (1) **input monitoring through green budgeting** to assess financial alignment with climate goals, and (2) **output monitoring that links policy activities to emissions outcomes**. Importantly, these approaches should not replace GHG inventories but rather complement them. The combination of robust emissions data with budgetary and activity-based monitoring allows for a **shift from static emissions reporting to a dynamic governance model that tracks progress, identifies gaps, and informs real-time policy adjustments.**

In conclusion, achieving NZE targets requires more than ambitious goal-setting. It demands methodological coherence across levels of governance (in particular between the national level and state level), quantification of policy effects, and alignment of financial resources. Strengthening GHG inventory systems and mainstreaming green budgeting practices can substantially improve climate policy monitoring and decision-making in Germany. Together, these tools form the foundation for developing more impactful and accountable climate policies that deliver measurable results within the critical timeframes required for decarbonization.