

From the environmental state to the sustainability state? Conceptualization, indicators, and examples

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ABSTRACT

The “environmental state” is an established concept in environmental politics that describes states with a considerable capacity to address environmental issues with new institutions and policies. At the Rio Earth Summit in 1992, the environmental discourse joined forces with the development discourse, politically facilitating the paradigm of sustainable development. Agenda 21 and the 2030 Agenda both call upon states to adapt their governance structures and policies to this new paradigm, for instance, through integrative national strategies for sustainable development and sustainability councils. The literature is undecided on whether sustainable development can be addressed within the environmental state or if it would be more adequate to speak of a “sustainability state” in its own right. After reviewing the literature, this article argues that the sustainability state is not just a development stage of the environmental state but that it is institutionally layered on other state functions, going clearly beyond – but not replacing – the environmental state. However, this layering may result in a sustainability state that is decoupled from other state functions served through differing structures, decisions, and measures. This article offers a descriptive-analytical conceptualization of the sustainability state and develops formal indicators to operationalize it. It analyzes how new administrative and political, regulatory and policy, financial, and knowledge structures can address different governance principles for sustainable development. All indicators are briefly illustrated with empirical examples from Germany or other countries. According to a preliminary assessment, Germany is considered an example of an emerging, yet possibly partially decoupled, sustainability state.

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Introduction: implementing sustainable development in the modern nation-state

With the rise of the governance discourse in the 1990s, the role of the state in regulating human-environmental relations as well as in facilitating sustainable development has come under pressure, as the state appears to lose steering capacities to other governance levels and non-state actors (Lemos and Agrawal 2006; Lange et al. 2013). In response, concepts like “environmental state,” “green state,” “sustainability state,” and “sustainable state” have been developed to conceptually emphasize and empirically research the critical role of the state in governing human-environment relations and sustainable development, respectively (Bornemann et al. 2024). In this article, I ask how the environmental state and the sustainability state relate to each other and how we can conceptualize and measure the sustainability state in a way that facilitates empirical research. Within the triad of polity, policy, and politics, I

focus on the polity, in other words, the rather formal structural-procedural dimension of the sustainability state. While I also indicate challenges in the politics and policy dimensions, these are matters of future research.

While the concept of the environmental state is well established in the literature of comparative environmental politics and policy, the concept of the sustainability state is only emerging. Scholars and policymakers have been calling on the nation-state to implement sustainable development at an institutional level (Spangenberg et al. 2002; Göll and Thio 2008; UN DESA 2012; Biermann et al. 2022). In fact, since the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, many nation-states have been adapting their institutional structures and policies to the goal of sustainable development. They have been following the calls of the main documents of the Rio process, namely Agenda 21 (1992) and the 2030 Agenda with

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its global Sustainable Development Goals (SDGs) (2015), to implement the guiding principle of sustainable development at all levels of government. For example, Agenda 21 asks United Nations member states to reform their decision-making processes so that they “integrate...economic, social and environmental consideration in decision-making at all levels and in all ministries” and reflect “a long-term perspective and cross-sectoral approach,” facilitating coherence of policies and policy instruments, complemented with systematic monitoring and evaluation as well as transparency (United Nations 1992, 65). As a key instrument, states should develop and adopt national strategies for sustainable development based on an assessment of the current situation and on broad participation, with the aim to implement Agenda 21 nationally and harmonize sectoral policies toward “socially responsible economic development while protecting the resource base and the environment for the benefit of future generations” (United Nations 1992, 66).

Twenty years later, the Division for Sustainable Development of the United Nations Department of Economic and Social Affairs (UN DESA) published a study on national institutions for sustainable development. It was reported that the majority of United Nations member states had established national sustainability strategies by 2010 and that many states also created national councils for sustainable development. Moreover, the study highlighted the key role of “Local Agenda 21” in sustainability governance and the roles of participation, quantitative sustainability indicators, and institutions for future generations at the national level (UN DESA 2012).

In 2015, the 2030 Agenda, defined in large part by the SDGs, provided a new impetus. Again, the United Nations called for “cohesive nationally owned sustainable development strategies, supported by integrated national financing frameworks” (United Nations 2015, 33). Since 2016, most United Nations member states have been reporting on their progress in implementing the 2030 Agenda and the SDGs in voluntary national reviews (HLPF 2024).

Various international organizations, think tanks, and practitioners have been studying how sustainable development can be implemented at the national level with the help of new public bodies, cross-sectoral strategies and policies, and institutionalized procedures (Dovers 2001; OECD 2007, 2023; UN DESA 2012, 2019; Bertelsmann Stiftung 2014; Niestroy et al. 2019). While these publications usually provide self-described best practice examples and applicable recommendations, they often lack conceptual depth.

Genuine academic research, however, is only slowly catching up. With respect to empirical research, many scholarly contributions portray certain types and cases of national sustainability institutions (Boyer 2000; Connor and Dovers 2004; Meadowcroft 2007; Berger and Steurer 2008; Göll and Thio 2008; Kahl 2008; Cordonier Segger et al. 2021; Kinski and Whiteside 2023). Others take a more holistic approach and analyze how sustainability is implemented not only by single institutions but with arrangements of institutions, meta-policies, and instruments within one state. Germany is assessed more frequently than other states. Heinrichs and Laws (2014) found that the ensemble of German sustainability institutions did not yet fully serve to mainstream the regulative idea of sustainability into the everyday decision-making of politicians and civil servants. Bornemann (2014) similarly concluded a decade ago that while the structure of Germany’s sustainability-related institutional arrangement was promising, it had not yet led to integrated sustainable policymaking. Böcher (2022, 174, own translation) stated that sustainability in Germany can be considered an emerging policy area in its own right, while “it seems that consistent policy integration with regard to an overarching, coordinated sustainability policy is still a distant prospect.” Birner et al. (2024) researched the effect of the introduction of the SDGs on the German government’s institutional landscape. They found that pre-SDG sustainability institutions are still dominant, while the SDGs have facilitated smaller institutional changes that benefit horizontal policy integration. Regarding other states, in their research project “Sustabilization of the State,” Christen and Bornemann (2021) conceptualized and measured the “sustainability-oriented internal governance capacity” of the Swiss cantons, drawing, *inter alia*, on the existence of sustainability specialist units, legal anchoring, sustainability mission statements, and sustainability evaluations. The authors found that none of the different governance arrangements fully met the requirements of the 2030 Agenda (Bornemann and Christen 2021). Yunita et al. (2022) analyzed the SDG-related arrangement of sustainability institutions in the Netherlands and found that most of their activities have not led to significant policy changes toward sustainability. They attribute this limited impact to a technocratic approach, the institutional anchoring of sustainability in development policy rather than leadership from the center of government, and a missing national SDG strategy.

Two studies offer large-n country-level analyses. In their comparison of 50 states, Wurster et al. (2015) showed that democracies (as opposed to autocracies) tend to employ a broader spectrum of “sustainability instruments,” while the creation of complex instruments further requires a strong state capacity. However, they did not distinguish between a narrow ecological and a broad understanding of sustainability. Breuer et al. (2023) analyzed the proposals for institutional designs of national SDG implementation bodies that were put forward in the 2030 Agenda voluntary national reviews of 137 signatory states between 2016 and 2019. They reported that these initiatives have facilitated horizontal (i.e., cross-sectoral) integration more often than vertical (i.e., cross-level) and societal (i.e., participatory) integration. Finally, in their comprehensive literature review of the political impact of the SDGs, Biermann et al. (2022, 795) found that the SDGs “have had some political impact on institutions and policies” but that it “has been largely discursive” with “more profound normative and institutional impact, from legislative action to changing resource allocation, [remaining] rare.” These assessments, however, only refer to the SDGs in particular and not sustainable development in general. Overall, most of this empirical research is somewhat scattered and lacks a standard conceptual frame of reference next to “sustainable development,” “policy integration,” or “SDGs.”

Regarding conceptual research, Mathis et al. (2023) understand national sustainability institutions as essential parts of an emerging sustainability state. Some scholars theorize such a sustainability state as a development stage of the environmental state (Hausknost 2020) or as going beyond the environmental state (Hausknost and Hammond 2021), while others understand the sustainability state as a concept in its own right (Heinrichs and Laws 2014; Mathis et al. 2023; Bornemann et al. 2024).

In the following section, I reflect on the relation between the environmental state and the sustainability state and argue that they should be conceptualized separately. In the next section, I outline a descriptive-analytical concept of the sustainability state. To make this formulation more applicable for empirical research, I develop formal indicators of an emerging sustainability state in the subsequent section and link them with basic assessment criteria by drawing on established governance principles for sustainable development. To illustrate the indicators, I use Germany as an example and refer to other countries for indicators not covered by the emerging German sustainability state. Germany

hosts a multitude of dedicated sustainability institutions and is the only country that researchers have to date analyzed explicitly as an emerging sustainability state (Heinrichs and Laws 2014). In the concluding sections, I reflect on the German sustainability state, the limitations of this concept, and ways forward.

The environmental state and the sustainability state: institutional layering

As a concept in political science and environmental policy research, the environmental state took shape in the early 2000s. However, as an empirical phenomenon, it can be traced back to the early 1970s when international institutions first began to problematize environmental issues both nationally and globally (e.g., at the United Nations Conference on the Human Environment 1972 in Stockholm). In addition, national governments in several states of the Global North began to create public environmental agencies and policies that later spread to the parts of the Global South (see Duit 2023 for a full review).

In a special issue on the environmental state, Duit et al. (2016, 5–6) defined the environmental state as

a state that possesses a significant set of institutions and practices dedicated to the management of the environment and societal-environmental interactions. Typically, this includes: environmental ministries and agencies; framework environmental laws; air, water and waste management legislation and associated regulatory bodies and mechanisms; dedicated budgets and environmental finance and tax provisions; and scientific advisory bodies, councils, and research organizations. With the environmental state, the state’s role in managing social-environmental interactions becomes a continuous focus of political argument and contestation. Thus, an environmental state has specialised administrative, regulatory, financial, and knowledge structures that mark out a distinctive sphere of governmental activity.

Duit et al. (2016) and others developed this descriptive-analytical concept of the environmental state to inform empirical research. They distinguished their formulation from rather critical-prescriptive concepts such as the “green state” or the “eco-state” that set out how a state that clearly prioritized environmental issues would have to look or that critically analyzed why real-world states failed to solve global environmental problems (Barry and Eckersley 2005; Bäckstrand and Kronsell 2015; Duit 2023). However, the situation in the literature became daunting because these different terms were not used consistently.

At the Rio Earth Summit in 1992, the environmental discourse joined forces with the development discourse, politically facilitating the paradigm of sustainable development that calls for a socially, economically, and environmentally integrated development that “meets the needs of the present without compromising the abilities of future generations to meet their own needs” (WCED 1987, 41). This notion of sustainable development succeeded in dominating the international and national political discourses so that more critical, eco-centric understandings of sustainability that prioritized ecological sustainability over economic development and opposed a green growth paradigm became limited to academic and activist niche debates with little impact on mainstream discourses and political practice.¹ With its call for balancing and integrating environmental, social, and economic policy, long-term perspective toward the needs of future generations, and emphasis on intra- and intergenerational human well-being and justice, the global, regulative idea of sustainable development is more ambitious and holistic than the management of the environment and human-environmental interactions, as put forward in the environmental state. At the same time, scholars criticize the concept of sustainable development as being overly vague about exactly how it would look in practice and how it can be achieved, seemingly circumventing the need for radical disruptive change and prioritization in case of tradeoffs between the different sustainability dimensions and goals (Blühdorn 2007; Adloff and Neckel 2019). Indeed, the 2030 Agenda explicitly acknowledges the need for nationally contextualized sustainability goals and flexible means of implementation, which has certainly facilitated its broad acceptance (United Nations 2015; Weiland et al. 2021).

Against this background, it is not surprising that the Brundtland definition of sustainable development (quoted above), Agenda 21, and the 2030 Agenda with its SDGs have succeeded mainly as a standard discursive frame of reference for United Nations member states and large parts of the sustainability community (see, e.g., Biermann et al. 2022). As this broad conceptualization of sustainable development is clearly distinct from a narrow ecological understanding of sustainability, its implementation at the national level also requires distinct institutional structures that are capable of enabling such an integrative, cross-sectoral, participatory, and long-term endeavor. Unlike the environmental state, the sustainability state can be understood as a “meta-governor” from this perspective (Bornemann et al. 2024). Quite in the sense of “institutional layering” (Streeck and Thelen 2005), the sustainability state

does not replace the environmental state (or any other “states,” for that matter) but adds another layer to other state functions of many modern states such as the fiscal state, the security state, the environmental state, and the welfare state. In Germany, for example, we see that core features of the environmental state, such as the Federal Ministry for the Environment (since 1986), the German Environmental Agency (since 1974), the German Advisory Council on the Environment (since 1972), the Committee on the Environment in the German Parliament (since 1986), and the Environmental Framework Law (since 1990) are still operating and did not transition into a Ministry for Sustainable Development, a Sustainability Agency, or a Sustainability Council, or a similarly constituted organizational form. Instead, the German Government and Parliament added new cross-departmental and cross-sectoral institutions on top of the existing ones, such as the State Secretaries’ Committee on Sustainable Development (since 2000), the Council for Sustainable Development (since 2001), the National Sustainable Development Strategy (since 2002), the Parliamentary Advisory Council on Sustainable Development (since 2004), and the Sustainability Impact Assessment (since 2009). In my view, the phenomena we can subsume under the term “sustainability state” are sufficiently distinct from the environmental state and need to be analyzed separately to avoid concept (over-)stretching.

Conceptualizing the sustainability state

The literature on the sustainability state is still scarce. According to Heinrichs and Laws (2014, 2623), the sustainability state is about integrating sustainability “into decision-making in politics and administration at all levels.” Consequently, Heinrichs and Schuster (2017, 549) define the sustainability state as “the systematic institutionalization of sustainability as a regulative idea concretised through basic principles, norms, organizational adaptations and instruments in the multilevel political and administrative system.” More precisely, according to Heinrichs (2022), an ideal-typical “sustainable statehood” would need to be institutionalized not only in the “multi-level political-administrative system” (e.g., through sustainability strategies and sustainable procurement), but also in “participation, cooperation and public communication” (e.g., through participation procedures and sustainability communication), “science and science-policy interfaces” (e.g., through transformative sustainability science and public-funded mission-driven science for sustainable development), and “culture and cultural diversity” (e.g., through enabling cultural reflexivity). Using slightly different terminology,

Bornemann et al. (2024, 8) define “the sustainable state as a meta-governor that seeks to shape external societal governance arrangements toward sustainability and adjusts its internal governance accordingly.”

I use the term “sustainability state” instead of “sustainable state” to emphasize the strong discursive reference (and, to a certain degree, commitment) of the state to the politically dominant concept of sustainability that is reflected in the Rio process and in institutional structures and policies, in contrast to a state that can actually be deemed “sustainable” according to some external (scientific) standard. Reflecting political praxis, I use the terms “sustainability” and “sustainable development” interchangeably. Therefore, I employ a descriptive understanding of the sustainability state in the tradition of Duit et al.’s (2016) conceptualization of the environmental state. Drawing on this formulation and the definitions of the sustainability state quoted above, I understand the sustainability state to be a state that possesses a significant set of formal institutions and practices dedicated to the governance of sustainable development, with specialized administrative and political, regulatory and policy, financial, and knowledge structures that are aimed at shaping political, administrative, and societal decision-making toward collectively pursuing sustainable development.

“The ‘sustainabilization’ of states unfolds as...a reflexive process of self-transformation,” write Bornemann et al. (2024, 16). However, by institutionalizing itself as another “distinctive sphere of governmental activity” (Duit et al. 2016, 6), creating an additional institutional layer, the sustainability state paradoxically is always in danger of embodying just another siloed policy area (“sustainability policy,” next to, for example, social policy or environmental policy). This would conflict with the sustainability state’s ambition to be more of an integrative, cross-sectoral “meta governor” (Bornemann et al. 2024, 8) that mainstreams sustainability coherently into all decision-making processes across policy areas. Hence, while sustainability policy could be understood as an emerging policy area of its own (Böcher 2022), a sustainability state would rather strive to resemble a meta-policy area of its own.

This inherent self-contradiction is in line with sociological neo-institutionalism, according to which we can understand the state as a non-unitary, incoherent political organization that caters simultaneously to conflicting interests (Brunsson 2002). In this theory tradition, political organizations such as states first and foremost seek legitimacy, and they gain it by signaling to relevant actors in their environment that they reflect those actors’ norms and meet their demands (Meyer and Rowan 1977; Scott

2008). In an organizational field, this can lead to isomorphism so that organizations become more similar to each other, for example, in their formal institutional structures (DiMaggio and Powell 1983). With the sustainability state, we observe that many states adopted national strategies and councils for sustainable development, as these were promoted by the United Nations (Busch and Jörgens 2005; Knill et al. 2014). However, when decision-makers are confronted with contradictory internal and external norms, demands, and motivations, they tend to decouple formal institutional structures from each other as well as from actual political decisions and actions (Meyer and Rowan 1977). Such a systematic disintegration serves the viability of the political organization, and formal changes in the institutional structures, in this case, to meet demands for the seemingly coherent implementation of global sustainability norms, might not facilitate but substitute a coherent sustainability orientation in political decision-making, despite possibly good intentions of those who build the sustainability state (Brunsson 2002). Such cases do resonate with the concern of Hausknot (2020), Hammond (2025), and others that the environmental (and sustainability) state is doomed to hit a glass ceiling of transformation due to conflicts with other (and stronger) state functions.

Given this understanding of the state as a political organization, in my descriptive conceptualization of the sustainability state, I leave the question of the empirical effectiveness of the sustainability state open. Why and under what conditions institutional entrepreneurs build the sustainability state, and whether or not it develops into a dominating, functional state paradigm that effectively steers the sustainability transformation, is a matter of future research. We initially need to develop formal indicators that allow us to identify the extent to which a state can be (formally) considered a sustainability state.

Operationalizing and assessing the sustainabilization of the state

To operationalize my definition of the sustainability state, I develop formal indicators that may guide future comparative empirical research. While the indicator selection is informed by the literature on the institutional implementation of sustainability (UN DESA 2012; Wurster et al. 2015; Niestroy et al. 2019; Christen and Bornemann 2021) and the search for sustainability equivalents of indicators of the related (yet different) concept of the environmental state (Duit et al. 2016), I only consider indicators that have at least one empirical instance (in Germany or elsewhere) and that are suited to roughly assess

the degree of sustainabilization of a state. The indicators show how a sustainability state can realistically look. As the sustainability state is not yet a strongly established concept or empirical phenomenon, the indicators are necessarily preliminary and will need to be adapted across space and over time.

The selection of indicators is also motivated by their potential contribution to public sustainability governance. For each indicator, I identify the extent to which it addresses one or more governance principles for sustainable development, which may inform the sustainability state as a “meta-governor.” Similar to my conceptualization and operationalization of the sustainability state, I deliberately choose governance principles that are not external to the mainstream political sustainability discourse but are advocated by international organizations such as the Organization for Economic Co-operation and Development (OECD) and the United Nations and are inspired by Agenda 21 and the 2030 Agenda.

Synthesizing previous studies (Steurer 2010; Heinrichs and Laws 2014; OECD 2018; Niestroy et al. 2019; Breuer et al. 2023; Mathis et al. 2023; Birner et al. 2024), arguably, there are the following five core governance principles for sustainable development.

1. *Horizontal integration* across policy areas, departments, and sectors, facilitated by leadership through the center of government to address the cross-sectoral, integrative nature of sustainability and to avoid negative externalities.
2. *Vertical integration* across levels of government – from international (United Nations) to local (municipalities) – to implement global (or national) goals such as the SDGs at all levels and to avoid vertical policy incoherence.
3. *Participation* to involve stakeholders and the broader public in goal setting, policy development, and implementation to improve mobilization and legitimacy and to make use of broad expertise.
4. *Intergenerational equity* through taking a long-term perspective to avoid myopic decision-making, consider the needs of future generations, develop long-term visions and strategies of sustainable development, tackle long-term problems, and ensure continuity in case of changes of government.
5. *Knowledge integration and reflexivity* to adequately address “wicked” sustainability problems, integrate different fields and types of knowledge in a deliberative manner, address the complexity and uncertainty of sustainable development and the involved facts, values, and interests, and facilitate transparent

monitoring, adaptation and learning with regard to the course of sustainable development.

Following the definition of the sustainability state outlined above, I structure the formal indicators according to the states’ dedicated specialized administrative and political, regulatory and policy, financial, and knowledge structures for sustainability. Empirically, a single institutional or policy structure might embody more than one indicator, and their design may vary between different sustainability states. As far as formal competencies are concerned, the indicators may not only be relevant at the national level but also at sub-national, local, and supranational levels. Each indicator (partially) addresses different governance principles for sustainable development (Table 1).

Administrative and political structures

Specialized administrative and political structures formally institutionalize sustainability through new or reformed public bodies and competencies that cut across siloed policy areas and institutions (Mathis et al. 2023).

- 1a. The first indicator is an *institutionalized lead responsibility for sustainability in the center of government* – for example, in the Prime Minister’s Office – as compared to lead responsibility taken by a line ministry such as environment, foreign affairs, or development cooperation. This emphasizes the overarching character of sustainability, symbolizes a strong commitment, and facilitates horizontal integration by avoiding siloed ministerial responsibilities (Wurster et al. 2015; Niestroy et al. 2019; Breuer et al. 2023). In Germany, the main responsibility for sustainable development is anchored within the Federal Chancellery, spearheaded by a state secretary who also heads the State Secretaries’ Committee on Sustainable Development.
- 1b. A *high-level interdepartmental governmental sustainability steering body* ensures that sustainability is implemented in all ministries and the public administration in general (Wurster et al. 2015; Niestroy et al. 2019). It can be complemented by ministerial sustainability focal points, working groups, sustainability secretariats, and exchange formats with inter- and sub-national actors. In the case of the latter, these bodies facilitate not only horizontal but also vertical integration. In Germany, a State Secretaries’ Committee on

Table 1. Analytical framework of indicators of the sustainability state and their tentative contribution to the implementation of governance principles for sustainable development (SD).

Indicators\Principles	Horizontal Integration	Vertical Integration	Participation	Inter-generational equity	Reflexivity	DE
(1) Administrative and political structures						
(1a) Institutionalized lead responsibility for SD in the center of government	x					√
(1b) High-level interdepartmental governmental steering body for SD	x	(x)				√
(1c) Parliamentary committee for SD	x				(x)	√
(1d) Stakeholder council for SD	x	(x)	x		x	√
(1e) Independent commissioner or ombudsperson for SD	(x)		(x)	(x)	x	
(1f) Multi-level coordination body for SD	(x)	x				√
(1g) Institution for future generations or long-term perspectives				x	(x)	(√)
(2) Regulatory and policy structures						
(2a) Constitutional provision for SD	x			(x)		
(2b) Framework law for SD	x			(x)		
(2c) Obligatory sustainability impact assessment	x			(x)	x	√
(2d) (National) strategy for SD	x	(x)	(x)	(x)	(x)	√
(2e) Local Agenda 21 and follow-up local SD strategies	x	(x)	x		(x)	√
(3) Financial structures						
(3a) Dedicated sustainability implementation plan budget or fund	(x)					
(3b) Sustainability criteria in the (national) budgeting process	x				(x)	
(3c) Sustainability taxes, subsidies, and other financial instruments	(x)			(x)		√
(3d) Sustainable public procurement			(x)			(√)
(4) Knowledge structures						
(4a) Sustainability monitoring system	x	(x)			x	√
(4b) Scientific advisory council and science-policy-interfaces for SD	(x)		(x)		x	√
(4c) Publicly funded research organizations and think tanks for SD				(x)	x	√
(4d) Public education for SD	(x)	(x)			x	√
(4e) Public research funding programs for SD	(x)				x	√
SUM: 21 indicators	14.5	4	4	4.5	10.5	15

Notes: Column 1 shows the indicators. Columns 2 to 6 show the tentative contribution of the indicators to the implementation of the governance principles, based on the author's interpretive assessment informed by the literature referenced in this section ("Operationalizing and assessing the sustainabilization of the state"). "x" indicates a full contribution, and "(x)" is a partial or weak contribution. Column 7 shows if Germany (DE) has a relevant structure for the respective indicator. "√" indicates a fully relevant structure and "(√)" a partially or weakly relevant structure, based on the author's interpretive assessment informed by the examples named in this section. The last row in columns 2 to 6 shows how often a governance principle is addressed by the indicators in total (counting 1 for "x" and 0.5 for "(x)"). The last row in column 7 displays the total amount of indicators Germany shows (counting 1 for "√" and 0.5 for "(√)").

Sustainable Development was created in 2000 to develop, coordinate, and monitor the implementation of the National Strategy for Sustainable Development and to provide advice on policies relevant to sustainability in general. Later, a lower-level working group made up of sustainability focal points in each ministry was added, and most recently, seven thematic Transformation Teams were created.

- 1c. A *parliamentary sustainability committee* institutionalizes sustainability within the legislative branch and may monitor the government's implementation of sustainability, deliberate about sustainability, and advise other parliamentary committees on sustainability-related issues (Fitsilis and Vrieze 2020). As a complement to conventional parliamentary committees that usually specialize in single policy areas and mirror government ministries, sustainability committees can take a more holistic, integrated view and seek deliberation and

consensus beyond the government-opposition divide to foster a broad sustainability agenda (Kinski and Whiteside 2023). In Germany, the all-party Parliamentary Advisory Council on Sustainable Development has been reintroduced at the beginning of every parliamentary term since 2004. Among other things, it monitors the government's Sustainability Impact Assessments of draft legislation.

- 1d. A *stakeholder council on sustainable development* consists of societal actors from different sectors, including labor unions, industry, religious organizations, environmental nongovernmental organizations (NGOs), youth organizations, and academia. It may also include public actors such as heads of government, ministers, regions, and municipalities. The councils usually have an advisory and sometimes a coordination function and facilitate social and political engagement with sustainability, thereby contributing not only to

participation but also to horizontal integration through their cross-sectoral membership, knowledge integration and reflexivity through diverse members and advisory roles, and vertical integration if members come from different levels of government (Boyer 2000; Spangenberg et al. 2002; UN DESA 2012; Wurster et al. 2015; Niestroy et al. 2019; GNNCSDS 2024). The German Council for Sustainable Development, created in 2001, consists of societal stakeholders only. Several states within the country also have established sustainability councils. The Belgian Federal Council for Sustainable Development includes governmental actors from different levels next to societal stakeholders. Several countries have established additional online participation formats, and Finland has complemented its stakeholder council with a large Citizen Panel and a 2030 Agenda Youth Group.

- 1e. A *sustainability commissioner or ombudsperson* is an independent office that monitors and audits the implementation of sustainability strategies and policies, provides advice, and, in the case of an ombudsperson, receives and processes sustainability-related complaints and petitions from the general public and possibly conducts its own investigations (Wurster et al. 2015; Wright and McKenzie 2021). With independent audits and advice, such commissioners contribute primarily to reflexivity. At the same time, their independence can also allow them to take a relatively long-term view, and their role in monitoring sustainability strategies may facilitate horizontal integration. If they are responsible for receiving and processing petitions, they may also foster participation. For instance, the Commissioner of the Environment and Sustainable Development, founded in 1996 in its present form in Canada and situated within the Canadian Auditor General, conducts independent audits, monitors the implementation effectiveness of the national sustainability strategy, provides recommendations, and receives petitions.
- 1f. To facilitate vertical integration not only with the United Nations, a *multi-level coordination body* can help to coordinate sustainability policy and implementation between and within national and subnational levels (Niestroy et al. 2019). Germany has institutionalized a Federation-Länder Experience Exchange for Sustainable Development, co-chaired by the Federal Chancellery.
- 1g. A dedicated *institution for future generations or long-term perspectives* helps states to consider the needs of future generations in

political decision-making and anticipate future trends and problems within the framework of sustainable development, which also requires a certain reflexive capacity. These institutions come in various forms, for instance, as independent commissioners or intra-governmental bodies, and sometimes have asynchronous terms to parliamentary terms (UN DESA 2012; Niestroy et al. 2019; Cordonier Segger et al. 2021; Rose 2024). In Germany, the Parliamentary Advisory Council on Sustainable Development is a member of the network of institutions for future generations, but it does not specialize in this regard. Therefore, better examples include the Committee for the Future in the Finnish Parliament (since 1993), the Future Generations Commissioner for Wales (since 2016), and the Maltese Guardian of Future Generations (since 2013).

Regulatory and policy structures

Sustainability states need to institutionalize regulatory and policy structures on a meta-level that would then guide specific policymaking and regulation toward sustainable development, establishing sustainability as a guiding principle for the integrated development and implementation of policy goals and instruments (Bornemann et al. 2024).

- 2a. *Constitutional provisions for sustainable development* anchor the goal of sustainable development permanently in a state's constitution and thereby oblige the government to pursue this goal in its different activities (Wurster et al. 2015; Christen and Bornemann 2021). Such constitutional provisions usually address all state actors and constitute a long-term commitment, facilitating horizontal integration and intergenerational equity, respectively. For example, Switzerland added sustainability to its constitution (Article 2) in 1999, and this provision asserts, “[The Swiss Confederation] shall promote the common welfare, sustainable development, internal cohesion and cultural diversity of the country.”
- 2b. Similarly, states may establish a *framework law for sustainable development* to put sustainability on a long-term legal footing (Christen and Bornemann 2021). For example, Morocco adopted Framework Law 99-12 on the National Charter for the Environment and Sustainable Development and Burkina Faso instituted Law No. 008-2014/AN (concerning framework law on sustainable development). Malta adopted its Sustainable

Development Act (and, with it, the Guardian of Future Generations) in 2012 to mainstream sustainable development across the government.

- 2c. An *obligatory sustainability impact assessment of draft legislation* checks how regulatory alternatives would affect sustainable development (Wurster et al. 2015; Niestroy et al. 2019; Christen and Bornemann 2021). By taking into account the different dimensions of sustainability, it fosters, inter alia, horizontal integration, as competent public servants are required to reflect on cross-sectoral and long-term impacts. In Germany, the Sustainability Impact Assessment is part of the Regulatory Impact Assessment and has been codified in Joint Procedures of the Federal Ministries since 2009. It focuses on long-term effects and uses the National Sustainability Strategy with its goals and indicators as a frame of reference, now implemented in an online assessment tool. Within Germany, Baden-Wuerttemberg established a sustainability check of draft legislation in 2011.
- 2d. (*National*) *strategies for sustainable development* are often regarded as the main instruments of public sustainability governance. Ideally, they are developed in a participatory manner, assess the current state of sustainability, develop long-term sustainability goals and measures to reach them, allocate responsibilities (and, perhaps, resources), directly relate to Agenda 21 or the 2030 Agenda, and monitor progress (Spangenberg et al. 2002; Meadowcroft 2007; OECD 2007; Berger and Steurer 2008; UN DESA 2012; Wurster et al. 2015; OECD 2018; Niestroy et al. 2019). Therefore, they are the only indicator that may contribute to the implementation of all governance principles for sustainable development to some extent. Germany has had a National Strategy for Sustainable Development since 2002 and updates it roughly every four years, involving most national sustainability institutions and the public. It includes management rules as well as quantitative and term-determined goals and indicators that are aligned with the SDGs. Most states within Germany have also adopted their own SDG-related sustainability strategies.
- 2e. Already in Agenda 21, municipalities were addressed as key agents of sustainable development. Consequently, many municipalities worldwide developed their own versions of *Local Agenda 21* in the 1990s, which often did not survive in the long run and some-

times were later replaced with local SDG-related sustainability strategies (UN DESA 2012; Wurster et al. 2015; Heinrichs and Schuster 2017). Usually developed in a participatory manner, they primarily contribute to horizontal integration by providing a cross-sectoral sustainability vision or strategy. In Germany, several municipalities have established these local initiatives, and municipal umbrella organizations have created a regular dialogue format with the Sustainable Development Council.

Financial structures

The financial structures of the state determine public revenues and expenses, and both partially reflect the government's policy instruments and substantive priorities. Hence, in a sustainability state, it can be expected that there are specialized financial structures intended to foster sustainability.

- 3a. To implement sustainability measures, financial resources are required. Therefore, the first financial indicator of the sustainability state is the existence of a dedicated *sustainability implementation plan budget or a sustainability fund* (Wurster et al. 2015). This might facilitate horizontal integration, in so far as the funded measures deliberately cut across policy areas and do not fit in the traditional sectoral funding lines. Denmark is among the few countries that established an SDG action plan budget as part of the national budget.
- 3b. Complementarily or alternatively, sustainability criteria such as the SDGs can be included in the *budgetary process of the national budget* and other public budgets to steer public spending toward sustainability goals (Niestroy et al. 2019). As this makes it beneficial for budget items to address multiple criteria, such as the SDGs, it can facilitate horizontal integration and reflexivity, also through increased transparency. So far, there seems to be only experimental experience with large-scale sustainability budgeting like so-called "SDG tagging," but the Finnish government regularly reports on the sustainability implications of its main budget items when submitting the national budget (Mulholland and Berger 2019).
- 3c. *Sustainability taxes and subsidies* help to incentivize sustainable behavior and innovation. However, as a very broad concept, sustainability does not easily translate into specific fiscal tools. We can construe climate taxes and subsidies as examples of this

indicator, as they usually have implications for all dimensions of sustainable development, including its long-term orientation. Carbon taxes, carbon emission certificate trading schemes, and subsidies for a green energy transition could be interpreted in this way. Climate change-related taxes and subsidies might, therefore, contribute to horizontal integration (having implications for ecological, economic, and social issues) and inter-generational equity (having implications for present and future generations). Germany does not have a carbon tax but takes part in the European Union Emission Trading System and started a complementary domestic emission-trading system for fossil fuels in 2021. Finland introduced a carbon tax as early as 1990 and Germany has been a pioneer in subsidizing renewable energy.

- 3d. *Sustainable public procurement* is an instrument that the emerging sustainability state can use to mainstream sustainability in public administration and foster sustainable businesses through its large market share (Heinrichs 2022). It, therefore, allows otherwise disconnected internal (e.g., civil servants) and external actors (e.g., businesses) to participate in the sustainability state. While sustainable procurement has not yet been comprehensively implemented in Germany, the federal government created a Competence Center for Sustainable Procurement in 2011 to educate and advise public administration at all levels of government on sustainable procurement.

Knowledge structures

Traditional knowledge structures are usually highly specialized and aligned with individual scientific disciplines and sectors. Sustainable development, however, represents a deeply normative and integrative guiding principle, while, at the same time, it requires the solution – or at least mitigation – of so-called wicked problems such as climate change, which are too complex and uncertain for any scientific discipline to handle on its own. Therefore, the sustainability state establishes new knowledge structures that take an integrated, cross-sectoral approach to complement traditional knowledge structures. They often integrate diverse stocks of knowledge from different disciplines, such as social and natural sciences (interdisciplinarity) and actor types such as scientists, professionals, and lay persons (transdisciplinarity) to facilitate sustainable development in an evidence-informed, yet holistic, way (see, e.g.,

Heinrichs 2022). All indicators in this category contribute primarily to the implementation of the governance principle of knowledge integration and reflexivity.

- 4a. To monitor progress toward sustainability targets and identify unsustainable developments that need to be addressed, the implementation of a *sustainability monitoring system* that reports transparently on a comprehensive, cross-sectoral set of sustainability indicators such as an adapted set of the SDGs is key (Niestroy et al. 2019; Christen and Bornemann 2021). Oftentimes, it is directly linked to the national sustainability strategy. Both Agenda 21 and the 2030 Agenda pushed for the development of reporting systems for sustainability indicators at the international and the national level (Spangenberg et al. 2002; UN DESA 2012, 2019; HLPF 2024). In Germany, the initial sustainability indicators were developed with the first National Sustainability Strategy in 2002. Since 2007, the Federal Statistical Office has been publishing the indicator reports independently on a biennial basis. The National Sustainability Strategy is revised every four years, which usually leads to changes in the set of indicators (e.g., the adoption of the SDGs in 2016). Most German states have established their own sets of sustainability indicators, including an agreed set of core environmental sustainability indicators that is shared by the states and the Federal government, thereby partially contributing to vertical integration as well.
- 4b. Governing toward sustainability is a highly complex and uncertain issue that may benefit from scientific advice. To strengthen the state's scientific and reflective capacities for successfully engaging in sustainable development and tackling complex long-term issues, many states have established *scientific advisory councils or other science-policy interfaces for sustainable development* (Niestroy et al. 2019; Heinrichs 2022). The German government created the Scientific Advisory Council on Global Environmental Change, which usually takes a holistic and interdisciplinary view, in 1992 and the Science Platform Sustainability in 2017.
- 4c. To facilitate long-term scientific research on sustainable development, which may also engage in transdisciplinary research, applied research, and policy advice, emerging sustainability states may fund *research organizations and think tanks for sustainable development* (Heinrichs 2022). Germany created the Institute for Advanced Sustainability Studies

in 2009, which became permanently institutionalized as the Institute for Sustainability Helmholtz Center Potsdam. At the level of states, North Rhine-Westphalia established the Wuppertal Institute for Climate, Environment and Energy in 1990, which increasingly broadened its scope toward sustainability and transformation research.

- 4d. To mainstream sustainable development throughout society and to educate students, laypersons, and professionals, *public education for sustainable development* (ESD) is facilitated by the United Nations Education, Scientific, and Cultural Organization (UNESCO) and is part of both Agenda 21 and the 2030 Agenda. The German Ministry of Education and Research offers a comprehensive ESD online platform with materials and funding opportunities.² As regards higher education, the University of Applied Sciences Eberswalde in Brandenburg was renamed Eberswalde University for Sustainable Development in 2010. In the same year, the state of Lower Saxony began hosting Germany's only School of Sustainability at Leuphana University Lüneburg, which engages in inter- and trans-disciplinary research.
- 4e. To facilitate the engagement of public research institutions in sustainability research, emerging sustainability states may set up *public research funding programs for sustainable development* (Heinrichs 2022). In Germany, the Federal Ministry of Education and Research has funded sustainability research with its Research for Sustainability (FONA) program since 2005.

Comparing the indicators of the analytical framework, Table 1 shows that the two structures that the United Nations has most actively promoted – National Strategies for Sustainable Development and Councils for Sustainable Development – are indeed best designed to simultaneously address most governance principles for sustainable development. Among those principles, horizontal integration stands out, as it is addressed 14.5 times in total by the 21 indicators of the sustainability state. This mirrors the observation that horizontal policy integration and coherence for sustainable development is probably the most promoted and studied governance principle for sustainable development (see, e.g., Bornemann 2014; OECD 2018; Yunita et al. 2022; Birner et al. 2024). It emphasizes the overarching nature of the regulative idea of sustainable development, reinforcing my argument that the sustainability state would overstretch the concept of the environmental state

and should instead be understood as a complementary yet integrative institutional layer of its own.

Germany as an emerging sustainability state

While I do not engage in systematic empirical research in this conceptual article, this section seeks to demonstrate that Germany is an emerging sustainability state according to the 21 formal indicators previously identified, 15 of which are addressed in the country. Germany scores best at knowledge structures, where it addresses all five indicators. With respect to administrative and political structures, the government and constituent organizations address 5.5 out of seven indicators. Regulatory and policy structures are visible in three out of 5 indicators. In general, financial structures are not yet widely established in the sustainability state, which is also true for Germany (1.5 out of four indicators).

Visualizing core components of the German sustainability state, Figure 1 highlights Germany's public governance framework for sustainable development, focusing on the contributions to the development and implementation of the National Strategy for Sustainable Development.³

Figures 1 and A1 (see appendix) show that the structures of the German sustainability state are, for the most part, very well interconnected and steered from the center of government. However, as outlined earlier in this article, this situation does not guarantee that the German sustainability state has a notable impact beyond its own structural boundaries, specifically the sustainability structures mentioned in the prior section and illustrated in Figures 1 and A1. Research conducted in the early 2010s reported that German sustainability institutions struggled to influence all administrative and political decision-making to the benefit of sustainable development (Bornemann 2014; Heinrichs and Laws 2014). Recent research indicates that they continue to meet obstacles today. The Parliamentary Advisory Council for Sustainable Development, for instance, mainly deals with the national sustainability strategy and its own maintenance but has been relatively unsuccessful in mainstreaming sustainability into regular parliamentary decision-making processes. In addition, its institutional reform attempts regularly fail (Kinski and Whiteside 2023). Birner et al. (2024) find that new mechanisms for sustainability policy coordination in Germany are used occasionally for negative coordination instead of policy integration.⁴ So far, the scarce empirical research on several indicators of the German sustainability state seems to suggest that it is only

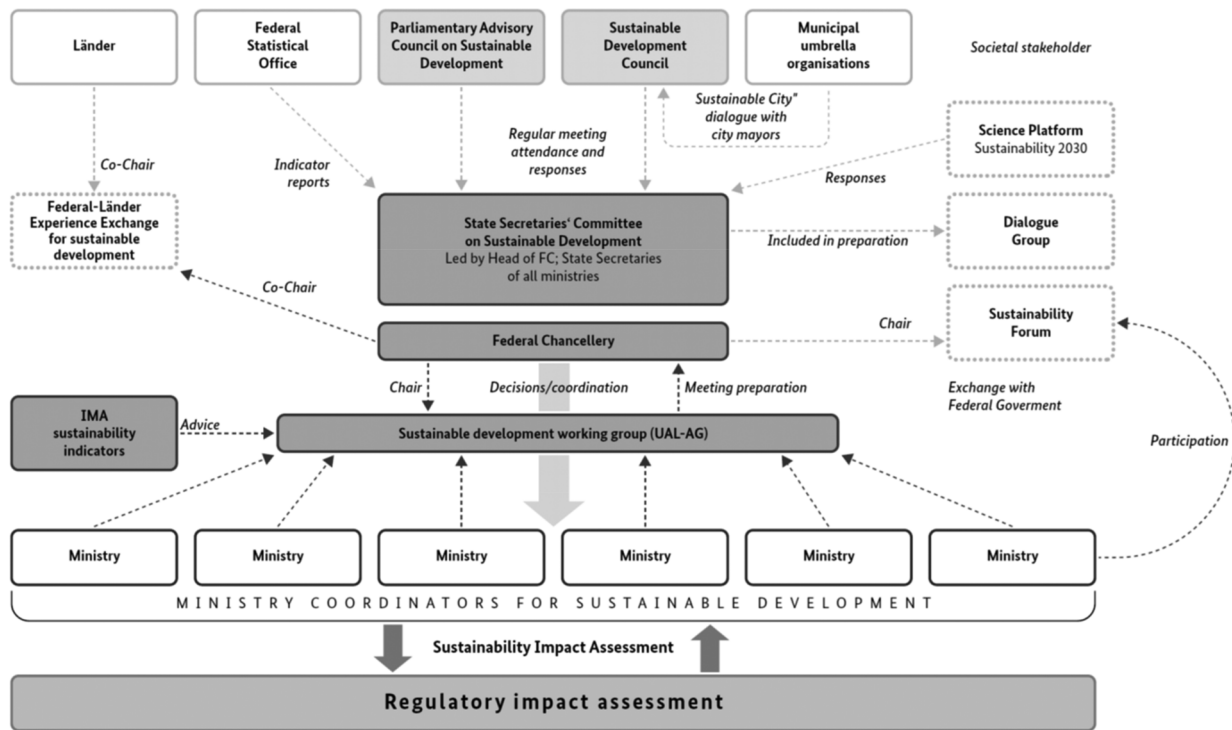


Figure 1. Germany's public governance framework for sustainable development as of 2021. Source: German Federal Government (2021, 18).

loosely coupled (though not fully decoupled) with actual political decision-making.

Regarding the glass ceiling of transformation (Hausknost 2020), data from the Sustainable Development Report indicate that Germany is effective in addressing the domestic dimension of sustainable development (rank four in terms of the SDG overall score, with 83.45% SDG achievement, see Sachs et al. 2024), but fails to address its systemic global dimension successfully. In contrast to its positive effects, Germany has been undermining the ability of other countries to achieve the SDGs (rank 146 in the SDG spillover score that measures social and environmental impacts that are part of economy, finance, trade, and security, with low scores indicating more negative and fewer positive spillover effects, see Sachs et al. 2024). This mirrors the performance of the (much older) German environmental state. On the one hand, Germany ranks third on the Environmental Performance Index (Block et al. 2024). On the other hand, the country has an ecological footprint of 4.5 global hectares per person, which accounts for a biocapacity deficit of -2.9 global hectares per person (GFN 2023). With its emerging sustainability state, Germany may have built the formal structures to push through the glass ceiling of transformation, but from the perspective of global sustainability, it has not yet succeeded. Despite the global ambition of the sustainability state, the government has inherited this problem from the environmental state.

Conclusion

States worldwide have been implementing international sustainability agreements at the national level and starting to develop specialized administrative and political, regulative and policy, financial, and knowledge structures that are aimed at shaping political, administrative and societal decision-making toward collectively pursuing sustainable development. Taken together, these formal structures constitute the sustainability state, as identified by 21 indicators so far. Germany addresses 15 of those indicators and, therefore, qualifies as an emerging sustainability state. The sustainability state does not replace the environmental state but adds a new institutional layer to address complex, overarching sustainability issues. At least in the German case, however, the sustainability state might share the fate of the environmental state. Notably, new governance structures seem to correspond with good national performance on domestic sustainability and environmental issues, respectively, but not with equally positive contributions to global sustainability due to negative externalities at the expense of other countries and the environment more widely.

The descriptive concept and operationalization of the sustainability state developed in this article are limited. The indicators require a relatively high level of state capacity, which is most often found in countries of the Global North. Given the very young research topic, the presented indicators and

assessments are only tentative and preliminary and clearly require more systematic and nuanced conceptual and empirical research on potential sustainability states in different contexts.

Moreover, the performance of a state with respect to the formal indicators of the sustainability state does not fully determine the effectiveness of these specialized structures, considering both the effective implementation of governance principles for sustainable development and, eventually, the national sustainability performance of the respective state, especially in terms of national and global SDG achievements. The formal structures of the sustainability state might only be loosely coupled (or even decoupled) with actual political decision-making. This is because the sustainability state competes with other “states” in terms of core state functions such as the welfare state or the security state. This situation limits the ambition of the sustainability state as a “meta-governor” (Bornemann et al. 2024), which also comes under pressure from shorter-term economic or security crises that shift political priorities away from sustainability and populist parties and politicians who may undermine not only the effectiveness of the sustainability state but once in power, also its very formal structures.

Nevertheless, the article provides a first applicable conceptual step toward future comparative empirical research, and it encourages prospective conceptual, empirical, and critical research on the formation, extent, and impact of the sustainability state. The sustainability state, as conceptualized in this article, provides the relevant formal structures, forums, and tools – and thereby the capacity – to guide policy, politics, and society toward sustainable development. Moreover, it could inspire institutional entrepreneurs in politics to expand the sustainability state by, for example, developing some of the structures mentioned here in the analytical framework in their own countries. Alternatively, such individuals and organizations might be inspired to create new structures that do not yet exist but could facilitate the implementation of those governance principles for sustainable development – vertical integration, participation, and intergenerational equity – that the sustainability state has not sufficiently addressed. Institutional entrepreneurs might even engage in removing obstacles to the sustainability state, such as siloed thinking and short-termism, thereby complementing the sustainability state’s typical institutional layering with the institutional conversion or displacement of “unsustainable” institutions (Streeck and Thelen 2005; Newig et al. 2019).

Notes

1. Critical and prescription-oriented scholars often use a different terminology to discuss ecologically and socially sustainable development paths and respective models of state activity that are based on post-growth or degrowth thinking (e.g., eco-state, eco-social state, eco-welfare state, or sustainable welfare state, sometimes contrasted with the environmental state). See Barry and Eckersley (2005); Bailey (2015); Gough (2016); Koch (2020); Hausknot and Hammond (2021).
2. See <https://bne-portal.de>.
3. Unfortunately, the governance framework (Figure 1) relates to a prior German government led by Angela Merkel; a more recent figure that also includes the so-called transformation teams created by the Olaf Scholz government is only available in German (see Appendix).
4. Negative coordination refers to a typical behavior of ministerial administrative units or other policy actors to keep each other at bay in the sense of making sure that policy decisions of one actor do not interfere with existing policies or new policy decisions of another actor (Scharpf 1994).

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Appendix

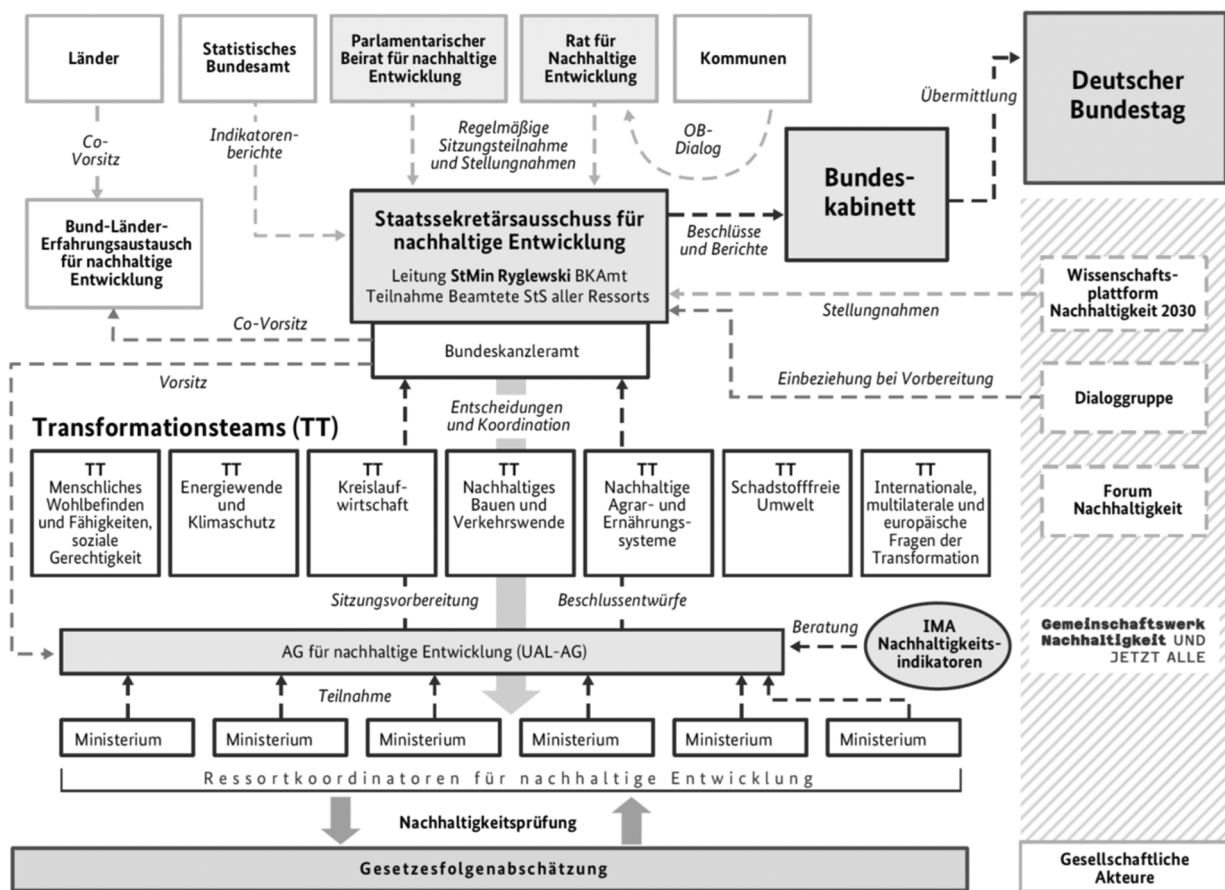


Figure A1. Germany’s current public governance framework for sustainable development.
 Source: Die Bundesregierung 2022, Grundsatzbeschluss 2022 zur Deutschen Nachhaltigkeitsstrategie (Resolution of Principle 2022 on the German Strategy for Sustainable Development). Berlin: Die Bundesregierung, 16.