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Heinrichs, Harald

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# Sustainable Statehood: Reflections on Critical (Pre-)Conditions, Requirements and Design Options

**Harald Heinrichs**

Institute of Sustainability Governance, Leuphana University Lüneburg, Universitätsallee 1, 21335 Lüneburg, Germany; harald.heinrichs@leuphana.de; Tel.: +49-4131-677-2931

**Abstract:** Thirty years after the seminal UN conference on environment and development, where the global agenda for sustainable development was agreed upon by the international community, uncountable initiatives in public policy, business and civil society have been activated. Despite all efforts, pressure on life-supporting Earth systems remain on an ecologically, socially and economically unsustainable pathway. Global collective action for sustainable development has so far been insufficient regarding the scientifically well-diagnosed need for substantial transformation. Given that the world remains a world of nation states, notwithstanding processes of globalization and transnationalization, internationalization and subnationalization, the quest for sustainable statehood is of utmost importance. Based on the expectations of nation states expressed in the UN Transformation Agenda 2030, it is argued that underlying and cross-cutting structures, procedures and instruments of statehood, which precede decision-making processes and policy-making in specific fields of sustainable development, such as climate change or biodiversity, are of key relevance. In this regard critical requirements and (pre-)conditions for sustainable statehood are discussed and design options for sustainable statehood in the Anthropocene are proposed.

**Keywords:** sustainable development; nation state; sustainable statehood; sustainability transformation; Anthropocene; science-policy interface; participation; public administration



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## 1. Sustainable Development in a World of States

Over 50 years ago, the first United Nations Conference on the Human Environment, taking place in Stockholm, Sweden, marked the beginning of modern international environmental policy [1]. At this time, 113 states gathered to discuss concerning global environmental degradation. Principles and recommendations for action were agreed upon, which aimed at developing and establishing environmental policy-making in the international community. The conference was based on concerning scientific studies from the emerging field of environmental sciences and driven by an increased public attention, fueled by environmental movements and intensified public discourse at many places around the world as well as by forward looking political leadership in several countries. Since then, many goals have been reached: environmental policy has become institutionalized in most nation states with ministries, agencies, laws and instruments, and internationally, hundreds of multilateral agreements as well as programs and organizations have been established [2,3]. With the seminal UN Conference on Environment and Development in Rio de Janeiro in 1992 and its follow-up conferences, the scope in discourse and policy practice has been broadened beyond environmental protection towards sustainable development with the ambition of co-optimizing environmental, social and economic developments [4]. In this context, policy innovations such as goal-driven policy-making and collaborative governance have gained in importance over the past 30 years. The currently valid UN Transformation Agenda 2030, including the global sustainable development goals (SDGs), signed by 193 states, is the latest manifestation of global environmental and sustainability governance [5]. However, despite this impressive global development of

environmental policy and sustainability governance in just two generations, taking into account the inertia of institutionalized societal conditions and relations, the substantial effects, particularly on the ecological dimension of sustainable development, are sobering. Extensive scientific evidence published in uncountable articles and synthesized in international policy-oriented studies prove in ever more detail that population growth and resource- and emission-intensive economic expansion put life-supporting Earth systems at risks, and that ecological exploitation and degradation are deeply intertwined with social inequality and intra- and inter-generational injustice [6,7]. In the geologically defined epoch of the Anthropocene [8] we are now living in, planetary boundaries are crossed in an alarming way and current trends remain unsustainable [9]. In face of this challenging landscape, this article (re-)focuses on the (potential) role of the state to drive the sustainability transformation more effectively and successfully. Despite decades of (neo)liberal globalization driving the processes of transnationalization and subnationalization putting pressure on nation states from within and without and fueling analytical-normative debates about the postnational constellation, states remain the universal model of political order: the world we are living in is a world of approximately 200 nation states [10,11]. Even more, after decades of neoliberal privatization in the aftermath of the breakdown of the Soviet Union and the assumed "end of history" with liberal democracy and market economy favoring a lean state, major global crises, such as the financial crisis of 2008/2009, the COVID-19 pandemic, geopolitical tensions and military conflicts, and last not least, global environmental challenges, such as climate change mitigation and adaption, have put the state—democratic and non-democratic alike—back into the limelight, oftentimes as a societal actor of last resort [12]. The spectrum of the renewed role of the state ranges from the re-evaluation of the regulatory state and state intervention into market economies, such as international tax regimes, antitrust laws or environmental and consumer protection in democratic states, through further expanding control of private sector and civic life in authoritarian states, up to nationalistic developments fueled by left- and right-wing populism in the global north and global south alike. Notwithstanding the ideological differences in democratic, authoritarian and nationalistic state formations and normative-analytical assessments thereof, all states are faced—to different degrees—with the intensifying consequences of unsustainable developments such as climate disasters, environmentally-induced social tensions and economic challenges. Before this background and recognizing that almost all member states of the United Nations have signed the Transformation Agenda 2030 and committed to the SDGs, it can be argued that sustainable statehood may become a more important feature of states in the upcoming years. In this context, the present review article explores in the upcoming sections critical requirements and (pre-)conditions for a sustainability-competent state. Based on key policy documents on sustainable development of the United Nations and pertinent literature addressing underlying institutional features of sustainability policy, the paper aims to contribute a differentiated conceptual approach to the discourse on sustainable statehood.

## 2. Sustainable Statehood: Critical Requirements and (Pre-)Conditions

The UN Transformation Agenda 2030 [5], as a key document for global sustainability policy, formulates a series of expectations on states for guiding and safeguarding sustainable development. Based on the expressed responsibilities, duties and recommendations several critical requirements and (pre-)conditions, which can be considered as essential for sustainable statehood, can be derived. The following important text passages in the UN Transformation Agenda 2030 are identified with relevance for the role of states in sustainable development. The identified aspects are then synthesized into key dimensions of essential requirements and (pre-)conditions followed by an exploration and reflection based on the pertinent literature. The focus of the analysis is directed towards the structural, procedural and instrumental dimension of (sustainable) statehood, which are of underlying importance for policies of sustainable development in general and its specific topics, such as climate change, biodiversity loss or poverty reduction.

The United Nations document "Transforming our World: the 2030 Agenda for Sustainable Development" entails, on 41 pages, an introductory preamble, a declaration, an overview of the 17 SDGs, including subgoals, as well as subchapters on implementation and review mechanisms. More than one-third of the document is devoted to the description of the SDGs, in which quite detailed commitments are formulated, representing a mix of specified goals and means for their implementation. The SDGs overwhelmingly address a wide range of policy fields, such as health, education and climate change, and the states are addressed in their role as policy-makers and –implementers. Underlying state-related structural, procedural and instrumental challenges and needs are communicated partly in SDG 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.) and SDG 17 (Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.) but most explicitly in the overarching sections of the document. Scanning the document regarding the expectations, duties and responsibilities of states for sustainable development one can find a significant number of paragraphs and sentences throughout the document, in particular:

> " . . . It is accepted by all countries and is applicable to all, taking into account different national realities, capacities and levels of development and respecting national policies and priorities . . . " [Paragraph 5].
>
> " . . . We will implement the Agenda for the full benefit of all, for today's generation and for future generations. In doing so, we reaffirm our commitment to international law and emphasize that the Agenda is to be implemented in a manner that is consistent with the rights and obligations of States under international law . . . " [Paragraph 18].
>
> " . . . We commit to providing inclusive and equitable quality education at all levels . . . " [Paragraph 25].
>
> " . . . We acknowledge the natural and cultural diversity of the world and recognize that all cultures and civilizations can contribute to, and are crucial enablers of, sustainable development . . . " [Paragraph 36].
>
> " . . . We acknowledge also the essential role of national parliaments through their enactment of legislation and adoption of budgets and their role in ensuring accountability for the effective implementation of our commitments. Governments and public institutions will also work closely on implementation with regional and local authorities, subregional institutions, international institutions, academia, philanthropic organizations, volunteers, groups and others . . . " [Paragraph 45].
>
> " . . . Our journey will involve Governments as well as parliaments, the United Nations system and other international institutions, local authorities, indigenous peoples, civil society, business and the private sector, the scientific and academic community and all people . . . " [Paragraph 52].
>
> " . . . Cohesive nationally owned sustainable development strategies, supported by integrated national financing frameworks, will be at the heart of our efforts. We reiterate that each country has primary responsibility for its own economic and social development and that the role of national policies and development strategies cannot be overemphasized . . . " [Paragraph 63].
>
> " . . . The online platform will facilitate access to information, knowledge and experience, as well as best practices and lessons learned, on science, technology and innovation facilitation initiatives and policies. The online platform will also facilitate the dissemination of relevant open access scientific publications generated worldwide. The online platform will be developed on the basis of an independent technical assessment which will take into account best practices and lessons learned from other initiatives, within and beyond the United Nations, in order to ensure that it will complement, facilitate access to and provide adequate

> information on existing science, technology and innovation platforms, avoiding duplications and enhancing synergies . . . " [Paragraph 70].
>
> " . . . Operating at the national, regional and global levels, it will promote accountability to our citizens, support effective international cooperation in achieving this Agenda and foster exchanges of best practices and mutual learning. It will mobilize support to overcome shared challenges and identify new and emerging issues. As this is a universal Agenda, mutual trust and understanding among all nations will be important . . . " [Paragraph 73].
>
> " . . . We also encourage Member States to conduct regular and inclusive reviews of progress at the national and subnational levels which are country-led and country-driven. Such reviews should draw on contributions from indigenous peoples, civil society, the private sector and other stakeholders, in line with national circumstances, policies and priorities. National parliaments as well as other institutions can also support these processes . . . " [Paragraph 79].

This selection of statements shows that the participating 193 states have firmly laid down state-related requirements and (pre)conditions for improving global sustainability governance. Looking at these kinds of passages, the document emphasizes an evident sustainability orientation in (multi-level) political–administrative systems of states within international and intergovernmental contexts, with specificities regarding participation, cooperation, public communication, science and science-policy interfaces, as well as cultural diversity and social learning. In the next section, these key aspects of state engagement on sustainable development are explored in more depth.

### *2.1. Multi-Level Political–Administrative Systems for Sustainable Development*

The beginning of the journey to sustainable development, marked by the Brundtland Report in 1987 and the subsequent Rio Conference on Environment and Development, with the adoption of Agenda 21 in 1992, must be seen within the context of historic global transformation after the breakdown of the Soviet Union. Western liberal democracies and capitalist economies, led by the United States, appeared as a superior political and economic model, and political scientist Francis Fukuyama famously diagnosed the "end of history", projecting the global victory of Western ideology [13]. Even though from today's view it appears that this was a misjudgment, the emerging discourse and guiding vision of sustainable development at the beginning of the 1990s was shaped by the radically changed global political landscape. Driven by economic globalization, strengthened privatization, increased attention to civil society and critical views on big government and a strong state, academic discourse and political practice concepts and approaches of governance beyond government, collaborative governance, networked governance and private governance questioned the steering role of the state and endorsed societal self-regulation [14]. The (nation) state became squeezed by processes of internationalization and transnationalization. At the end of the 1990s and the beginning of the 21st century, however, the state-critical (neo)liberal agenda was exposed to headwinds. Anti-globalization and anti-privatization movements, the terrorist attack in the United States on 11 September 2001, the global financial crises of 2009, right-wing and left-wing populism, as well as the re-emergence of statism in Russia or China inter alia, led to resurgence of (nation) states in world society; the spectrum ranges from strengthened regulatory and interventionist democratic (welfare) states to non-democratic, authoritarian statehood. The question to what extent the state is back—in its different political–cultural forms—and should be back in the face of complex global challenges has been discussed with regard to the environment and sustainable development as well [15–17]. From the 1990s onward, environment and sustainable development were important topical fields for the development and exploration of governance perspectives and approaches. Environmental and sustainability governance, grounded in the idea of governance beyond and besides the state, have become a dominant area of research in the past 30 years [18,19]. In this line of thinking, the focus was—and still

is—on multi-stakeholder governance beyond government emphasizing the inter-relational processes between state and non-state actors and most often not framing the state as primus enter pares. However, already at the beginning of the new millennium and more so in recent years, publications re-focused the state and emphasized its crucial role for environmental protection and sustainable development by discussing empirical observation and the normative concepts of the green state, ecological state or environmental state in the context of democratic societies, ecosocialist and ecoauthoritarian states as non-democratic approaches, as well as the sustainability state or sustainable state, for various political systems [16,17,20–22]. Reflecting on this state-focused debate, the ideal typical key features of sustainable statehood with relevance for the implementation of the UN Transformation Agenda 2030 can be deduced.

Given that the life-supporting Earth system and its planetary boundaries are foundational for any socioeconomic activity, it is crucial for the identification and conceptualization of structural, procedural and instrumental approaches of sustainable statehood to learn from empirical insights as well as theoretical considerations on environmental statehood. A first wave of key literature explored two decades ago the (new) role and performance of nation states with regard to global environmental changes. Some authors argued that due to globalization pressures, nation states need to internationalize by engaging more in international cooperation, particularly in the field of environmental governance [23,24]. Others observed the greening of states through civil society pressure and discussed the interrelationship of ecological modernization and the (new) role of the environmental state [25], and a further perspective was directed towards analyzing the institutionalization of the environmental state by looking at the status of environmental capacity-building, comparing the development of the ecological state with the welfare state and making the argument for strengthening the state with regard to the (global) ecological crisis [15]. Such discourse was not merely about denationalization in favor of more market and less state but about reforming the environmental state: increasing efficiency and effectiveness through capacity-building of the multi-level political–administrative system for environmental policy, becoming more cosmopolitan through participation in multilateral environmental policy-making, creating structures and instruments for collaborative multi-stakeholder-governance and going beyond the regulatory environmental state by enabling structures and instruments for environmental innovation. Further publications in this context further differentiated the focus on green statehood both theoretically and empirically. In the face of ever more pressing environmental challenges, especially climate change, and with regard to growing awareness in science and practice for sustainability transition, going beyond a narrow environmental policy focus, further characteristics of sustainability-oriented states have been elaborated: typologies tracing the diversity of environmental states in different world regions and with heterogeneous social, economic and political conditions [26]; the increased relevance of interrelation between redistributing welfare states and regulating environmental states [21]; the underlying relevance of (globalized) political and economic dynamics for environmental states [23]; and new demands for environmental statehood coming from sustainability-related issues such as intra- and inter-generational justice or (deep) socioecological transformation perspectives [27]. Meanwhile, the sketched discourse is—explicitly or implicitly—anchored dominantly in a Western perspective of representative democracy, market economy and a decisively different view on the environment, and the state is pursued in consideration of ecoauthoritarianism and ecosocialism. The latter argues that capitalism has to be replaced by ecosocialism to reach true sustainable development and that in the previous states democracy was inadequate to bring about radical change, and instead, a technocratic and meritocratic state is required to force sustainability [17,28]. Both approaches put collective necessities above individual human rights and rest more in output- than input-legitimacy. Most often China is cited as a paradigmatic model for this non-democratic approach. For our context, it can be concluded from the research on environmental, ecological or green states in the tradition of democratic thinking, as well as by studies on authoritarian and socialist ideologies, that in the face of accelerating

environmental degradation and unsustainable development across political systems and traditions, new approaches of green statehood are required. This challenge is, last but not least, further emphasized and concretized by case studies analyzing through the lens of environmental justice and environmental movements the role of states vis-à-vis resource extractive industries [29,30]. The literature reflected upon until here focuses strongly on the changing role of the state regarding the environment and environmentally sustainable development. Some authors, however, have gone beyond the environment-centered perspective, relating the multidimensional understanding of sustainable development to the nation state. In this line of study, the analytical interest is directed mainly towards sustainability strategies and the institutionalization of sustainability in political–administrative systems [16,31]. Empirical as well as conceptual research in this regard points out the need for the structural, procedural and instrumental innovations of states. Regarding structures and procedures, the need for systematic horizontal (across policy fields) and vertical (across political–administrative levels) coordination and integration is emphasized. In the face of the multi-actor, multi-sector and multi-level challenges of sustainable development, an ambitious participatory and cooperative style of policy-making is recommended, and looking at the necessarily long-term transformation affecting different societal groups in different ways today and in the future, guiding instruments such as sustainability strategies, monitoring systems or sustainability assessment tools are needed, which allow for intra- and inter-generationally fair and just transitions. A special research strand deals with the subtopic of sustainable public administration [32]. Under this terminology, a broad spectrum of topics affecting the implementation of sustainability in public administration at different levels is discussed, spanning issues such as sustainable public procurement, organizational sustainability and carbon neutrality management, circular economy approaches or the role of (expert) leadership for sustainable development in public administration. Even though most of the literature is focused on public administration in democratic states, comparable to the previous observations on ecosocialism and ecoauthoritarianism, selected publications bring forward the argument that economic, social and ecological sustainable development in planetary boundaries require a strictly regulating and steering state, using China as role model [17]. Summing up the observations on green or environmental states, sustainability or sustainable states, it can be concluded that across different political ideologies and state forms and the varying understanding and practices of state authority and civic freedom, a substantial increase in sustainability competences and sustainability professionalization in political–administrative institutions through organizational capacity-building, adequate policy instruments, long-term and integrative orientation as well as a cosmopolitan world view in the face of the international and transnational boundary conditions for any nation state is crucial. Despite fundamental differences between democratic and non-democratic states regarding democratic participation and state authority, individual freedom and collective stability, it can be assumed that sustainable development requires a sustainabilitization of any type of state, functioning as a regulating and enabling, accountable and responsive, transformational state at the national, subnational and local policy-making and policy-implementing levels. The key features of sustainable statehood discussed so far allow for a more differentiated understanding of state functions articulated in the UN Transformation Agenda 2030. Next to these overarching structural, procedural and instrumental aspects, three special areas, which are dealt with in the UN document as shown in the quoted paragraphs above, deserve closer inspection: (1) participation, cooperation and public communication for sustainable development; (2) science and science-policy interfaces; and (3) cultural and social learning for sustainable development.

### *2.2. Participation, Cooperation and Public Communication for Sustainable Development*

Citizen participation, multi-stakeholder cooperation and public communication on the risks of unsustainable development, such as climate change, or sustainability communication on the SDGs are important topics throughout the Agenda 2030. This reflects the conviction of the international community that the social and factual complexity of

sustainable development requires a joint effort of public and private sectors, civil society organizations as well as society at large. A rich literature base on participation, cooperation and public communication for sustainable development has been developed over the past 30 years, which can be employed for gaining a more nuanced perspective on this area of sustainable statehood. On the basis of groundbreaking theoretical elaborations on deliberative and participatory democracy and participation typologies, in which intensity levels of participation ranging from public information through consultation to co-decision-making were differentiated, citizen participation in environmental matters and sustainable development has been conceptually and empirically intensively researched [33–35]. Rooted in the—oftentimes implicit—presupposition that participation is per se favorable, participatory methods have been developed and applied in a broad field of issues, ranging from environmental conflicts through planning or envisioning sustainable futures. Despite some critical observations and considerations, pointing at important questions such as the role of social inequality in formal and informal public participation, which may lead to structural reproduction than change, or an underestimation of the relevance of a competent public administration for implementing and enforcing effective measures, there are strong functional and ethical arguments in favor of increased participation [36–38]. Functionally, it appears to be rational to include diverse perspectives given the diverse social situation in pluralist societies. Ethically, it can be stated that citizens should have the opportunity to bring in their opinion in issues which may affect them. Particularly in the context of sustainable development, it is expected that participation has the potential to increase social acceptance for policies and measures and that applicable solutions can be found by including citizen perceptions and competences [39]. Furthermore, the potentially supportive role of digitalization, such as e-participation, farther reaching visions of liquid democracy or the role of digital tools for participation through civic self-empowerment, has been highlighted [40]. Regarding the latter, it is expected that by empowerment through unconventional participation like protest, demonstration or other civic initiatives, sustainable development may be pushed forward. All things considered, well-designed participation by public institutions, as well as state resonance regarding participatory engagement by citizens, appears to be a crucial feature for sustainable statehood through which input legitimacy for sustainability transitions as well as implementation effectiveness can be fostered.

Given that societies do not consist only of (individual) citizens but of like-minded groups of people and more or less organized collectives, cooperative approaches between state and organized stakeholders from civil society and the private sector are considered crucial for shaping and realizing sustainable development. In fact, the perspective of collaborative, multi-stakeholder governance, propagating a liberal, moderating state and network governance between state and non-state actors as well as private governance approaches have gained in reputation over the idea of a hierarchical steering state with dominantly regulatory environmental and sustainability policies [41–43]. Interactive processes with organized civil society represented by non-governmental organizations as well as private sector associations are perceived as crucial with regard to the multi-actor, multi-sector and multi-topic challenges of sustainable development. Despite convincing arguments and encouraging observations on the potential of collaborative sustainability governance, particularly in the context of liberal democracies and market economies, there are some critical aspects as well. Comparable to the challenge inequality in citizen participation, the access to collaborative governance procedures and the potential to influence opinion building, will formation and decision-making in this process is unequally distributed [44]. Sustainability governance is not (only) driven by rationality and solution-orientation of the involved parties but by power relations and self-interest. Control and transparency of legitimate lobbyism, combating illegal corruption and facilitating structured procedures for multi-stakeholder governance are of utmost importance for realizing just and effective cooperative sustainable statehood.

The participation of citizens and cooperation with organized interests for sustainable development are directly connected to a further feature of sustainable statehood: pub-

lic communication of (un)sustainable development. It could even be argued that public sustainability communication is a prerequisite for the involvement of society at large in sustainability issues. As for citizen participation and stakeholder cooperation, a rich body of knowledge has been generated over the past four decades on this topic. Based on parallel and overlapping discourse in science communication, risk communication and environmental communication, insights for state-related sustainability communication can be derived [45–49]. At first it must be noted that public communication in modern mass societies employing information and communication technologies on a large scale is essentially mediatized communication shaped by traditional broadcast mass media as well as internet-based mass individual communication, and social media in particular [49]. Depending on the respective political system, with different forms and degrees of freedom of the press, public and private media services, more or less pluralistic media landscapes, one can find different manifestations of public communication on environment, risks and sustainable development. Studies on climate change, for example, show how significant international and intercultural differences in public communication and perception of climate change depend on factors such as varying media systems, journalistic norms or state involvement [50]. Moreover, it has been shown how the media may drive the amplification of risks, how (journalistic) media coverage is shaped by the interaction of journalists, experts and public relations activities of organized societal actors and that the media recipients should be seen more as active sense-makers than passive consumers [51,52]. The differentiation and commercialization of media driven by economic globalization and the dynamic development of the internet and social media have added complexity to societal communication and push forward the mediatization of life worlds as well as the diversity of the public spheres [53]. Given that mediatized public communication is of significant importance for the social construction of reality because media serve as an interpretative system and shape societal orientation, sustainability communication appears of high relevance for sustainable statehood. Without any doubt, there are fundamental differences in state-run public communication in more democratic states, where the state participates in communication arenas, or more authoritarian states with media landscapes under state control. However, looking at sustainability challenges, all states are confronted with comparable issues: three distinctive but interrelated areas of state-run communication can be differentiated--disaster communication, risk communication and sustainability communication [54]. Disaster communication is required in cases of acute events induced by unsustainable developments, for example, regarding weather extremes, such as flooding or heat waves. Communication infrastructure, procedures and directive communication must be in standby mode and immediately implementable in cases of emergency. Risk communication, in contrast, is a more anticipatory task confronted with the need for supporting the development of risk perceptions through framing, which helps individual and collective decision-making in risk management in fields such as health. Meanwhile, state-run public communication on disaster and risk is needed to address consequences and side-effects of unsustainable development, and the perspective of sustainability communication is directed towards transformation. Thereby specific communication challenges arise, such as goal-conflicts between the different sustainability topics and goals, the mid- and long-term perspective or the handling of projections and future visions. Meanwhile, disaster and risk communication have been further developed over the past two or three decades, and sustainability communication has been conducted and institutionalized by states to a lesser degree.

Regarding the need for citizen participation, stakeholder cooperation and public communication by state institutions to reach society and involve as many parts of society as possible in the endeavor of sustainable development as expressed in the UN Transformation Agenda 2030, it can be concluded at this point that extensive conceptual and empirical knowledge is available in support of the development of sustainable statehood regarding participatory, cooperative and communicative potentials.

The structural, procedural and instrumental features of sustainable statehood discussed so far for multi-level political–administrative systems in general and participation, cooperation and public communication specifically rely on a crucial ingredient, which is reflected upon in the next section: science and expertise.

### *2.3. Science and Science-Policy Interfaces for Sustainable Development*

Sustainable development is inherently normative and value-laden: it is a global ambition for improved social and economic development within planetary boundaries striving for the goal of intra- and inter-generational justice, but it is only a normative and ethical endeavor; it is fundamentally science-based. It was the pioneering environmental sciences of the 1960s, the application of quantitative and qualitative modeling at the beginning of the 1970s and interdisciplinary and international large-scale research on issues such as climate change, biodiversity loss, chemical pollution or ozone depletion, and as well on socio-economic dimensions regarding poverty and social inequality and its interrelation with environmental challenges, which stimulated and keep on driving public discourse and political action (e.g., [6,7,9,55,56]). The role of science and expertise, understood as science which transgresses the boundaries of pure science towards policy and practice, especially for the UN conferences on environment and sustainable development over the past 50 years, should not be underestimated. It could even be said that without scientific insight into complex phenomena such as ozone depletion, climate change or biodiversity loss, international and national environmental and sustainability policy would not be what they are today. National and international science programs on environmental science, science for sustainable development up to specialized initiatives on inter- and transdisciplinary sustainability science with funding mechanisms, institutionalizations at universities and research centers, journals and professional networks, have been put in place and represent nowadays a considerable knowledge infrastructure [16,57–59]. Alongside this institutionalization progress, science-policy interfaces play an important role for enabling evidence-based policy-making. Nowadays, there are scientific advisory systems for environmental policy and sustainable development in nation states as well as internationally [60], and social science has researched the relationship between science and policy and generated instructive insights on structures, processes, functions and proposed design options for improving scientific policy advice [61,62]. Instead of simplistic conceptualizations of science and policy as linear knowledge transfer by speaking truth to power, this line of research shows that science-policy interfaces in knowledge societies with a broad spectrum of legitimate knowledge claims, unavoidable scientific uncertainties and pluralism in values and interests should be thought of as analytic–deliberative processes in which scientific knowledge and expertise are re-constructed in policy contexts. In this sense, it is neither about technocratic ideas of implementing assured scientific truth into policy decisions, nor about decisionistic approaches of scientific and technical expertise only assisting pre-determined political goals but about discursive-oriented approaches in which the best available scientific knowledge is synthesized with an explicit policy-orientation [63]. Scientific expertise in science-policy interfaces in this perspective is not about the technocratic hubris of speaking truth to power but functions as a catalyst for sustainable development and sustainability governance by providing peer-reviewed knowledge about sustainability challenges, including causal mechanisms and model-based anticipation as well as scientifically grounded options for action. In order to be effective, interface-research suggests that not only interactive mechanisms between policy-makers and scientific advisors are of relevance but that the transparency and professional public communication of the advisory work and its results are important. Prominent advisory bodies such as the IPCC serve as good examples in this regard [64]. In the face of the enormous complexity of interrelated sustainability challenges and the high demand of finding technical, ecological, economic, social and institutional solutions, well-designed science-policy interfaces appear as crucially important for sustainable statehood. Science and scientific expertise can help sustainable development through their analytic abilities

and rationalizing impact, but rational insight and technical solutions have its limits as well. Unsustainable development and sustainability transformations affect the everyday lives of people and their well-being, emotions, feelings, sensing and imaginations, which goes far beyond cognitive rationality. Consequentially, the UN Transformation Agenda 2030 mentions the role of culture(s) and cultural diversity for sustainable development, which are addressed in the next section.

### *2.4. Culture and Sustainable Development*

Due to reduced dependence on instincts and the ability and the necessity for interpreting and constructing the world, humans are eminently cultural beings despite their corporeal embeddedness in nature [65]. Throughout human history, variations in world views, beliefs, practices, habits, customs, social institutions, artistic expressions etc. have emerged around the globe, and despite--or because of--economic globalization and perceived trends of cultural homogenization described as McDonaldization, cultural diversity remains not only a reality but a precious commodity of world civilization [66–68]. With regard to sustainable development, rightly so, the United Nations emphasizes the importance of cultural diversity (https://www.un.org/en/observances/cultural-diversity-day (accessed on 10 December 2021)). On the one hand, any sustainability solution must be sensitive to differing cultural realities. On the other hand, cultural diversity provides a rich pool to find more sustainable pathways [69]. However, cultural diversity as such does not automatically mean sustainable development. Resource-intensive consumer cultures are equally as unsustainable in ecological terms as patriarchal societies are unsustainable with regard to social inequality. This means that sustainable development is fundamentally a cultural challenge, which requires cultural (self-)reflection and development. Given that culture is characterized not only by cognitively represented world views and knowledge but by embodied social practices as well, sustainable statehood needs to find ways to go beyond widespread approaches such as economic incentives, information or regulation, which are implicitly or explicitly based on the idea of man as rational homo economicus [70]. If humans are not only cognitive information processing machines but living their everyday life in bundles of partly unreflected practices shaped by pro-verbal feelings, affects and sensations, sustainability transformations need to pay attention to subjective well-being and the cultural construction of meaning [71,72]. In this regard, sensory and imaginative approaches, which are able to capture phenomena such as atmospheres, moods, sensed life worlds, and which can stimulate imagination for new options, may enable cultural reflexivity for sustainable development [73]. Beyond general political appreciation for cultural diversity and the cultural promotion approaches of sensory-informed policy-making or arts-based policy interventions for sustainable development, they may help to increase cultural sensibility and well-being orientation in sustainability governance [74]. Thus, cultural diversity and cultural reflexivity are another key action field for sustainable statehood next to multi-level political–administrative systems, participation, cooperation and communication and science and science-policy interfaces.

### *2.5. Outlook: Shaping Sustainable Statehood*

Against the backdrop of the discussion enfolded in this article, it could be claimed that in a world of nation states, there will be no sustainable development as agreed upon by the international community in the UN Transformation Agenda 2030 without sustainable statehood. That means, if one assumes that for the foreseeable future nation states will remain the key actors for handling global public affairs and not be dissolved or replaced by other forms of cosmopolitan collective self-organization, more attention needs to be directed to shaping sustainable statehood structurally, procedurally and instrumentally. The following table (Table 1) gives an overview over key (pre)conditions, requirements and exemplary design options discussed in the previous sections.

**Table 1.** Key features of sustainable statehood.

| (Pre)Conditions/Requirements | Design Options (Examples) |
| --- | --- |
| [-3ex] Multi-level political–administrative systems | • Sustainability strategies, assessment and monitoring tools<br>• Sustainable public administration, e.g., procurement, organizational carbon-management<br>• Leadership and capacity building in human resources<br>• Participatory and cooperative procedures |
| Participation, cooperation, publiccommunication | • Public information, consultation, co-decision-making<br>• Space for civic engagement<br>• Civic participation procedures reflecting social inequality<br>• Digitalization and e-participation<br>• Cooperation and involvement of organized stakeholders<br>• Mediatized public risk and sustainability communication |
| Science and science-policy interfaces | • Public-funded and mission-driven science and engineering for sustainable development<br>• Transformative sustainability science<br>• Science-policy-society interfaces<br>• Analytic-deliberative procedures |
| Culture and cultural diversity | • Support for cultural diversity<br>• Enabling cultural (self-)reflexivity through arts<br>• Considering cultural practices and subjective well-being<br>• Sensory- and aesthetic-informed policy approaches |

Looking at the range of (pre)conditions, requirements and design options set out in this article, which are interdependent and mutually reinforcing, it can be concluded that a rich supply of conceptual approaches, empirical insights and practical experiences is available, which may help to shape sustainable statehood. However, the existence of conceptual and empirical insight alone does not make an immediate difference in practice. Acting subjects are needed to drive innovation and transformation in state institutions. Next to policy entrepreneurs from inside and outside state bureaucracies, transdisciplinary sustainability science may contribute to this field of transformation. In collaborative projects between sustainability science and political–administrative practice, knowledge and design options on sustainable statehood can be generated, exemplarily implemented and stimulate social and institutional learning. Given that sustainable statehood—as claimed in this article—should be seen as a multi-level challenge within the framework of the UN Transformation Agenda 2030, on the one hand, multiple and distributed experiments across nation states would be desirable, and on the other hand, international and transnational exchange on sustainable statehood not only in academia but between state institutions could be imagined to diffuse best practices. This can be considered as particularly relevant in the current global situation of multiple crisis, especially regarding the intensified geopolitical tensions and conflicts triggered by the Russian invasion of Ukraine with its socioeconomic ripple effects in energy markets and the enduring COVID-19 pandemic. Both events not only put pressure on the international community but affect national politics significantly. Studies show how rightwing populism and extremism try to take advantage of these crisis [75,76]. These developments are not only undermining sustainability policy and progress towards sustainable statehood but threatening democratic political order more fundamentally. Despite the strong normative and analytical preference for democratic political order in this article, particularly regarding social sustainability and civic participation, the dimensions of sustainable statehood discussed here might be of relevance for non-democratic states as well: they have committed to the Transformation Agenda 2030 as well, and they are challenged to find solutions for cross-cutting and long-term unsustainable developments to safeguard—despite mechanisms to suppress opinions—basic societal acceptance and support. Thus, the structural, procedural and instrumental proposals elaborated in this article might be relevant for developing sustainable statehood in different political orders and systems in order to enable the goal attainment of the universal sustainable development goals in the Anthropocene.

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