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SDG-Aligned Futures and the Governance of the Transformation to Sustainability

Reconsidering Governance Perspectives on the Futures We Aspire to

Ariel Macaspac Hernandez

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Bonn, November 2021 Ariel Macaspac Hernandez

Contents

Figures

Tables

Abbreviations

FDI	foreign direct investment
GNI	gross national income
GTS	governance, transformation and sustainability
IPCC	Intergovernmental Panel on Climate Change
NGO	non-governmental organisation
R&D	research and development
SDG	Sustainable Development Goal
SDP	Sustainable Development Pathway
T2S	transformation to sustainability

Executive summary

The (im)possibility of governance of the transformation to sustainability (T2S) is driven by how the related multiple transition processes as well as the various functional, institutional and bargaining interactions among relevant agents or stakeholders can be steered. Like other transformation processes, T2S is an immediate response to threats and risks behind structural changes. In addition, this discussion paper contends that T2S is a "purposive new normal" because it seeks ways to achieve a new equilibrium whereby the system is able to effectively confront or prevent imminent threats and risks by moving away from unsustainable socio-economic-ecological systems. It needs to be noted that there can be more than one version of the new equilibrium for each state or society. This paper argues against the "ahistoricity" (*Geschichtslosigkeit*) approach of much of the literature on T2S and contends that each country has a distinct set of socio-political (e.g. quality of institutions) and economic resources (e.g. gross national income) available, depending on its current standing.

The academic debate on transformation has re-emerged with intensity due to it increasingly being linked to the discourse on sustainability. One important thread of this transformation–sustainability nexus is the role of governance in determining the (successful) outcome of the transformation process, among other things. This discussion paper explores how an integrated conceptualisation of the governance of T2S can shed light on the necessary puzzle parts that various disciplinary perspectives can contribute, not only in helping to see the bigger picture, but also in understanding possible meanings when operationalised to solve problems on the ground. An integrative approach also means that the conceptual diversity of governance is understood not as a barrier, but rather as an opportunity to evaluate governance in terms of how it could integrate multiple (and parallel) transitions (e.g. transition from a planned to a market economy, post-colonial transition) and changes (e.g. demographic trends, human capital) together into a transformation pathway to sustainability. The first step taken by this paper is to present how the different research clusters of sociology, political science and economics (and their sub-disciplines) are seeking to explain the different requirements for governance to be conducive to T2S.

While the academic literature on governing T2S can already build on decades of work, the debate on the three-fold interfacing of governance, transformation and sustainability (GTS) still has major gaps to fill. This paper articulates an integrated approach in understanding the governance of T2S by bringing together perspectives from sociology, political science and economics (and their sub-disciplines) as puzzle parts. Connecting the different puzzle parts contributed by the different disciplines, this paper conceptualises the four types of resources needed to make governance conducive to T2S: *vision, performance, social cohesion and resilience*. The next step for this paper is to use puzzle parts to form a framework to introduce three sets of scenarios for sustainable futures, the "*SDG-aligned futures*". The three pathways leading to these SDG-aligned futures are *political-transition-driven (or strong), societal-transition-driven (or cohesive)* and *economic-transition-driven (or efficient).*

The three scenarios for SDG-aligned futures serve on one hand as the basis for the contextualisation of transformation for a more strategic application of appropriate solutions by focussing on what governance structures, levels, processes and scales are

conducive to T2S. At the same time, this approach resolves the "ahistoricity" dilemma in many concepts of T2S by highlighting that countries have different entry points when initiating T2S. The perspectives on the scenarios towards a sustainable future provide multiple entry points for each country by specifying the departing stage for a specific country that consists of a set of path dependencies resulting from the country's (1) historical experience (e.g. colonialism) and (2) national discourse (e.g. debate on the sustainable energy transition). As countries utilise the potentials of their already existing governance structures and implement policy reforms that occur within existing institutional and politico–legal structures as well as through social upheavals and fundamental changes (hence, resilience is fundamental to T2S), these pathways are aligned by the Sustainable Development Goals, leading to coherent societal priorities and policy mixes.

1 Introduction: The (im)possibility of governing the transformation to sustainability

The idea of humans being merely objects of authority is controversial, if not scandalous. Centuries of struggles of numerous movements were needed before freedom of will came to no longer be understood as a threat to peace and order, as argued by Immanuel Kant's claim on the valuable link between "freedom and goodness" (Kraft & Schönecker, 1999). At the same time, freedom of will is a pillar to conflicts as aspirations between individuals and groups collide. This collision is often resolved with a social contract to prevent what Thomas Hobbes called the "war of all against all" in *Leviathan* (1651). This social contract is embodied by a set of governance modes, which refer to the different forms of managing interactions and processes that take place at the interface between the state (including sub-state), civil society, the market and individuals (Pahl-Wostl, 2015).

The current global and domestic efforts to govern the transformation to sustainability (T2S) are like "taming" a "giant elephant" that feeds on existing conflictual power dynamics and inequalities and that no one can see as a whole but only in part (Hernandez, 2021). For this reason, governing T2S can only be achieved by combining these different parts in a coherent manner. In addition, taming T2S is a delicate endeavour for the reason that existing social systems need to be able to withstand different types of shocks, as dismantling lock-ins and path dependencies can create waves of resistance and disruptions. At the same time, the governing of T2S combines multiple sustainability aspirations that can compete with or complement each other. T2S is highly conflictual with multiple fronts clashing between ideologies and ways of life. While resolving the conflict lines, the transforming social systems need to be able to connect these ideologies and ways of life without losing their core identities.

1.1 Deconstructing the construct – governance and the transformation to sustainability

This discussion paper asserts that the (im)possibility of the governance of T2S is driven by how the related multiple transition processes as well as the various functional, institutional and bargaining interactions among relevant agents or stakeholders can be steered. Like other transformation processes, T2S is an immediate response to threats and risks behind structural changes. These structural changes can be initiated by events that can be global (e.g. climate change, information technological innovation), regional (e.g. wave of democratisation in the Arab region, China's perceived assertiveness in East and South East Asia), national (e.g. liberalisation of a planned economy) or local (e.g. curbing of air pollution). These events call for shifts in policies or even modifications of social contracts, particularly when institutions require new societal mandates to effectively address new issues.

In addition, this discussion paper contends that T2S is a "purposive new normal" because it seeks ways to achieve a new equilibrium whereby the system is able to effectively confront or prevent imminent threats and risks by moving away from unsustainable socio-economic-ecological systems. It needs to be noted that there can be more than one version of the new equilibrium for each state or society. T2S is *purposive* because it is a process that is steered by pre-determined "prioritised goals" such as the 2030 Agenda for Sustainable Development or Africa's Agenda 2063, which are themselves outcomes of various deliberative and

negotiation processes, both globally and domestically (African Union, 2013; United Nations General Assembly [UNGA], 2015). The state in which these goals are met can be labelled as the envisaged "new normal" to highlight the necessity of normalcy during and after the transformation (Hernandez, 2021). While the threats posed by climate change, poverty, state fragility, etc., are primarily outcomes of long-existing "inflammatory" patterns of human behaviour, each version of the new normal is unprecedented, and therefore uncertain. Although the 2030 Agenda was adopted in 2015 as a roadmap for a concerted, integrated and aspirational compact for sustainable development aiming to generate the needed solutions and ambitious actions for "transforming our world" (United Nations Economic and Social Commission for Asia and the Pacific [UNESCAP], 2016), its achievement is local and needs to be coherent with local aspirations. In addition to the UN's 2030 Agenda and other global goals (e.g. the Paris Agreement), there are also regional goals (e.g. Agenda 2063: The Africa We Want) and national goals (e.g. South Africa's Bio-economy Strategy), all of which together provide each country with a unique blueprint and strategic framework for achieving the goals for sustainable development.

Linking perspectives is key to T2S because each sustainability goal is itself an interplay of perspectives. Although taking action in support of one goal may generate co-benefits for other goals, one goal can also be in conflict with another (International Council for Science [ICS], 2017). For instance, the ambitious measures and instruments to achieve environmental integrity or clean energy by deploying renewable energy sources can also cause food insecurity or rising energy prices (see Hasegawa et al., 2018; McCollum et al., 2018; Roy et al., 2018). At the same time, achieving one goal can pave the way for the achievement of another. For example, resolving air pollution caused by traffic congestion by expanding the public transport system can also help resolve the social exclusion of poorer households, which can then afford the mobility requirements of social interactions (see Kamruzzaman, Yigitcanlar, Yang, & Mohamed, 2016).

Furthermore, the potential synergies and co-benefits between policy priorities (and the related instruments) can help further unlock additional political capital to trigger the tipping point in transformation. This tipping point refers to the state where a critical mass has been reached and the achievement of the goals has become self-enforcing (see Milkoreit et al., 2016). This paper argues that there is a need to find out how the governance of T2S can be instrumental in overcoming trade-offs while realising potential synergies. Therefore, this paper argues that governing T2S calls for an integrative facilitation that is based on appropriate *cognition*, solution-oriented *contextualisation* and targeted *application*. Integrative facilitation means that additional formats of participation of various stakeholders (vertical) and sectors (horizontal) are developed and implemented to come up not only with narratives, but also collective action.

The working definition of the "transformation to sustainability" used in this paper is the definition introduced by the author in an earlier work (Hernandez, 2014b; 2021):

T2S is the "*shifting from the initially chosen (or taken) pathway to another pathway as goals have been revised to enable the system to adapt to changes*".

This definition highlights T2S as the shifting from one (less sustainable) to another (more sustainable) pathway or trajectory. Steering transformation towards sustainability means actively overcoming the "transition costs" that are needed to rebut structures or elements

such as carbon (or non-sustainable) lock-ins that hinder systemic changes. These transition costs are direct or indirect requirements to shift from one pathway (status quo) to another pathway that reflect "fundamental changes in structural, functional, relational and cognitive aspects of socio-technical-ecological systems that lead to new patterns of interactions and outcomes" (Patterson et al., 2017, p. 2). An example of these transition costs include costs for additional monetary incentives and market instruments to enable competition between renewable and fossil energy. Another example of a transition cost refers to arising opportunity costs or compensation for the loss of income for households in coal-dependent communities. Finally, this definition of T2S acknowledges that the goals, which are outcomes of various levels of deliberation, have been and can still be re-negotiated. Policy goals can be incremental, with one change depending on preceding changes in other areas or sectors. For example, the Chinese central government's growing awareness and concerns about environmental (e.g. air pollution), health (e.g. pandemic), economic (e.g. slowing economic growth) and social issues (e.g. inequality) led to new priority policy goals (Hernandez & Misalucha-Willoughby, 2020). These shifts in political priorities, which are themselves triggered by previous changes, have further paved the way for new socio-technical narratives that are conducive to more ambitious social, environmental and climate protection policies (see Cao, 2018; Trombetta, 2019).

The scholarly analysis of T2S inevitably touches on the discourse on governance (and politics). This discussion paper highlights governance as the framework or architecture that can "steer" the transformation process towards sustainability. This steering foresees that several agents use channels and employ instruments to advance their agendas. Whereas the first studies on the governance of transformation dealt with the transformation to modern statehood (see Fisher & Green, 2004 Patterson et al., 2017), many contemporary studies, including this discussion paper, focus on the (im)possibility of governing transformation through agents that, for instance, include non-state actors as well at the possibility of self-governance. This discussion paper argues that the steering of T2S is rather inherently connected to the interplay or interactions of various agents (both change and status quo agents), structures or contexts and society at large.

This discussion paper acknowledges the innate connection between T2S and governance, which are two concepts that mutually enforce one another in a multifaceted manner. On one hand, T2S is a non-linear and "emergent" process, that is, an outcome of or a response to changes such as demographic changes or technological breakthroughs. On the other hand, T2S is "purposive", that is, it is a strategically instigated effort to avoid the collapse of the system by effectively addressing emerging risks and threats brought by other sets of changes (e.g. climate change) (Hernandez, 2021). In other words, T2S emphasises the "steering" of a process through a "feedback loop", which highlights the interplay between multiple layers of changes (e.g. technological innovation, decolonisation, economic transition from a planned economy to a market economy, increase in the occurrence of extreme weather events, etc.).

This paper argues against the "ahistoricity" (*Geschichtslosigkeit*) approach of much of the literature on T2S and contends that each country has a distinct set of socio-political (e.g. quality of institutions) and economic resources (e.g. gross national income, GNI) available, depending on its current standing (see Hernandez, 2014a; Penetrante, 2011, 2013). For instance, the Philippines' current resources that can be utilised to initiate and complete its T2S are themselves outcomes of multiple transition processes (e.g. transition from a Spanish and US colony to an independent republic). Therefore, the Philippines' sustainability

aspiration can only materialise in conjunction with the other transition processes (see Greene & Penetrante, 2011; National Economic and Development Authority, 2021). Similarly, governance is *emergent* because it is the outcome or result of an aggregate of historical experiences and contexts. The (im)possibility of governing is, for example, significantly defined by previous successes and failures to respond to changes (e.g. mafia-like structures established during the decolonisation process) (Hernandez, 2021). In addition, similar to T2S, governance is also *purposive*, that is, a minimum or specific quality of governance (in terms of structures, institutions and self-governance) is needed to effectively address changes. For example, existing structural inequities between ethnic or "identity groups" during colonial times in the Philippines led to "winner-takes-all" power struggles after its independence from the United States (Hernandez, 2014c).

1.2 What makes governance conducive to T2S?

The Sustainable Development Goals (SDGs) and the relevant policy instruments and technologies can create new winners and new losers (see United Nations, 2020). Therefore, this discussion paper argues that there are minimum quality requirements for governance structures to be conducive to T2S. These requirements are partly reflected by SDG 16 (Peace, Justice and Strong Institutions). For example, when enduring changes remain unmanaged, they may become disruptive and lead to the rupture of the system. For this reason, state institutions need to be in place to make sure that (1) existing inequalities that have become intolerable can be dismantled, (2) appropriate compensatory instruments are created to make these inequalities tolerable and (3) new inequalities that arise through new policy instruments do not become intolerable or are compensated for. The failure to resolve changes following the implementation of the SDGs can further increase transition costs, especially when inefficiencies create their own dynamics, such as the establishing of a "civil war economy", in which economic development that only benefits one group at the expense of another may further cement the power dynamics responsible for the civil conflict and therefore pose new insurmountable barriers to T2S.

A comprehensive understanding of the various transformative steering processes paving the way to sustainability can be achieved by using the same methods as for assessing good governance. The analysis of power relations between agents – including the effects of a set of institutions (e.g. law, education system) – in this power play as well as the analysis of the ramifications of the approval or disapproval of (global and local) society at large are also key to the analysis of T2S. As James Patterson et al. (2017) argue, governance is inherently implicated in any intentional effort to shape T2S. Because T2S has implications for power relations between stakeholders, it is deeply and unavoidably political (see Patterson et al., 2017). However, power asymmetries between actors do not always replicate T2S. Common vulnerabilities and joint interests that connote interdependence between the interests of powerful and weaker actors can motivate genuine integrative collaboration, as the strength of any sustainability pathway is defined by the weakness of the weakest. Therefore, any transformation pathway is always "negotiated" in nature. In addition, as explained above, governance and transformation are both "purposive" (*that is, they cannot exist without a predetermined purpose*), as they both articulate aspirations that demand efforts to respond and adapt to these enduring changes. At the same time, governance structures (e.g. hierarchies, institutions, social mandates, networks) can jointly define the "tolerable window" of T2S. While Andrew Stirling (2011) and Karen O'Brien (2012) recognise the

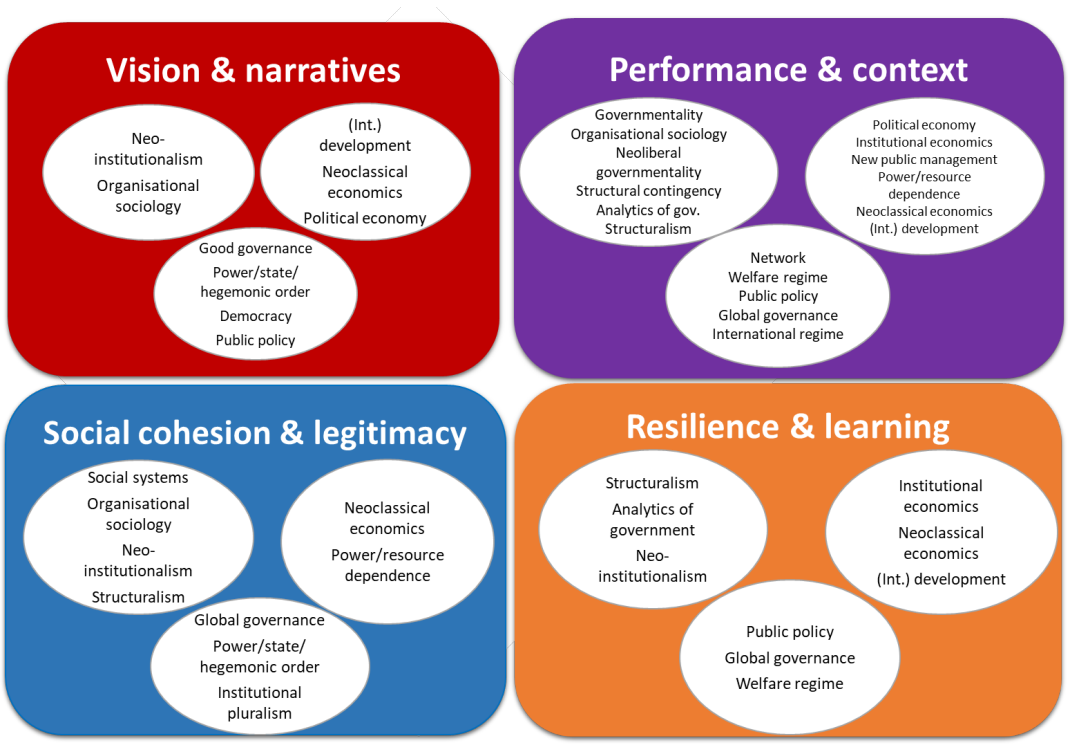
proliferation of framings and narratives of socially constructed transformation processes, this paper argues that a set of minimum values is needed to ensure that the terms of transformation remain acceptable, or at least tolerable for all. Existing governance structures can guarantee that a transformation process does not go beyond a predetermined threshold vis-à-vis rights and political liberties. For example, the constitution of a country can limit the power of state agencies in expropriating the land and properties of citizens, even though the intention behind it is to expand renewable energy such as geothermal or hydropower. Nevertheless, because this tolerable window is constantly negotiated, governance structures are also subject to changes as the transformation process unfolds.

1.3 Research objectives and design – four types of resources to make governance conducive to T2S

The academic debate on transformation has re-emerged with intensity due to it increasingly being linked to the discourse on sustainability (see Sachs et al., 2019; TWI2050, 2018; UNESCAP, 2016). One important thread of this transformation–sustainability nexus is the role of governance in determining the (successful) outcome of the transformation process, among other things. For this matter, as this paper suggests, the steering of this transformation process compels an understanding of the "integrative" meaning of governance, which addresses the interplay between multiple layers of changes and the resulting various functional, institutional and bargaining interactions. For instance, how does the switch from fossil fuels change the ways in which countries cooperate, or how do affected indigenous communities seek to assert their autonomy as new wind farms are constructed in their areas? Despite the obvious significance of governance in understanding the transformation to sustainability, the various elements related to governance (e.g. the role of non-governmental organisations (NGOs) and other networks, significance of deliberative democracy and environmental policies of authoritarian regimes) are usually investigated separately from one another instead. In contrast, the purpose of this paper is to provide an analytical framework that allows an integrative perspective on governance and how it relates to T2S.

As Figure 1 shows, this paper explores how an integrated conceptualisation of the governance of T2S can shed light on the necessary puzzle parts that various disciplinary perspectives can contribute, not only in helping to see the bigger picture, but also in understanding possible meanings when operationalised to solve problems on the ground. An integrative approach also means that the conceptual diversity of governance is understood not as a barrier, but rather as an opportunity to evaluate governance in terms of how it could integrate multiple (and parallel) transitions (e.g. transition from a planned to a market economy, post-colonial transition) and changes (e.g. demographic trends, human capital) together into a transformation pathway to sustainability. Figure 1 illustrates the different research clusters of sociology, political science and economics (and their sub-disciplines) that seek to explain the different requirements for governance to be conducive to T2S:

Figure 1: What makes governance conducive to the transformation to sustainability – integrated perspectives from sociology, political science and economics and their sub-disciplines



Source: Author

As Figure 1 illustrates, the resources needed to make governance conducive to T2S can be distributed into four categories: *vision, performance, social cohesion* and *resilience*. Successful T2S is dependent on how governance modes and the relevant institutions are able to facilitate the interactions concerning the *deliberation of visions*, such as the vision of sustainability. These visions are embedded in a rhetorical structure and expressed through *socio-technical narratives* that not only legitimise policies, but also constitute the thresholds that evaluate the *performance* of governance modes and institutions. T2S is dependent on the quality and effectiveness of governance modes and institutions in "performing" their functions (e.g. guaranteeing property rights), as determined by the social contract. For example, the vision to alleviate poverty requires concrete qualifiers that convey just how intolerable poverty is and how much of an improvement there needs to be in income generation. These qualifiers are political decisions that are outcomes of deliberations between state institutions and society at large. These visions are therefore integral elements of any social mandate that sets important milestones for the transformation process, through which *incremental learning* occurs in order to help constantly adapt to changing conditions. These visions are "promises" to society at large through which the latter approves existing social, political, economic and ecological norms. For example, when society at large comes to the consensus that they seek a more egalitarian society, it will most likely accept stronger state intervention in distributing wealth through progressive tax schemes. In contrast, societies where the consensus is that productivity is the way towards affluence, society at large will most likely prefer the state to generate more opportunities rather than distributing wealth. Both cases represent two possible pathways towards sustainability. In other words, this evaluation of the performance represents the contextualisation of the process of T2S.

Furthermore, T2S needs resources that can guarantee social cohesion, which is a necessary condition for a society to approve or disapprove of the visions and performance of governance. A society without a minimum level of cohesion cannot undergo a process of reckoning or self-reflection on what it can approve or disapprove of. Are institutions effective in promulgating a common identity among citizens? Or are elite groups dependent on divided societies to maintain power and privileges? Are there mechanisms that ensure social mobility? Do state agencies protect norms of solidarity, cooperation and trust? Changes and threats can rattle relations between societal actors, especially when changes modify power distribution and the related system of privileges. Resources such as norms on adequate representation, power sharing, checks and balances, and the rule of law are necessary to maintain a certain level of social cohesion, which is defined by the level of social trust. Institutions must be trustworthy enough for power asymmetries to be tolerated.

Finally, T2S requires the ability of governance structures and institutions to survive stress tests caused by endogenous and exogenous shocks and disruptions. Resilience (of governance) pertains to another type of quality or strength of state institutions to absorb and survive shocks and disruptions. Upheavals and fundamental changes in the social system can lead to dangerous political vacuums and uncertainties in the new normal, which can mobilise extremist factions in society and legitimise the suspension of human rights and political liberties. Are there functioning state institutions that aim to defend the rule of law, such as Constitutional Courts, or even the democratic order, such as the German Bundesamt für Verfassungsschutz, which is a federal agency that observes and warns about extremist groups? On the other hand, upheavals and fundamental changes can be helpful in ensuring the durability of the system by identifying the weaknesses of social systems, which can be immediately resolved, for example through policy instruments. However, this is only possible when incremental learning and innovative culture are deeply embedded in the minds of societal actors.

This paper articulates an integrated approach in understanding the governance of T2S by bringing together perspectives from sociology, political science and economics (and their sub-disciplines) as puzzle parts. Section 2 highlights theoretical perspectives from these disciplines to explain the various aspects of governance. This paper focusses on these three disciplines because most scholarly works on the governance of transformation concentrate on one of these three disciplines (and their sub-disciplines). While the academic literature on governing T2S can already build on decades of work, the debate on the three-fold interfacing of GTS still has major gaps to fill. Therefore, the next step for this paper is to use GTS as puzzle parts to form a framework to introduce three sets of scenarios for sustainable futures, the "*SDG-aligned futures*". Section 3 introduces the three pathways leading to these "futures", which are defined by the outcomes of historical experiences rather than geospatial specificities: *political-transition-driven (or strong), societal-transition-driven (or cohesive)* and *economic-transition-driven (or efficient).*

The three scenarios for SDG-aligned futures serve on one hand as the benchmark for the contextualisation of transformation for a more strategic application of appropriate solutions by focussing on what governance structures, levels, processes and scales are conducive to T2S. At the same time, this approach resolves the "ahistoricity" dilemma in many concepts of T2S by highlighting that countries have different entry points when initiating T2S. The perspectives on the SDG-reformed scenarios towards a sustainable future provide multiple entry points for each country to initiate T2S, following the assumption that each country can

achieve sustainability. These entry points specify the departing stage for a specific country. These points consist of a set of path dependencies resulting from the country's (1) historical experience (e.g. colonialism) and (2) national discourse (e.g. the national debate on energy transition). As countries utilise the potentials of their current governance structures and implement policy reforms that occur through existing institutional structures as well as upheavals and fundamental changes (hence, resilience is fundamental to T2S), these pathways are aligned by the SDGs; should these countries fulfil the requirements, they are then able to move towards one of three types of sustainable futures, here called "SDG-aligned futures".

The interplay between the (academic) disciplinary and experiential lenses (SDG-aligned futures) can foster a circular approach to studying governance: constructing research goals or questions, developing concepts, formulating hypotheses, framing evidence-gathering procedures, agreeing on validity criteria, running an academic debate within a discipline, operationalising benchmarks and applying research results to solve concrete problems on the ground, contextualising solutions, modifying previously formulated research questions and revisiting existing precedents and concepts.

2 Disciplinary debates – integrated perspectives on governance

Governance remains a confusing concept. The "fuzziness" (Schneider, 2012) and its characteristic as an "empty signifier" (Offe, 2009) pose doubts about its value as an analytical category. In addition, as the following clusters of debate prove, governance is still "imprisoned" in various "conceptual jails" (Rosenau, 1990, 2000a). Governance can be understood in a narrow way – that is, governance refers to a central government (see Bendix, 1964; Bentley, 1967) – or the broadest way, that is, the production of social order, collective goods or problem-solving through purposeful political and social interventions, either through authoritative decisions (hierarchical governance), horizontal forms of coordination, the establishment of autonomous and self-governing arrangements, or through hybrid forms (see Jordana & Levi-Faur, 2004; Mayntz, 2003). This paper understands governance in the context of its function of steering T2S; the three disciplines and their sub-disciplines contribute important puzzle parts to explain what it takes to ensure T2S.

The integrated approach of this paper presents another attempt at drawing answers from multiple disciplines. Nevertheless, multi- and interdisciplinary approaches are not (yet) self-evident. Each discipline has its own conceptualisation of issues. These concepts serve as fundamental cognitive building blocks that help to understand and explain objects and relationships. These concepts are also outcomes of the mental representation and abstraction of phenomena that may or may not exist in the actual world (see Margolis & Lawrence, 2003). In addition, each discipline has its own conceptual system that demarcates its disciplinary context and, in that respect, defines distinct methods and approaches of bringing together thoughts and ideas as well as linking knowledge to reality. The different disciplinary stances on governance can therefore be expected due to these varying methods of investigation and interpretation. These differences are actually desired, as they can be useful to further theorise and operationalise the levers, transformative potentials and practical usefulness of governance. Nevertheless, there are still some missed opportunities, mainly because of existing barriers between disciplines. Effective interactions between disciplines remain constrained in developing research questions, developing concepts,

formulating hypotheses, framing evidence-gathering procedures, agreeing on validity criteria (objectivity, reliability and validity), running academic debates, operationalising benchmarks and applying research results to solve concrete problems.

There are various possible ways to explain these barriers between disciplines. For example, there seems to be a lack of a "common language" as well as a lack of understanding of what other disciplines are doing. As this paper argues, the empirical richness of research topics such as the governance of the transformation to sustainability can, for example, inhibit exchanges between disciplines because each discipline has its own preferred entry point for starting the academic debate. For example, sociology's main entry point to T2S refers to how socio-technological innovation is changing societal relations (and vice versa). Political science's main entry point to T2S is how power relations are adapting to the new conditions (and vice versa) emerging as T2S unfolds. The main entry point of economics pertains to how emerging monetary and non-monetary values are changing economic flows of capital, labour, products and services (and vice versa).

Moreover, interactions between disciplines can be restrained not only due to competition between disciplines, but also due to irreconcilable differences in conceptualisation (e.g. scope of definitions), methods (e.g. quantitative vs quantitative inquiry), interpretation of results (e.g. inductive vs deductive reasoning) or even in the professional culture in each discipline (see Penetrante, 2014; Sjöstedt, 2003). The methodologies or procedures for reviewing the existing literature used by the disciplines furthermore limit what the other disciplines can contribute. In addition, when jointly working on a specific issue such as the governance of T2S, most multi- or interdisciplinary research confines its focus to commonalities and the differences between these disciplines. For example, as Deborah Brautigam (1991) contends, the most obvious common issue linking sociology, political science and economics (and their sub-disciplines) is their common concern about the framework for decision-making in the allocation of scarce resources.

An integrated approach can help researchers in different disciplines go beyond merely comparing what the disciplines understand or merely developing a common understanding of a specific topic such as governance. An integrated approach to the concept of governance proposes examining how the selected disciplines and sub-disciplines so far have evaluated the meaning of governance to understand complexity. Each discipline focusses on distinct dimensions that are related to governance, and the integrated approach of this paper brings these different dimensions together into a cohesive framework. The distinct focus on dimensions of governance can, for example, confirm that the sociological term "governmentality" is not similar to the cybernetic term "steering" or the political scientific/ social scientific term "governance". Nevertheless, there is no need to reach a consensus on the concept of governance among these disciplines. This paper suggests the following definition of governance, which integrates distinct perspectives from sociology, economics and political science:

> Governance refers to the acts of both state and non-state actors to steer various processes, regulate functional interactions, mobilise consensus-building, exert authority to achieve allegiance, direct social affairs, manage conflicts, signal contingencies to contain disruptions and ensure approval from society at large, whereas the mandate of governance is initiated by a problem or a threat either created by chance or by the failure to appropriately respond to a change.

2.1 Governance and sociology

Sociology can be considered as the first arena of the contemporary academic debate on governance. Without using the term "governance", sociologists in the 1960s and 1970s debated over how humans are governed. Sociological concepts such as the social system theory of Talcott Parsons (1951) and Niklas Luhmann (1975) served as antecedents for current definitions of governance from the sociological point of view. Referring back to Figure 1, sociology, in general, and social system theory, in particular, explain the necessity of the "mechanisms and patterns of mastering interdependencies among actors" (Lange & Schimank, 2004, p. 18) to ensure social cohesion. Whereas the sociological debates on governance initially highlighted the significance of state institutions, organisations and community power in establishing social order, most conceptualisations are now less restricted in terms of explaining the (hierarchical or horizontal) relations among actors. The following paragraphs discuss selected debate clusters within sociology that address how governing relates to social relations. These include the Foucauldian "governmentality" cluster, the "analytics of the government", neoliberal governmentality as well as organisational sociology's structuralism and neoinstitutionalism.

"Governance" or any similar terminology had not yet been used in sociology until Michel Foucault introduced the term "governmentality" during his lectures at Collège de France as part of his course "Security, Territory and Population" in 1977 and 1978. Foucault (2007) defined governmentality as an array of institutions, forms of knowledge and techniques that enable the exercise of power over a target population. In addition, Foucault's usage of the word governmentality gave it a distinct meaning by deliberately linking two words semantically: *gouverner* (to govern) and *la mentalité* (mentality) (see Lemke, 2001, 2002). According to Michael Billig (2013), Foucault chose the word governmentality to construct a concept that would stress the inability to understand the modern government without understanding the making of modern individuals and their mentalities. In addition, Foucault (2007) identified governmentality as a prerequisite for modernity without clearly stating the actor or agent that is governmentalising. Other sociologists who were called "Foucauldians" continued and expanded the debate on governmentality as a "sociological thing" (Billig, 2013).

The approach of Foucault and the Foucauldians is novel because it pitches itself against the analytical model of sovereignty that is dominantly articulated in historical discourses, according to which power was understood in terms of conflict, domination and sovereignty (see Balibar & Wallerstein, 1991; Giddens, 1984, 1985). The Foucauldians Nikolas Rose and David Miller assumed in their article "Political Power beyond the State: Problematics of Government" (1992) that governmentality is a guiding principle for understanding power. This principle reinvigorates the debate on governance by providing an alternative to the Hobbesian framing and Machiavellian underpinning of the concept of power. Governmentality extends governing beyond the state by depicting how power is also exercised in institutions such as the family, in proper hygiene, in the workplace and in relationships (e.g. between medical doctors and patients) (Foucault, 2007).

Referring back to Figure 1, governmentality explains that "performing" governance depends upon the ability to exercise power through institutions, knowledge and techniques, whereas power is exercised beyond the state. Governmentality highlights the conditions or instruments needed to exert power over a population, which implies that citizens cannot be

the agents of power. However, this does not mean that citizens cannot define which instruments they approve of. Therefore, the concept of governmentality does not directly identify the "who" in governance, but rather implies the "how" because it claims that the government, which is identified as just one of the many means to exert power, is not to be equated with the state because the state can exist without the government – or even with more than one government (e.g. federal states or insurgent governments with status as belligerents or de facto recognition).

New clusters emerged within the debate on governmentality and helped manifest the further development of the concept. Although these clusters remain interrelated, they contribute other possibilities for understanding what governmentality may mean. One cluster labelled "analytics of government" pertains to governmentality that looks at mentalities, routines and techniques that are already self-evident and therefore "taken for granted". Subjects are governed through these organised practices that are already deeply embedded in social life (see Dean, 2010; Lemke, 2002). As resources to ensure resilience, these organised practices or habits reduce the amount of contingencies confronting individuals, limit the number of potential risks and threats, and therefore increase the number of potential "battlefronts" for institutions. For example, national governments follow specific protocols when natural disasters or pandemics occur. These protocols use certain data sources and parameters to measure severity indicators and calculate thresholds for certain measures to be taken into effect. In addition, this cluster associates power with knowledge (see Power, 2011) and is interested in how new actors such as global credit rating agencies "perform" certain functions, defining the governance landscape, thus changing the nature of – and relations between – the state and civil society (see Lemke, 2002; Rose, 1999). Similarly, the "neoliberal governmentality" attempts to explain how governance is "performed". It foresees the benefits of the state "hollowing out" some of its cartographic responsibilities and delegating power to non-state actors (private sector) (see Jessop, 2004; Joyce, 2003). Recently, there have been some attempts to apply Foucault's concept of governmentality to non-Western and non-liberal settings, such as China (see Jeffrey, 2009). For example, Jeffrey (2009) observes that Chinese governmentality is based not on the notion of freedom and liberty but rather on a distinct rational approach to planning and administration.

Organisational sociology is a branch of sociology that is dedicated to looking at how humans collectively organise themselves in organisations (see Clegg, Hardy, & Nord, 2006; Etzioni, 1961; Reed, 1989; Scott, 1981, 1995). Considered as the founding figure of organisational sociology, Max Weber (1976, 1988) spearheaded the debates on modern, rational–legal states and their bureaucracies. According to Weber, a state's reliance on hierarchy (and its implied authority) is the characteristic of a modern state. In addition, he argued in his 1919 work "*Politik als Beruf*" (1988) that this hierarchy's ability to ensure social cohesion or social order depends on the legitimacy of the authority. He added that, for hierarchy to be legitimate, the state needs to establish administrative structures such as bureaucracies, which are based on norms of universalism, continuity, efficiency and predictability rather than of particularism and ad hoc or arbitrary procedures. These norms can be considered as an explanatory variable for how the state or an organisation can or should instigate deliberative processes, leading to principles that function as visions which guide social relations. Organisational sociology has, however, deviated from Weber's focus on states and instead has targeted organisations, including for-profit and non-profit enterprises. Therefore, the perspective of organisational sociology can be particularly useful when analysing the broadest meaning of governance.

Organisational sociology can also explain how governance is "performed" by focussing on the connection between efficiency and legitimacy (see Parsons, 1961; Scott, 1995). Efficiency can be defined as a judgment whether the outcomes have been achieved with the least possible costs and negative externalities. Organisational sociology argues that organisations, both state and non-state, can only be successful when the instruments chosen to achieve goals have been previously approved by society at large. This paper assumes that this approval by society at large is given when that society is willing to shoulder (or tolerate) the costs as the best alternative to the expected outcome.

Two major clusters have emerged from organisational sociology: *structuralism* and *neo-institutionalism (or new institutionalism)*. Whereas structuralism highlights efficiency as its main theme, neo-institutionalism made legitimacy its main concern. Structuralism implies that performing governance can be analysed through its function of providing an overarching system or structure that determines human experience and actions (see Bourdieu & Zanotti-Karp, 1968; Sturrock, 1979). This "intellectual movement" that rose to prominence, particularly in France, in the 1960s claims that human actions are bound by structural relationships. Therefore, it implicitly rejects the concept of free choice (see Levi-Strauss, 1963). Sociologists such as Dorothea Jansen (2002) and Wittek, Schimank and Groß (2007) evaluate the set of governance conditions under which particular types of governance are likely to elicit the intelligent efforts of organisational members. Thus, governance structures have direct and indirect effects on the performance, cooperativeness and creativity of those governed members. Other scholars, such as Philip Selznick (1957, 1996) and Mayer N. Zald and Patricia Denton (1963), highlight the utility, efficacy and rationality of organisational routines and practices. These practices are eventually institutionalised and become self-reinforcing. Meanwhile, proponents of the "structural contingency theory" attribute the efficiency of organisations to contingencies or variables that determine the effects of organisational design elements on organisational performance (see Donaldson, 2001; Mohr, 1971; Thompson, 1966). Examples of these contingencies are the scale or size, technology use, competition strategy and instruments, leadership and operational diversity. On one hand, these contingencies serve as (path-dependent) lock-ins that pre-select appropriate actions, thus improving performance. On the other hand, these contingencies enable the organisational structure to address challenges by providing resources for early response, thus ensuring resilience. Nevertheless, inefficiency can still arise when, due to lack of information, the organisation is unable to modify these contingencies. The primary value of structuralism to the debate on governance is its ability to explain the implications of institutional lock-ins and of the cultural and socio-political contexts, not only to policies, but also individual choices.

Another sociological debate on governance, "neo-institutionalism", emerged as a reaction to the "behavioural revolution" against the dominance of political science in studying political institutions and organisational structures or bureaucracies. This revolution brought the shift of the focus on institutions towards individuals (see Adcock et al., 2007). The influential paper published by John Meyer and Brian Rowan (1977) is considered to have revived institutionalism, which from that point on has been called neo-institutionalism. In contrast to structuralism, which examines the relationships between actors and the norms that define these interactions, neo-institutionalism focusses on the broader cultural and historical environment that exerts influence on organisations. It is this environment that moves actors to modify their behaviours and structures accordingly (see Christensen & Molin, 1995; Meyer & Scott, 1983). This ability to modify one's behaviour can be perceived

as a prerequisite to the system's resilience. It also strengthens the approval of institutions because it ensures that these institutions can and will adapt to changing conditions. Legitimacy, often referred to as "social fitness" (Oliver, 1991), inherently addresses how the status quo is attained and can be changed through institutional arrangements. In addition, neo-institutionalism refers not only to how and why specific formal and informal mechanisms are established, but also how the legitimacy of these structures or institutions arise (see Friedland & Alford, 1991). Neo-institutionalists are interested in explaining how and why these organisational arrangements continue to be relevant over time, even when there are compelling rational or functional reasons for their modification or removal (see Lim, 2011).

Furthermore, neo-institutionalists argue that organisations often either do not completely behave rationally or they strictly follow a functional logic legitimacy (see Meyer & Rowan, 1977; Tolbert & Zucker, 1983). Paul DiMaggio and Walter Powell (1991) contend that organisations are no longer conceived as purposive, completely bounded and independent entities. Instead, they are well-embedded in their cultural environments. Organisations encompass patterns of domination and subtle forms of subjugation that are connoted as expressions of the prevailing rationale or just order (see Schneiberg, 1999; Schneiberg & Bartley, 2001). Therefore, these arrangements persist because organisations retain them to gain and sustain legitimacy (Meyer & Rowan, 1977).

To summarise, the identified clusters of sociological debate cover the four types of resources needed for governance to be conducive to T2S. Organisational sociology and neo-institutionalism can explain how norms in state and non-state organisations can facilitate the deliberation on principles such as sustainability. Governmentality, neo-liberal governmentality, organisational sociology, structuralism as well as structural contingency theory can explain what and how institutions need to perform in order to achieve the approval of society at large (legitimacy). Social system theory, organisational sociology, structuralism and neo-institutionalism can provide explanations for the mechanisms and patterns that facilitate identity-building, solidarity and cooperation among societal actors. Finally, analytics of government, structuralism and neo-institutionalism pinpoint the resources needed to allow governance modes and institutions to alleviate the effects of shocks and disruptions through learning processes.

2.2 Governance and political sciences

Political science reignited the academic debate on governance during the 1980s and 1990s. Departing from the ideas on the nature of authority (Plato and Aristotle), the structures containing the abuse of authority (John Locke), the social contract between the ruler and citizens (Jean-Jacques Rousseau) and submission to the coercive rule of the *Leviathan* state (Thomas Hobbes), most modern political scientists tend to associate governance with state- or nation-building (see Chernillo, 2007; Evans, Rueschemeyer, & Skocpol, 1985; Kotz, 2005; Meyer, Boli, Thomas, & Ramirez, 1997). The following subsections will introduce the selected clusters within political science and its sub-disciplines that capture both the narrowest and broadest definitions of governance. These clusters within political science include the traditional state–government debate, institutional pluralism and good governance. In addition, other clusters that emerged from sub-disciplines include global governance, international regime and public policy. Finally, a cluster on governance

evolving around climate and environmental politics can be distinguished, which particularly connects polycentric governance to, among other things, the distribution of collective goods.

The political scientific debate on governance initially focussed on hierarchies, political institutions and crucial structural changes in modern societies and the resulting changes in the relationship between the state and society. This research strand of political scientific debate on governance follows the traditional understanding of the state controlled by a government. Through hierarchy – a pyramid of social control – decisions made at the top by institutions are followed and implemented by subsidiaries at the bottom of the hierarchy (see Dubreuil, 2010). Scholars promoting this debate highlight the significance of statehood and how the state defines the coordination of collective action. Statehood – determined by the state's ability to monopolise the use of violence and force – is understood as the outcome that can be achieved through institutions and legitimacy (see Bentley, 1967). The state's legitimacy is defined by the political loyalty of constituents, which, due to the lack of challenges, allows the state to effectively "provide an adequate framework within which the required reconstitution of social relations could take place" (Bendix, 1964, p. 23). Therefore, the state's legitimacy is measured by its ability to ensure non-violent social interactions.

With the backdrop of the Second World War and the Cold War, (traditional) political science understands governance as power structures, whereas power is both a means and an end of statehood. The state is conceived of as an "arena" of actors competing for hegemony, an arena in which conflicts between them are resolved and the segmented society can bond together through the leadership of the hegemon (see Kreuzer & Weiberg, 2005). With power exercised through authority mechanisms or hierarchy, the hegemonic group assumes control of the state through force (see Giddens, 1985). In this situation, institutions such as the constitution of the country are primarily instruments of "predatory" actors. On one hand, institutions forged by the hegemon ensure that power – and the privileges attached to it – can be maintained (see Buckel & Fisher-Lescano, 2007; Keohane, 1984, 1986). Charles Tilly (1985, 1990) studied a hundred years of European experience and declared that state institutions formalise organised violence. As Karl Renner (1952, p. 272) suggested, violence is, historically speaking, the first founder of the nation-state. On the other hand, institutions can ensure social cohesion, primarily because these institutions increase the barriers and costs for other actors to challenge the hegemon. As Sonja Buckel and Andreas Fischer-Lescano (2007, p. 11) suggest, "The repressive power of political institutions stabilizes social consensus." Nevertheless, other authors, such as Antonio Gramsci (1971), argued that hegemony can also be assumed without the use of violence through ideology. He noted that the "bourgeoisie" developed a hegemonic culture, which propagated its own values and norms and eventually led to the "common sense" values of all. These values are the factors that ensure the political loyalty of the "society at large" (see Hernandez, 2014c). Therefore, political science can, for instance, explain that visions such as sustainable development need to be "mainstreamed" and made compatible with the values of the hegemonic culture.

Several clusters of academic discourse within political science emerged when some scholars started to move away from the power- and state-centred connotation of governance towards the idea of (institutional) pluralism (see Bratton, 1989). This shift entails, for instance, a change in the analytical focus – from the macro to the micro level (see Schneider, 1999). Moving from the macro to the micro level allowed for an actor-centred analysis of institutions that inherently expands the pool of relevant decision-makers and stakeholders (see Mayntz & Scharpf, 1995). This type of analysis focussed on the preferences of actors

that are capable of calculating actions vis-à-vis institutional contexts. Actors are no longer subjected to rational choice. Rather, their calculated behaviour is determined by their orientation to institutions (see Scharpf, 1972, 1999). Moreover, with this change from the macro to the micro level of analysis, the possibility of self-organisation and the identification of new forms of coordination mechanisms come into light that determine relational interactions, not only among state actors, but also between state and non-state actors (see Baum, 2004; Haggard, 1990).

The perception of the possibility of governance without a strict hierarchy paved the way for the autonomy of non-state actors. Business and industry entities as well as civil society groups and other "policy entrepreneurs" are recognised as being capable of complementing, reciprocating, competing with or even substituting for state actors, for instance in resolving vulnerabilities (see Fisher & Green, 2004; Plummer & Taylor, 2004). For example, after the United States, under the Trump administration, withdrew from the Paris Agreement, hundreds of companies pledged that they would still abide by the agreement (see Abraham, 2017; Harder, 2015; Tabuchi & Fountain, 2017). However, although this consciousness implies a detaching of these non-state actors from the overall hierarchy, it also calls for further debate on integration (see Oberthür, 2009; Schlesinger, 1999). As actors from the private sector are able to cooperate with state actors through networks (see Cogburn, 2017; Messner, 1997), (public) trust becomes an important resource of governance (see Adger, 2010; Blake & Mouton, 1985; Buskens & Raub, 2002). Embedding networks in policy-making processes serves as a guarantee that policies will cover a broader spectrum of interests. Networks are important partners of state actors to ensure the efficiency of state services. Therefore, as non-state actors are not only able to set the agenda for policy-making, but also able to provide solutions through various deliberation processes, the concept of governance explicitly extrapolates persuasion and bargaining games. Negotiation studies, which is considered a separated discipline, especially in the United States, became more involved in the academic debate on governance (see Betsill & Corell, 2008; Raiffa, 2002; Sjöstedt & Penetrante, 2013; Susskind & Crump, 2008). Negotiation scholars such as Gunnar Sjöstedt (2009, 1993) and I. William Zartman (1978, 2000) view governance as an actor, an issue, a structure, a process and an outcome of negotiations.

Another cluster that can be labelled as "good governance" focusses on the normative aspects of governance. This cluster explains a more prominent role for visions, as the principles behind these visions create a "tolerable window" for decisions and actions of both state and non-state actors. In addition, this cluster elevates the significance of non-state actors. Concepts of fair or good governance are argued to be the direct results of the demands to couple pluralism – that is, non-state actors assuming a more active role in policy development and implementation – with the demands for accountability, particularly when looking at political systems (see Buskens & Raub, 2002; Lonsdale, 1986; Paul, 1990). The quality of governance becomes the main legitimising factor of political systems. John Lonsdale's (1986) concept of political accountability pinpoints the institutionalised methods available to citizens, not only to choose a government (or define the actions of non-elected officials), but also to sanction incompetent leaders. In addition, Lonsdale's concept of public accountability points to the access to and quality of public services. His work on public accountability can also be linked to other works on governance and welfare regimes (see Greve, 2013; Hacker, 2002; Przeworski, 2000). Furthermore, research connecting governance with accountability supports important theoretical and empirical inputs to research on democracy (see Avritzer, 1995; Przeworski, 2000; Winslow, 2005). The rule of law and

human rights are, for example, two of the main topics of theoretical and empirical works on democracy. They look at how state actors and public servants can be legally held liable for their personalised actions through politically and constitutionally independent institutions (see Roberts, 2002; Sparer, 1984). For example, research on deliberative democracy highlights how rulers effectively delegate or share authority, how subordinates and society at large can substantially participate in various consensus-building processes and how the abuse of power is not only limited, but also sanctioned (see Bessette, 1980; Fishkin, 1991).

Parallel debates on governance have emerged in other (sub-)disciplines of political science. Scholars of international relations have increasingly come to understand the concept of (global) governance in terms of how international structures define relations between countries (see Risse, 2004; Rosenau, 2000a). As common vulnerabilities such as climate change become evident, national governments recognise the benefits of multilateralism and turn their attention to international institutions and regimes to launch global efforts to resolve problems that affect everyone (see Caporaso, 1992; Keohane, Macedo, & Moravcsik, 2009). Multilateralism is the cooperative and inclusive approach in international decision-making when addressing common vulnerabilities that cannot be resolved by a single country. The term "global governance" emerged through the works of various scholars highlighting that, in the absence of a world government, it is in the interest of states to cooperate with other states (see Martin, 2010; Martin & Simmons, 2010; Rosenau, 1995, 2000b). Nevertheless, this cooperation entails a vast array of rule systems that exercise authority and transcend normal national jurisdictions with the purpose of ensuring international order and stability (see Rosenau, 1995, 2000b; Ruggie, 1992). Global governance scholars explore how international rules are established and how these rules define how states design and implement domestic policies (see Dingwerth & Pattberg, 2006; Rosenau, 2000b). It should be noted that international rules are not limited to formalised regulations but also include informal structures (Rosenau, 2000b), and that these international rules can also originate from domestic non-state actors (see Ronit & Schneider, 2000; Rosenau, 1992).

A sub-cluster eventually emerged within the global governance debate, particularly when the concept of governance was coupled with international regime theory (see Hasenclever et al., 1997; Rittberger, 1993). The constructivist stance on regimes examines how non-state actors such as NGOs have helped define the governing of issues such as sustainable development and climate change within and alongside the regime (see Andresen & Gulbrandsen, 2003; Betsill & Corell, 2008; Sverker & Stripple, 2003). For example, Thomas Princen and Matthias Finger (1994) suggest that NGOs are able to link local and global issues, especially concerning issues related to the environment, namely because the causes of environmental problems can be global and the effects local. Other authors, such as Dong Wei (2010), confirm the constructive role of NGOs and other social enterprises in implementing state policies.

A parallel debate on governance can be classified as a cluster on public policy. This debate focusses on the "locus of collective decision-making", or where policies are concretely produced. Scholars such as Jörg Klawitter (1992), Helmut Willke (1992) and Volker Schneider (1999) point to the significance of polycentric governance relationships in collective decision-making. These scholars can be regarded as enhancing the terms "polycentricity" and "polycentric governance", which were introduced by Vincent and Elinor Ostrom, Charles Tiebout and Robert Warren in the 1960s and 1970s (see Ostrom,

Tiebout, & Warren, 1961). These terms connote the existence of many centres of decision-making that are formally independent of each other and conscious of each other due to competitive relationships among them. Eventually, these public policy scholars introduced the concept of policy networks and provided answers to how public policies are developed, implemented, verified and modified (see Jansen & Schubert, 1995; Schneider 1999). For these scholars, public policies are not exclusively "produced" by the state as a single public actor or by a stringent "public hierarchy", but rather by networks of societal actors. Wolfgang Reinicke (1999) observes that polycentric governance relationships are located on several levels, from local public–private partnerships to national policy-making onto global organisational networks. He adds that the cooperative interactions between government and non-governmental organisations not only produce solutions to global and domestic problems, but they also determine new political configurations. Jorg Sydow (1995; Sydow, Schreyögg, & Koch, 2009) adds that a solution to a given global problem is a final product of the intensive exchange of information or of combined complementary resources in a network of diverse actors.

The concept of polycentric governance has attracted renewed interest, particularly from scholars on climate and environmental politics. This interest justifies a distinct cluster on governance, mainly because the debate within this cluster includes scholars outside social science, giving the debate on governance a distinct quality. Andreas Thiel (2017) conducted a comprehensive analysis of early writings on polycentricity. He observes that the literature on environmental governance has distinct uses of polycentricity to understand and explain, for example, the role of constitutional rules, specifically in relation to issues of distribution. He adds that another nuance of environmental governance pertains to how polycentric governance shapes public service or welfare in assessing socio-ecological system performance such as equity, sustainability, resilience and robustness. Another prominent scholar is Derek Armitage (2008), who connects governance issues with normative principles derived from studies on the commons and resilient governance. Another group of scholars within this cluster highlights the ontological use of the concept of polycentric governance as a "framework of analysis" (see Gruby & Basurto, 2014; Lubell, 2013). This framework of analysis is argued to be useful when analysing self-organisation at the local level in particular (see Lubell, 2013). To summarise, the interest of scholars from this cluster in governance can be attributed to their views on how changes in institutions and governance are connected to changes in processes and channels of deliberation and distribution of collective goods.

Political science and its various sub-disciplines or clusters of debate can provide explanations for the four types of resource governance that are conducive to sustainability. The clusters on good governance explain the role of the normative visions such as pluralism and public accountability when evaluating the performance of institutions. In addition, the cluster on public policy expanded the scope of visions by highlighting the significance of polycentric governance, which further increases the complexity of deliberative processes. The clusters on welfare regime and negotiation studies support the network cluster in elevating the role of non-state actors in performing governance by embedding networks in policy-making processes. Global governance as a cluster provides additional insights for how global institutions can be tapped to resolve both global and national problems. For public policy, the effective performance of governance is an outcome of the intensive exchange of information and/or combined resources in a network of diverse actors. At the same time, by connecting governance with normative principles derived from studies on the

commons and resilience, public policy is able to shed light on the responsibility of state institutions as enablers of incremental learning.

2.3 Governance and economics

During the emergence of governance as a subject of research in the 1980s, many economies were at a crossroads just as new macroeconomic policy reforms – such as the introduction of austerity measures and the dismantling of monopolies through the privatisation of various public enterprises in important sectors such as energy and transport – were being introduced in many countries (see Schröder & Jarausch, 1987; Zartman, 1983). Particularly during the eight rounds of negotiations to replace the 1947 General Agreement on Tariffs and Trade with the World Trade Organization in 1995, proponents of liberalising international trade dominated the academic discourse and political debates on the connection between economic development and governance (see Irwin, Mavroidis, & Sykes, 2008; Nader & Brown, 1993). Economic transformations and the economic performance of former colonies were closely observed, as many of these countries were highly dependent on loans, foreign direct investment (FDI) and assistance from global financial institutions such as the International Monetary Fund and the World Bank (see Eichengreen, Wyplosz, & Park, 2008). Governance has become not only a (domestic) development issue, but also an outcome of globalisation, that is, of the international economic competitiveness of countries. For example, Ankie Hoogvelt (1997) problematises the new political economy relating to the progress of developing countries by looking at how globalisation determines global forms of production, exchange and governance as well as how developing countries respond to a new architecture of core–periphery relations in the world economy.

Neoclassical economics is regarded by many as the origin of most theories of governance (see Williamson, 1979, 1993). (Performing) governance is conceptualised by most economists in terms of its function as the enabler (or brake) of economic development. Assuming that actors are rational, they establish process-oriented private and public institutions and organisations that ensure the stability of the system. In addition, this assumption of rationality of actors implies that the visions and principles needed are dictated by this rationality. Proponents of neoclassical economics address governance in terms of its relevance to market dynamics, which frame economic activities such as the connecting of the supply of products and/or services to the demand side (see Weintraub, 1993). Primarily, governance constitutes market dynamics through the guaranteeing of property rights and contracts as well as through policy and market instruments such as financial incentives to ensure that outcomes of interactions rigorously follow the laws of supply and demand (see Evans, 2012; Paltiel, 1989). Douglass North (1990), for instance, argues that the institutional protection of property rights of individuals over assets serves as an economic incentive and guarantees stability. Other economists are interested in how elements of institutions (norms, rules, values and patterns of behaviour) affect the performance of economic systems. For Brautigam (1991), studying governance reveals how politics and economics interact in shaping economic development. She adds that understanding governance requires the exploration of why and how accountability, openness and predictability are important characteristics of political institutions that enable or disable economic environments.

Moving away from neoclassical economics, institutional economics emerged, which is interested on one hand in how economic development (or the lack of it) – including the economic rationales (as visions) such as cost-benefit considerations – can have an effect on governance, and on the other hand in how institutions can help shape economic processes (e.g. in industrial organisations) (see Nabli & Nugent, 1989). This focus highlights the "principal–agent" problems of the governance–economy nexus: the challenges confronting states that are reliant upon agents to deliver state tasks and services. As Thrainn Eggertsson (1990) argues, the distribution of political power within a country and the structure of its institutions are critical factors in economic development. However, this causality between economic vitality, elite structures and institutions can be difficult to grasp empirically, especially with the surge of Asian rising powers with authoritarian regimes (see Einzenberger & Schaffar, 2018). Although many scholars agree in principle that a successful economic transformation can pave the way for the mobilisation of non-state actors that demand accountable leaders and effective institutions, the reality can still prove otherwise (see Green, 2015).

Inspired by Karl Marx and Max Weber, proponents of the *power dependence theory* and the *resource dependence theory* argue that the content and quality of politics are defined by the equal distribution of power resources between societal actors or classes – resources that are bestowed with competing interests (see Emerson, 1962; Pfeffer & Salancik, 1978). According to Richard Emerson (1962) as well as Jeffrey Pfeffer and Gerald Salancik (1978), an equal distribution of power resources fosters ("balancing") dependence between these actors, and this dependence necessitates cooperative exchanges and transactions. These power resources are, according to Gøsta Esping-Andresen (1990), defined by the following criteria: (1) organisational capability, (2) capability of responding to conflicts, (3) leverage, including the capability of mobilising supporters, (4) representation in political institutions such as the parliament, (5) proximity to executive powers and (6) degree of independence from the market system. Therefore, the relationship between economic development and governance lies in the latter's structural capabilities and class structures, which can effectively distribute power between competing groups (see Esping-Andresen & Korpi, 1984).

Governance is also a major thematic interest of many multidisciplinary studies with roots in economics. New academic sub-disciplines emerged when economics – as a standalone topic – was seen as inadequate to address several themes such as the economic prospects of former colonies and human security. Political economy emerged as a sub-discipline that looks at the interaction between economic and political systems and examines not only how socio-political forces affect individual and collective choices, but also how "rational-acting" decision-makers reach "optimal" decisions (see Simon, 1955; Tversky & Kahnemann, 1986). The stance of proponents of political economy on governance is linked to the debate surrounding globalisation and the idea of a "lean state" with merely regulatory function, enabling free markets to foster international economic competition (see Buchanan, 1966; Friedman, 1962).

Political economy argues that the "politics" part of governance should be limited to the implementation and "refereeing" of the rules of the game (*Spielregeln*) (see Suchanek & von Brook, 2012). Therefore, political economy understands governance as an outcome of globalisation and neo-liberalisation. In addition, governance is seen as the latest stage in the political evolution of the global capitalist system, in which economic relationships between self-interested and competitive actors are driven by rational choices and pricing mechanisms

that coordinate supply and demand in markets in a way that is automatically in the best interests of society (see Evans, 2012; Olson, 1971). However, this implies that political economy assumes the unilinear understanding of economic development. Particularly in the late 1980s and 1990s as well as in the early 2000s, proponents of political economy argued that economic globalisation precipitated a crisis of legitimacy in the welfare state, as national governments were hollowed out in terms of decision-making capabilities (see Evans, 2012; Mazzucato, 2013). It was also argued that, through this scaling-down process, the state is able to create space for NGOs and the private sector to participate in governing. Therefore, as Stoker (1998) suggests, governance came to be understood as the process of creating conditions for social order.

Emerging from political economy is the "new public management", which combines policy analysis and political economy (see Jordana & Levi-Faur, 2004; Majone, 1997). Similar to the arguments of political economists, proponents of the new public management attribute government inefficiencies and economic hardships of the early 1980s to the incapability of bureaucracies and hierarchies (see Bailey, 1993; Hughes, 2003). For them, good governance needs to be a market-driven mechanism that links performance to rewards through instruments that not only alter preferences, but also motivate the participation of non-state actors. Current examples of these instruments include environmental taxation, renewable energy levies, private or voluntary sustainability standards and tradable carbon permits.

Another multidisciplinary branch that sees governance as an important theme is development studies. Emerging during the decolonisation processes in the post–Second World War period – and initially a branch of economics – many development economists argued in the 1960s that there was also a need to address non-economic areas such as state cohesion and peace research (see Abbott, 2003). Development studies already existed in the 18th and 19th centuries when it focussed on the existence of poverty within society and what could be done to address it (Ravallion, 2011). Scholars such as David Hume, Adam Smith and John Stuart Mill were the first proponents of debates on economic growth, the distribution of wealth and the role of the state (Currie-Adler, 2014). David Hulme (2014) links this first wave of analysis of domestic social problems with the enactment of laws in England that aim to address poverty as well as with the rules about indigence in France. The second wave was initiated after the end of the Second World War with newly independent states with low levels of economic development demanding new concepts of modernisation (Currie-Adler, 2014). A new wave of scholarly debate emerged in the 1960s calling for new concepts and theories for the study of the developing world post-independence, as newly independent states increasingly wished to move away from their former colonisers by seeking policies to "catch up" economically (see Currie-Adler, 2014; Sumner, 2006). As many of these former colonies have become vulnerable to insurgencies and civil wars, more scholars of development studies have shifted their focus to issues related to governance (see Messner, 1997).

Development studies address the applied aspects of governance and highlight the operational side of governance (Brautigam, 1991). Based on how many development scholars formulate their research questions, choose methods of analysis as well as communicate the results of their studies, they are often perceived as scholars engaged in prescriptive works, offering hands-on experience for practitioners, including policy-makers, the private sector and civil society. Some development scholars argue that economic growth and economic transformation can improve governance structures. For example, Duncan Green (2015) suggests that, although international development assistance should improve

governance structures (public financial management, taxation, etc.), the establishment of institutions such as free media as well as, for example, anti-corruption measures would be highly dependent on the country's historical development. Contemporary governance problems cannot be understood outside of their political and historical contexts (Brautigam, 1991). Therefore, many development scholars argue that international development assistance or foreign aid need to link economic transformation with political change. Brautigam (1991) warned that foreign aid may undermine accountability in recipient countries because the government becomes less dependent on the taxation of citizens. This is supposed to unintentionally reduce the pressure on the government to be accountable. Other scholars support this warning and argue that foreign aid enables the solidification of a government's position as the primary source of capital accumulation, which leads to less productivity and corruption (see Tandon, 2008; Theobald, 1990). Diamond, Linz and Lipset (1988) contend that, in some developing countries, bureaucratic employment becomes a major avenue of wealth through political corruption.

2.4 Interim conclusion – a multidisciplinary debate on governance of the transformation to sustainability

The three disciplines (sociology, political science and economics) as well as their related sub-disciplines have been providing the necessary puzzle parts that attempt to explain the requirements to ensure the possibility of governing T2S. However, these puzzle parts do not yet deliver what can be done to foster T2S. This paper attempts to resolve this gap by arguing that the interactions between academic communities representing these disciplines and sub-disciplines need to go beyond arguing which discipline can best explain governance or how these disciplines differ in defining, measuring or interpreting governance. This is possible because this paper argues that the emerging debate on environmental governance as well as on (transformation to) sustainability (e.g. 2030 Agenda) is taken as an opportunity to re-constitute a multidisciplinary perspective on governance. Through a back-casting exercise with the question "which resources are needed for T2S to be effectively governed", this paper has developed a framework that is presented in the next section. This framework simply answers the question: What does it take for governance to be conducive to T2S?

The possibility of governing T2S requires four types of resources that can help make governance conducive to T2S: *vision, performance, social cohesion and resilience*. In terms of vision, when governance modes and institutions can effectively facilitate the deliberation and come up with visions and the corresponding socio-technical narratives needed for the development and implementation of the social contract, governance is one step closer to being conducive to T2S. Organisational sociology identified norms as an explanatory variable for how visions and narratives are created. Similar to the argument of (international) development studies, neo-institutionalism assumes that these visions are mirrors of cultural environments and that understanding these visions and narratives requires the understanding of their political and historical contexts. This understanding abates the "*ahistoricity*" dilemma or the Eurocentric trap of linearity that confronts many scholars when addressing the transformation processes of countries in the Global South. Moreover, political science, particularly the power/state-centred strand, has identified the "hegemonic culture" as the orientation of "common sense" values or visions. In other words, visions and narratives can be explained as outcomes of this hegemonic culture. Knowing this, it is possible to focus on what constitutes a hegemonic culture and how sustainability

principles can be "mainstreamed" to promote T2S. In addition, the good governance cluster of political science exemplifies pluralism and public accountability as requirements to achieve visions that are accepted by all. Therefore, shortcomings of good governance can be clearly attributed to deficiencies in pluralism and public accountability. The democracy cluster goes one step further and argues that democratic principles of free and fair elections and the rule of law have become both the means and the end of transformation processes. Another perspective is provided by the polycentric governance cluster of public policy, which highlights the importance of integrative bargaining. Managing integrative bargaining has become imperative because of the existence of multiple governance modes and institutions, either sectoral or regional. This cluster looks at strategies, power dynamics and structures in the context of bargaining, leverage-making and cooperation. At the same time, public policy has also opened, if not encouraged, the academic debate on the effectiveness of authoritarian versus democratic regimes as well as of non-state actors with global significance in determining visions and narratives.

With regard to the performance of governance, the procedures – which are used to, for example, measure the quality and evaluate or interpret the meaning of the results towards the sustainability goals – represent the contextualisation of the governance of T2S. As countries have different departure points for T2S, evaluating performance can be challenging, especially from the point of view of justice. Blaming and shaming laggards or attributing "success" to specific governance modes and institutions is not only Eurocentric, it is also misleading. At the same time, because sustainability is a global vision, the convergence of transformation pathways is an integral approach because the global system is only as strong as its weakest member. Instead of focussing only on why countries differ in their development, it should be asked under which conditions countries can pull each other towards sustainability. How can the successes of some countries be replicated in others? How can good practices serve as multipliers for other good practices? For this matter, the cluster on global governance explains the benefits of multilateralism to launch global efforts to resolve problems that have domestic causes and consequences. In addition, the network or integration strand of political science as well as negotiation studies elevate the role of networks and non-state actors in providing a broader set of solutions by covering a broader spectrum of interests. Public policy, particularly its focus on polycentric governance, explains the significance of the intensive exchange of information and of combining resources in a network of diverse actors. Networks and non-state actors can help shape public service and welfare in assessing the socio-ecological performance of government modes and institutions. Institutional economics analyses the role of governance structures in shaping economic processes. Political economy as well as the new public management, however, limit the scope of this performance to merely regulatory or referee functions. All disciplines share the common understanding that the quality of institutions determines the effectiveness of governance. However, they do not yet clearly identify the qualifiers or indicators of quality, nor do they identify which institutions should be tasked to ascertain the quality of other institutions. Nevertheless, the current literature on sustainability can already offer valuable insights, for example on due diligence, voluntary sustainability standards and environmental social governance (Glasbergen & Schouten, 2015; Grimm, Fues, Negi, & Sommer, 2018; United Nations Forum on Sustainability Standards, 2018).

In terms of social cohesion, the focus is put on the factors that can ensure it. Social cohesion is an end that can only be achieved if the social system is legitimate for all societal actors,

regardless of their power capabilities. It needs to be highlighted that the legitimacy is key for the capability of governance modes and institutions to serve as relational infrastructures that connect societal actors together. However, legitimacy is not self-enforcing, as it requires additional mechanisms or even additional institutions for the legitimisation process to unfold. Moreover, in order to ensure social cohesion, it is not enough to have societal actors who are unwilling or unable to contest the legitimacy, but rather that these actors are actively engaged in constant deliberation. Legitimacy is not static and needs regular modification as social systems evolve. Traditional political science, particularly the power/state strand, sees the state as the space where actors bond together through the leadership of the hegemonic group. This leadership is the mechanism needed for governance modes and institutions to be legitimate. However, this also implies that the legitimacy of these governance modes and institutions ceases when the leadership of the hegemonic group ends. Furthermore, as social system theory explains, legitimisation depends on mechanisms and patterns of mastering interdependence among actors. In other words, legitimacy is achieved when horizontal and vertical relations among actors have reached an "optimal" state, where non-cooperation hurts intolerably. This relates to the explanation of structuralism, which assumes the cooperative character of relations between actors, in which actors learn more to "master" interdependence by cooperating. This cooperativeness is, however, only possible when there is reciprocity, which is ensured by adequate frameworks for social relations. Neo-institutionalism explains that the purpose of this interaction is to either attain or change the status quo, which implies that institutions are dynamic. Actors decide on which institutional arrangements can be trusted and relevant over time. This implies the importance of social trust or social fitness.

The fourth type of resources refers to resilience, which pertains to the need of a social system to be able to defend itself from external and internal shocks. Resilience is a tricky balancing act, and additional institutions are needed to oversee that shocks are anticipated and averted as well as used as learning experiences to improve. Sociology's analytics of government see organised practices that are embedded in social life as examples of these institutions. This implies a broader understanding of institutions, which can also include routines and habits that are already taken as self-evident. Structuralism expands these practices by explaining that societies have channels at their disposal to anticipate shocks. Contingencies such as leadership can come up with preventive as well as early response mechanisms to mitigate the effects of the shocks and disruptions. Finally, public policy, particularly the cluster on polycentric governance, sees the possibility to survive shocks, particularly those of global scope, through multilateralism, which allows the bundling resources to address emerging common vulnerabilities.

3 Perspectives on SDG-aligned futures – explaining the qualities of governing sustainable futures

The transformation to sustainability is an aspiration for the future. Understanding and ascertaining its meaning is challenging because it connects the future with the present. It connects a vision for the future with concrete actions in the present. In addition, as a normative aspiration, it deals with a complex negotiation or deliberation process involving multiple ideas about what the future should be like, how it should be achieved and under which costs (Hernandez, 2014b). In addition, it brings new forms or a new importance of

national and transnational knowledge cooperation and exchanges because of the scientific characteristics of the actions needed (see Hernandez, 2018a, 2018b; Schwachula, 2020). Innovative and groundbreaking research methodologies are equally needed to understand and explain the processes behind this rather normative sustainability "idea". The following sections set the stage for the proposed framework on the interfacing of GTS. Using the disciplinary lens from the previous section, three sets of scenarios for sustainable futures – the SDG-aligned futures – are introduced, each of which represents a possible pathway towards sustainability: *political-transition-driven (or strong), societal-transition-driven (or cohesive)* and *economic-transition-driven (or efficient).*

3.1 Embedding historicity in scenarios – entry points to the transformation to sustainability

Although scenarios of sustainable futures are forward-looking, they cannot be detached from the past. As the Dutch historian and one of the founders of modern cultural history Johan Huizinga (2004) contended, history is the "interpretation of the significance that the past has for us". Sustainability deals with visions for the future, and yet these visions are shaped by historical experiences, which limit the set of possible resources and shape the cognition and actions of actors. Therefore, it inevitably calls for methodologies that address the challenge of having different entry points and different possible trajectories to achieve visions. For this purpose, scenarios have emerged as useful methodology and decision tools in climate and sustainability research, due to the relevance of the temporal dimension of the relevant processes and outcomes (see Hernandez, 2021; Intergovernmental Panel on Climate Change [IPCC], 1990; Organisation for Economic Co-operation and Development, 2006). As Nich Hughes (2008) observes, the proliferation in the use of scenario methods – particularly of integrated assessment models to develop scenarios (see Rogelj et al., 2018; van Vuuren et al., 2017) – fulfils the deliberation requirement for T2S because scenarios break communication barriers, not only between researchers (e.g. social scientists vs natural scientists), but also between stakeholders (public sector, civil society and business/industry sector), who find that they can participate in determining a future that has space for them. However, barriers still exist, particularly when social and natural scientists jointly determine not only the integrated scope or parameters of the system being studied, but also the possible ways the system may have evolved into its current state and the ways it might continue to evolve (Hernandez, 2021, p. 128). The "negotiation" and consensus-building aspects of scenario-building are implications of the normative undertone of T2S.

3.1.1 Assumptions and storyline – finding scenarios based on experiences

The next section introduces the SDG-aligned futures as three scenarios of a sustainable future that countries can achieve through a specific transition pathway shaped by their entry points. These three futures are ideal types that countries can seek. However, assumptions still need to be clarified to explain the storylines and where these futures are coming from. This paper assumes that a conceptualisation of SDG-aligned futures needs to go beyond the simplistic geographical and spatial regions to which countries belong. Instead, conceptualisations of these futures need to be based on experience and should therefore highlight identities that have been crystallised through patterns and structures. By highlighting the different experiences in the scenarios, the SDG-aligned futures can be distanced from the

"colonial" presumption that Western culture has naturally flowed outward, bringing modernisation to the rest of the world (see Blatt, 1993). Furthermore, a focus on the distinct experiences of each country revisits various critical approaches and perspectives, for example on the economic analysis of sustainable development (see Castro, 2004).

For example, the "Indian experience" is an outcome of distinct historical events and the resulting domestic discourses. This assumption inevitably contextualises various concepts and expands, for example, the meaning of the economy and how (economic) development is "best" achieved based on national priorities and not on the goals set by the Europeans. In India's case, economic development is explained in the context of a former colony with multiple issues it needs to address, such as the connection between the caste system and economic activities. In this example, economic development needs to be accompanied by policies and instruments for inclusion. Economy can be explained through its social context. This paper assumes that T2S is also possible without replicating Europe's modernisation process based on the immense wealth of subsequent colonial accumulation (Young, 1993, cited in Blatt, 1993). T2S is a global vision. Therefore, with T2S assumed as a global value chain, each developed and developing country should achieve a set of institutions and frameworks that can facilitate T2S without hindering T2S in other countries.

Another requirement for using historical experiences in determining sustainability aspirations is clarifying the comparability of these complex historical experiences. This paper assumes that the positive experiences, for example, of European countries can be used not as a yardstick for the trajectories of developing countries, but as a documentation of policy instruments or technologies that are also available – or should be made available – to developing countries. Aggravating this complexity is also the non-linear character of society and governance, which limits the usefulness of approaches and methodologies to assess "good practices" of a country and apply these to the others. Questions about the attribution of success (and how it is defined and measured) limit the value of comparisons. For example, Germany's positive record in reducing greenhouse gas emissions is not solely explained by its ambitious mitigation policies, but also its reunification with the former German Democratic Republic, which provided more "emission benefits" due to a more "feasible" baseline for measuring greenhouse gas emission reductions (see Weidner, 2007). Germany exemplifies how historical experience matters in any T2S.

Exacerbating this difficulty of elevating "good" experiences of (mostly developed) countries and using them as a yardstick for sustainable development results from the difficulty of the same terminologies with different connotations. For example, a simplistic "factional" categorisation between liberal and communal societies – also often referred to as right and left in US politics – is not only regarded as "Western-centric", because the Western discourses will most likely define the connotation of this terminology, which will not be useful in understanding processes in the countries that do not belong to the West. Liberalism is one of these concepts that can only be explained in a national context. For example, there is no equivalent term in Japanese for "liberal", whereby the idea of "individual rights" is equated with "selfishness". A Japanese "liberal" is instead defined as one who supports Japan's post-war constitution (Brasor, 2017). In addition, Anthony Egan (2012) suggests that the current "racist" and "white" association of liberalism in South Africa (and its integral role to South African nationalism) can be explained by the liberal historians emphasising "race" – that is, cooperation as well as conflict between racial groups – when debating with both "extremist liberals" and "Marxists" who are emphasising "class

struggles". He continues that "liberals" and the "liberal agencies" such as churches and missionaries have been reduced to little more than agents of colonial power in South Africa (see Majeke, 1952).

Another challenge is the identification of a useful threshold between qualifiers of a characteristic. For example, the qualifiers used for the SDG-aligned futures' characteristic of "solidarity and welfare regime" can be misleading due to the different intentions behind policies. For example, although Sweden and other Scandinavian countries are often regarded as the "model welfare states", this type of welfare instead emphasises the maximising of labour force participation, which promotes gender equality and income redistribution (see Gøsta Esping-Andresen & Korpi, 1984; Malley & Moutous, 1996). Meanwhile, to ensure legitimacy, Saudi Arabia and other authoritarian regimes have become welfare states exclusively for their citizens through payouts without improving political liberties and human rights (see Cowan, 2018; Dickinson, 2017). Although Sweden can be easily classified as "communal", doing the same for Saudi Arabia is not only counter-intuitive, but can also be misleading. In this paper, these countries will be assumed to fulfil the requirements of the qualifier, but a disclaimer will be added to highlight the potentially misleading aspects of policies.

Another important assumption about the SDG-aligned futures is that choices and behaviours can and should change as the transformation process unfolds. The assumption of a deliberative transformation process implies a T2S witnessing various bargaining and persuasion games. These changes in preferences and paradigm shifts are direct results of learning processes in these games. As social, technological, economic and political changes emerge, new issues may arise that can alter differential power relations. An example of this shift of choices is how the Fukushima disaster changed not only public opinion, but also the political will in Germany (see Hennicke & Welfens, 2012). In addition, as the COVID-19 pandemic proved, these changes can lead to new vacuums that can mobilise the sudden acceptance of measures that were previously deemed to be too expensive or politically infeasible (see TWI2050, 2020). New conflict cleavages can also lead to new coalitions and networks. Therefore, this paper assumes that shifting from one sustainable development pathway (SDP) to another SDP is most likely to be the rule rather than the exception as the transformation process unfolds. In some cases, shifting from one trajectory to another is even necessary to fulfil the changing narratives and altered demands of society at large.

Finally, the value of these SDG-aligned futures lies not in classifying every country to an SDP, but primarily in its potential use as a benchmark to understand what a country needs to move closer to at least one ideal type. The entry points to an SDP validate the assumption that every country can initiate T2S. Because countries will most likely encounter multiple types of (political, social, economic) transition, it is assumed that countries will most likely have hybrid types of T2S, and clearly classifying the countries into an SDP is not always possible. However, because these SDG-aligned futures are to be understood as Weberian ideal types (see Weber, 1976), hybrid types will not yet play a significant role, at least in the first round of analysis. Ideal types are composed of basic concepts that define a "constructed world of ideas" or "idea constructs", compelling researchers to conduct a comparison between the countries assumed to belong to the pathways and the "historical cases". The SDG-aligned futures are heuristic models or scenarios that do not need to reproduce reality. They can only be manifested as incomplete as they disregard one or more parts of reality (see Jellinek, 1900). At the same time, these SDG-aligned futures will

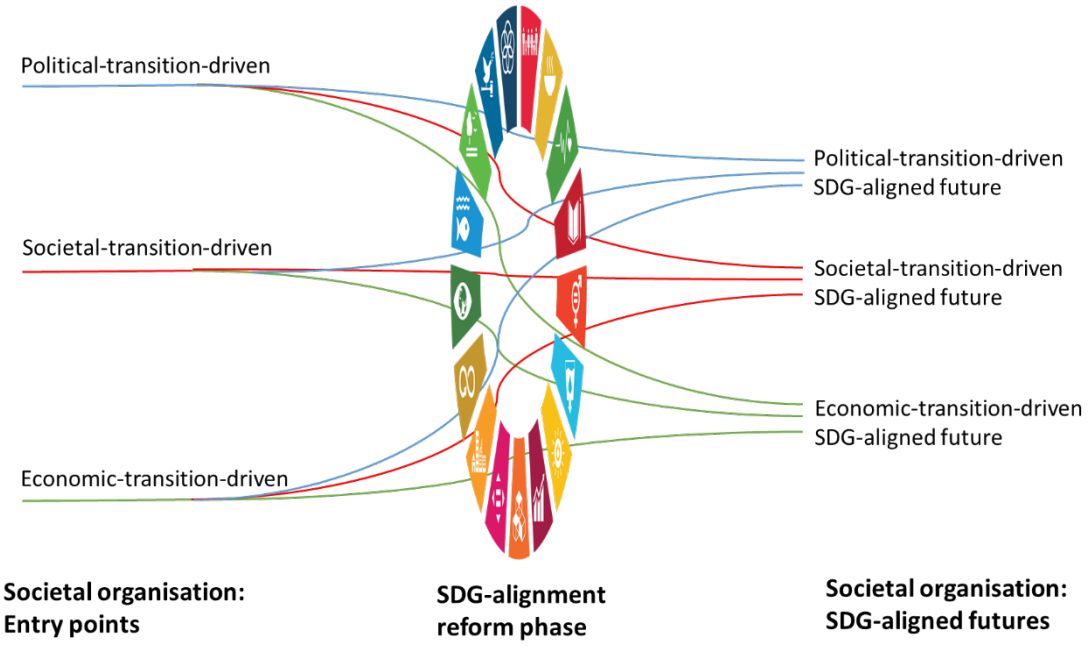
introduce both simple concepts and "fictional conceptual extremes" that can still exist in reality. In this regard, some countries can be attributed to multiple SDPs. At the same time, it can be argued that if a country "chooses", for example, the political-transition-driven pathway, it will have deeper insights about, for example, which policy instruments will be mostly likely available and which barriers this country will be able to overcome.

3.1.2 The SDG-aligned futures as scenarios for governing the transformation to sustainability

Each SDG-aligned future is a back-casting exercise through which the steps can be revisited from the entry points and the SDG-alignment reform phase leading to the sustainable futures (see Figure 2). The SDG-aligned futures can help "imagine" what additional resources – in terms of policies or reforms – are needed in the "characteristics" to make governance conducive to T2S. The assumptions about each characteristic are presented in terms of their associated variables, appropriate qualifiers and policy measures that are needed to move towards sustainability. At the same time, it needs to be highlighted that, as the sustainable development trajectories approach the SDG-alignment reform phase, it is necessary to achieve a minimum level of SDG 16 (Peace, Justice and Strong Institutions). Hence, this paper assumes a certain quality, scope, function or dimension of governance modes and institutions for each of the SDG-aligned futures. In addition, each scenario proposes how governance modes and institutions can resolve conflicts. However, a disclaimer is to be made that these assumptions are difficult to make, especially in light of context-related power dynamics that confront each country or society.

A bird's eye view of how the SDG-aligned futures can provide direction for SDPs is illustrated in Figure 2. The figure identifies three SDPs according to the type of transition to a sustainable future that the countries prioritise or choose to achieve: *political-transition-driven, social-transition-driven* or *economic-transition-driven*. Each represents a Weberian ideal type of a set of regimes and other governance structures that are needed to achieve sustainability.

Figure 2: The SDG-aligned futures



Source: Author, developed with Ines Dombrowsky and Gabriela Iacobuta

As assumed, sustainability is attainable for all countries, regardless of their entry point. Nevertheless, there are different sets of policy instruments available for these countries due to path-dependent governance structures (see Howlett, 2009). The "entry points" acknowledge the significance of path dependence in any transformation pathway towards sustainability. These entry points represent the non-linear character of governance as well as the historicity of T2S. For example, a country with an authoritarian regime can express its intention to achieve a sustainable future. This vision of achieving T2S will elevate certain policy instruments such as strengthening the rule of law or public accountability to ensure that it gains approval of society at large. If this country is already a country with a stable authoritarian regime, it will more likely pursue the economic-transition-driven pathway, which foresees certain policy instruments, such as strengthening the role of networks in the public sector, supporting technological innovations.

The SDG alignment reform phase is a pulling juncture in which challenges to effective policy mixes and integration are properly addressed. Challenges include conceptualising, measuring and resolving externalities, trade-offs and mobilising synergies that allow pulling effects to occur. Pulling effects can be explained with the "blanket" analogy. Whatever spot in the blanket is picked, pulling it up leads to other parts of the blanket to elevate. For example, the same country with a stable authoritarian regime that chose the economic-transition-driven pathway will need to complement its policy to enhance green technological innovations with reforms, not only in its market organisation to induce domestic demand of new technologies, but also in its rule of law by strengthening intellectual and other property rights. These reforms will lead to further changes in labour policies, as new employment opportunities are created. An improvement in labour policies can help improve equality in income distribution, which can further entice environmental protection.

The SDG-aligned futures – three possibilities of governance towards a sustainable future

The SDG-aligned futures represent three sets of governance modes and institutions in a sustainable future. These futures can be achieved through one of the three SDPs. The "political-transition-driven" SDP can also be called the "strong" pathway, in which the agents have achieved a consensus and been given tacit approval that a sustainable future can be realised through a "strong" central state authority that "orchestrates" the realisation of the new normal, which is here called "entrenchment". The entrenchment of the new normal pertains to the mainstreaming of sustainability policies to achieve the tacit approval of society at large. In this state-centred pathway, additional resources are mobilised to strengthen the capabilities of state institutions to distribute the costs and risks of T2S as well as the benefits and opportunities created by sustainable practices (see Back & Hadenius, 2008; Kotz, 2005). Although developed countries can belong to this pathway, former colonies and territories that experienced high or low degrees of violent decolonisation processes tend to belong to this pathway.

Many of these countries endured protracted civil wars due to the political vacuums that emerged after independence (see Collier, 1999). Other countries belonging to this pathway experienced multiple political backlashes, which motivated the agents and society at large to further strengthen the state's capability to improve the performance of state institutions. Countries in this pathway aim to move from weak or deficient governance structures to bureaucracies that exhibit characteristics of strong statehood. For many countries in this pathway, after decades or even centuries of colonial rule, which favoured specific identity (ethnic) groups, the success of T2S is dependent on the dismantling of institutional lock-ins responsible for the political marginalisation of groups and how their effects can be reversed and compensated (Hernandez, 2014c). The political marginalisation of groups is responsible for state fragility due to the constant conflictual relations. In this pathway, the vision of a sustainable future is closely linked with the avoidance of future (security) vacuums.

The second pathway is labelled "societal-transition-driven" pathway. With this pathway, which can also be referred to as the "cohesive" pathway, the vision for a sustainable future is closely linked with the principles of solidarity and welfare. In this pathway, citizenship is the driving force to see the realisation of a sustainable future where governance modes and institutions can effectively "balance" power among actors. Countries in this pathway have either long histories of highly "corporate capitalist" or "restrictive authoritarian" governance structures. This implies that there can be diverse motivations behind societal transitions, such as ending ethnic segregation that created social tensions (e.g. Apartheid in South Africa), or addressing social injustices that mobilised armed insurgency (e.g. the Maoist insurgency in the Philippines). In addition, the legacies of past corporatist capitalism or authoritarianism have instilled a heightened degree of engagement and participation of non-state actors because of the initial perception that governance modes and institutions are biased towards market actors. Examples are social market democracies in Western Europe such as Germany, Austria, Switzerland and Sweden, where the decision to strengthen their welfare regimes is an outcome of their historical experiences and the political discourses that occurred to make sense of these experiences (see Müller-Armack, 1981; Valocchi, 1992).

The third pathway, labelled "economic-transition-driven" pathway, also referred to as the "efficient" pathway, pertains to countries where governance modes and institutions are oriented towards a sustainable future that is achievable by improving efficiency and

maximising societal value. This vision foresees governance modes and institutions ensuring an "efficient economy", whereas the maximisation of value is defined by its broadest meaning, that is, a space that creates and distributes economic/monetised and non-economic/broader societal value. This pathway is driven by the main logic that the private sector and networks have the necessary specialised knowledge that can best provide solutions within a regulatory framework set of the state (see Ferguson, 2014; Gilles, 2010; Seabrooke & Henriksen, 2017). The sustainable future envisioned in this pathway narrates that the state cannot be a rule enforcer and a player at the same time (see Suchanek & von Broock, 2012). Many countries in this pathway transitioned from a planned to a market economy. Other countries in this pathway experienced years or decades under extreme austerity measures that paved the way for the "leaning" of governance modes and institutions to achieve an "efficient economy". Some countries, such as the United States, the United Kingdom, Australia, New Zealand and Denmark, have other reasons for adopting policies to advance a "lean", "minimal" or "small" government (see Madrick, 2009; Martin, 2011).

3.2 Characteristics of the SDG-aligned futures – challenges and opportunities for transformative governance

In this section, the "characteristics" of governance are introduced to clarify the differences between these three SDG-aligned futures. These characteristics can determine certain qualities, intensity, spatial boundaries, temporal validity, level of engagement, caveats, best alternatives and capacity related to how governance modes and institutions can govern T2S. These characteristics are divided into four types. The first type pertains to characteristics that are needed to create visions and the related socio-technical narratives. These visions for sustainable futures represent rhetorical structures that are needed for strategic and systems thinking under complexity and uncertainty. The next type pertains to characteristics for "performing" governance, which contextualises governance modes and institutions in order for them to be compatible with change management. This contextualisation identifies the set of resources and appropriate qualities needed to address the barriers to effective governing. The third type pertains to characteristics concerning those resources needed to ensure social cohesion that legitimises governance modes and institutions. These resources can be beneficial when building networks and coalitions for the necessary changes and paradigm shifts. The last type pertains to characteristics that highlight the resources needed to strengthen the resilience of the transformation process and successfully defend itself from internal and external shocks. These characteristics are discussed in the next subsections according to the four types of resources, which are illustrated in Figure 3, that make governance conducive to T2S.

Figure 3: Governance modes and institutions – what makes governance conducive to T2S

Source: Author

3.2.1 Visions and narratives in the SDG-aligned futures – how stories are created

The possibility of governing T2S requires that governance modes and institutions motivate strategic and systems thinking when coordinating the creation of narratives and visions about the future. In general, visions about the future, such as "sustainable futures", target human development or human well-being in addition to ecological integrity. The academic disciplines in the previous section explained how these visions are established. Because these visions are "mirrors of the cultural environment", the processes leading to these visions will utilise how cultures and societies define human well-being, for instance. The "hegemonic culture" becomes an important independent variable that explains the selection of visions. Therefore, this subsection intends to highlight three possible "hegemonic cultures" that might dictate how governance modes and institutions can facilitate the bargaining and persuasion between actors to come up with visions they all accept.

Table 1 summarises a selection of different characteristics of governance that allow countries or societies in each pathway to develop and further improve the process of generating visions and formulating the related socio-technical narratives. This paper identifies major associated variables that can concretise these characteristics and differentiate the pathways. In addition, the qualifiers pertain to an attempt to introduce thresholds that can highlight the nuances of how countries in each pathway, given the set of governance lock-ins, can attain a sustainable future.

Table 1: Visions and narratives in the SDG-aligned futures				
Characteristics		Political-transition-driven pathway	Societal-transition-driven pathway	Economic-transition-driven pathway
Policy entrepreneurship of non-state and subnational actors (Betsill & Corell, 2008; Covarrubias, Spaargaren, & Boas, 2019; Chan et al., 2019; Covarrubias, Spaargaren, & Hsu, 2018; Cogburn, 2017; Kingdon, 1984; Mintrom & Norman, 2009; Sabatier, 1987)	Associated variables: Diffusion of policy innovations Qualifiers: Global, national/local; networks or sectors/issues)	National within policy silos: Policy innovation occurs primarily within smaller policy networks. Policy innovation is not sufficient for T2S but a necessity. Policy gains within networks are incremental. Between networks, policy gains are concentrated in silos because of competitive relations between policy networks. Explicit policies exist to foster diffusion of innovation.	Two-stage diffusion: Diffusion in policy innovations first occurs nationally between issue groups (e.g. human rights groups vs companies on due diligence) and then between civil society and the public sector. The diffusion of policy innovations tends to be local (or national) due to the necessity of contextualising barriers, benefits and trade-offs.	Global within and between sectors: In this pathway, policy entrepreneurs tend to consist of global, regional and national networks from business and industry sectors providing needed practical expertise related to the life cycle of products and services. There is intense competition between networks. Policy gains are less incremental.
Consensual knowledge (Bliesemann de Guevara & Kostic, 2018; Edwards, 2018; Hernandez, 2018a, 2018b, 2021; Kjellén, 2013; Schwachula, 2020; Sjöstedt & Penetrante, 2013)	Associated variables: Consensual knowledge as reflected by the number and origin of peer-reviewed articles cited in international assessment reports (e.g. IPCC's assessment reports) Qualifiers: Fragmented/dispersed, regional (spatial); silos, impact, sectoral-oriented	Polycentric and (policy) silos-oriented: Technological deployment primarily occurs at the national level, which means that national standards in SD-related technologies are considered. Polycentricity connotes dependence between regions because it is defined by specialisation of regional knowledge hubs and cooperation between regions. Polycentricity is not sufficient for T2S but a necessity.	Regional (according to value orientation) and impact-oriented: Consensual knowledge-building is regional and impact-oriented. The existence of multiple regional standards and various combinations of policy mixes will most likely lead to multiple regional visions of sustainable futures, which enjoy broader societal support and ownership.	Fragmented and sectoral: Networks of scientific and expert knowledge concentrate on specific sectors such as the transport or energy sectors. Consensual knowledge-building is more likely to be supply-side focussed. Technological deployment is global implying sector-wide technological standards.

These visions represent the "new normal" that is aspired to (see Balzacq, 2005). The achievement of the new normal, as the Copenhagen School claims, depends on how agents are able to present non-actions towards changes as existential threats (see Waever, 2011). Lately, the term "new normal" has become popular in the media and academic discourses and is particularly linked to the COVID-19 pandemic. The pandemic as well as the anticipated effects of climate change revealed the role of real and perceived threats in empowering change agents and achieving public approval to advance costly structural changes and paradigm shifts.

The vision of a sustainable future is increasingly attracting attention, in academia as well as the public sector. However, due to the "cultural environment" and the relevant path dependencies or lock-ins, the vision of a sustainable future may differ, for example, in terms of the emphasis on technology, the level of material consumption, the role of state institutions as well as of non-state and subnational actors, the scope of economic flows, etc. At the same time, all "cultural environments" and contexts seek human well-being, though they differ on how they define and measure what ensures human well-being. This implies the universality of human development as a vision but the contextuality of how it can be achieved. In addition, this vision also means the "story" ensures the required approval of society at large, particularly when social costs and burdens are being distributed. This story is a "speech act" that is told through narratives. These narratives are important elements of the rhetorical structure; they securitise and help elevate certain issues from low politics into high politics (see Waever, 2011). This vision pertains to a political tool because it limits the network of constitutive rules and narratives that are used to frame arguments and win support (see Balzacq, 2005). Looking at the SDPs, the historical pasts of countries have most likely produced certain sets and qualities of governance modes and institutions. As the actors and society at large negotiate the specific vision they collectively aspire to, there will be a point when they recognise deficiencies and agree on a specific "formula" to overcome and resolve these deficiencies. Therefore, the achievement of this vision is highly contingent on the environment in which it is launched.

3.2.1.1 Policy entrepreneurship of non-state actors

Policy entrepreneurship refers to the resources available to "highly motivated individuals" and non-state and subnational actors to advocate the interests of their constituents. They do this by drawing attention to policy problems (convening power through agenda-setting); identifying gaps in governance; providing specialised knowledge and information for feasible policy solutions; building coalitions of supporters and thus improving democratic quality; outperforming competitors by delivering scalable and replicable solutions; and stimulating further societal and legislative actions through diffused norms (see Arias-Maldonado, 2007; Chan et al., 2019; Mintrom & Norman, 2009). Policy entrepreneurship of non-state and subnational actors is a tool central to T2S because it can connect expertise with policy innovation to pursue incremental policy change through persuasion (see Kingdon, 1984; Sabatier, 1987). In terms of the pathways, non-state and subnational actors are assumed to be successful in advocating the types of visions and necessary changes needed to achieve the vision. The associated variables primarily chosen for the purpose of differentiation refer to the extent of the diffusion of policy innovations. Taking the example

of the development of green technologies, policy entrepreneurs will employ different sets of approaches to connect their interests with technological innovation.

The strong pathway – the political-transition-driven pathway – understands the integral function of policy entrepreneurship to strengthen the capacity of state agencies and institutions. In this pathway, diffusion in policy innovation primarily occurs nationally within networks. Collaboration between policy entrepreneurs on the global level occurs, but the actual "influencing" of policy development and implementation occurs at the national level. In this pathway, policy entrepreneurs maintain close relations with proximate policymakers through different types of incentives. Networks are strategic and membership is itself a reward. Networks will more likely include like-minded members representing the private and public sectors. This implies that policy innovation is already occuring within these networks.

Policy entrepreneurs in this pathway tend to work in smaller networks (policy silos) that reflect the different *Ressorts* in policy-making. Within a network, collaboration is complementary. At the same time, policy gains within networks are incremental; but between networks, policy gains are concentrated in silos because relations between policy networks can be competitive. The deployment, for example, of green technologies is primarily a political project and a means for political gains. This implies that the specialised knowledge of policy entrepreneurs is highly desired in issues relevant to the management of policy development and implementation. Policy entrepreneurs can best influence policy-making, for example, by pointing out inefficient processes. Potential pulling effects of this characteristic in the context of this pathway include improvement in public investment in research and education because policy-makers recognise the need for scientific communities to be independent from the private sector.

The cohesive pathway – the societal-transition-driven pathway – recognises how policy entrepreneurs can help draw attention to policy problems and assess how policy solutions can or cannot advance social well-being. In this pathway, diffusion in policy innovations occurs nationally, first between issue groups and then between civil society and the public sector. For example, the deployment of green technologies will be dependent on how these technologies are translated into social or cultural innovations by serving the priorities of local communities. Therefore, the feasibility of certain green technologies needs to be explained first through their social contexts. Policy entrepreneurs in this pathway connect technological innovations with welfare policies. Therefore, their expertise on issues, including human rights and the protection of minorities, is most likely built upon long-term partnerships and coalitions. The diffusion of policy innovations tends to be local (or national) due to the necessity of contextualising barriers, benefits and trade-offs. At the same time, strong global coalitions and networks of policy entrepreneurs can be observed, but these coalitions are more a platform for exchanges of good practices. Therefore, in this pathway, policy gains are incremental, which means that the success of one policy entrepreneur will more likely lead to more "ambitious" goals for the others. Finally, the potential pulling effects of this characteristic in the context of pathways include, for example, the expansion of equality in income distribution because technological innovation in the transport sector might provide more opportunities for inhabitants of rural and marginalised areas.

In the pathway driven by societal transformation, civil society groups and other advocacy groups enjoy convening power in evidence-based policy-making processes. They are mandated by society not only to identify important issues, but also to provide solutions (see Gleis, Sæther, & Fürst, 2019; Spain, 2009). There is fluid mobility between civil society leaders and political leaders, particularly because these civil society groups often serve as recruitment pools for future policy-makers. Many political leaders were themselves involved in advocacy activities in the past, and several civil society leaders maintain close ties with proximate policy-makers. Therefore, there is a constant exchange of expertise. Because of the convening power of civil society, other social priorities can easily reach the "high politics" realm of policy-making. For example, gender equality is pushed by setting up a fair playing field through the elimination of gender-relevant structural disadvantages. In addition, "home management" (i.e. child care rendered by either parent, or home care of sick and old parents) is given greater recognition or higher "market value". The state contributes significantly towards establishing the work–life balance by providing additional market incentives for work flexibility.

The efficient pathway – the economic-transition-driven pathway – appreciates how these groups perform a function in the policy process, particularly highlighting trade-offs and synergies across sectors. National boundaries across sectors are rather fluid. In this pathway, policy entrepreneurs tend to consist of global, regional and national networks from business and industry sectors, providing their practical expertise related to the life cycle of products and services needed to develop and deploy green technologies. Their expertise will help highlight trade-offs and synergies between technological innovation, changes in business models and shifting policy priorities. The motivations of networks are not always altruistic because, as "first movers", they anticipate pay-offs resulting from the new lock-ins (e.g. technological standards). Therefore, there is intense competition between networks.

In this pathway, the state is highly dependent on non-state actors to implement policies, particularly in local communities (see Covarrubias et al., 2019; Pittman & Armitage, 2019). Non-state actors' convening power means that they not only provide technical consultation, but also develop and conduct actions to resolve problems that are outside the political realm. For example, to foster green technologies, non-state actors predominantly provide quality higher education (see Edwards, 2018; Gumport, 2000). With regard to relations, non-state actors, civil society groups and other advocacy groups "convert" their values into a "common currency" to allow for comparisons of their goals with economic values. For example, environmental groups frame their arguments in terms of how environmental protection can create jobs or contribute to a community's economic development. Potential pulling effects of this characteristic in the context of this pathway include the strengthening of public accountability mechanisms to ensure that state actors do not purse the unfair treatment of specific non-state actors.

3.2.1.2 Consensual knowledge

Knowledge is central to any sustainable future. It serves as the agency or facilitator of T2S by providing a framework for complexity and uncertainty (Hernandez, 2021, p. 90). Policy-makers consult scientific experts to better understand problem issues and to come up with evidence-based solutions that can be jointly accepted by any political ideology and society at large. At the same time, the reliance of policy-making upon scientific knowledge

increases the demand or need to be critical of the emerging scientific authority or technocracy (see Barett & Chambers 1998; Bijker et al., 2009). In the context of T2S, where the outcomes of bargaining and persuasion games represent new lock-ins, the ability or inability to influence the definition of these lock-ins through equitable access to knowledge is integral to the legitimacy of T2S. In the previous works of the author of this paper, the concept of knowledge diplomacy was introduced to explain the multi-level process of the global and domestic processes of joint decision-making (Hernandez, 2018a, 2018b, 2021; Sjöstedt & Penetrante, 2013).

Knowledge diplomacy refers to the process of establishing consensual knowledge for collective decision-making (see Hernandez, 2021, 2018a, 2018b; Sjöstedt, 2009). Because consensual knowledge establishes the parameters within which decisions can be made, it assumes a facilitating function in T2S. Joint decision-making can immediately address contingencies and therefore save resources on procedures and allow for further concentration on concrete solutions. For example, the various assessment reports of the Intergovernmental Panel on Climate Change (IPCC) and the Summaries for Policymakers serve as consensual knowledge that is used not only in climate negotiations to achieve global agreements such as the Paris Agreement, but also in domestic policy-making. These Summaries for Policymakers are deliberated by the IPCC's plenary, in which negotiators representing state members negotiate with IPCC scientists about the content of the summaries. In addition, knowledge diplomacy also refers to how networks of scientific bodies, universities, research institutes and think tanks exchange insights and attempt to find consensus about common concepts, methodologies and interpretations of scientific knowledge. These exchanges include, for example, interactions between social scientists with a deeper understanding of societal implications of technical solutions and natural scientists with limited insights about the actual operational usability of scientific knowledge (Anstey, 2009).

Knowledge diplomacy (and how it leads to consensual knowledge) is an important aspect of creating visions and narratives on sustainable futures. The three pathways differ on how scientific knowledge becomes consensual knowledge due to the differences on how power is translated into access to scientific and expert knowledge. The political-transition-driven pathway foresees a polycentric and silos-oriented knowledge diplomacy. Consensual knowledge-building focusses on co-benefits, synergies and trade-offs, which are important in weighing policy options. At the same time, networks of scientific and expert knowledge support policy-making by making government agencies and institutions accountable, thereby improving democratic quality. These networks are, however, concentrated in regional knowledge hubs that often reflect existing regional centres of power.

Because each of these regional hubs will most likely represent specialised knowledge, the polycentricity of knowledge diplomacy does not lead to intense competition among these regional knowledge hubs. For example, consensual knowledge on wind energy can be centred in Northern Europe and bioenergy in South America. At the same time, consensual knowledge on poverty alleviation can be centred in South Asia due to India's developmental experience and its international development assistance policies being regarded as a good model for poverty alleviation. This initial regional focus on consensual knowledge is addressed by another layer of contextualisation of consensual knowledge to make it applicable in other regions. This means that polycentricity in this pathway connotes dependence between regions, and therefore a high acceptance of more intense cooperation

between regions. However, because government agencies and institutions cannot cover all issues and areas relevant to T2S, this pathway expects "blind spots", which expose T2S to additional governance risks. Therefore, additional policies are needed to prevent the crowding out of public policies, meaning that consensual knowledge-building in this pathway will more likely sustain more coordination between national governments.

In the societal-transition-driven pathway, consensual knowledge-building is regional and impact-oriented. The reason behind this is the role of civil society groups in generating and disseminating knowledge, as they tend to work locally and focus on certain issues. The focus on the demand side of consensual knowledge-building leads to the increased attention and significance of traditional or local knowledge. This is driven again by grassroots movements that put forward local issues and local solutions. There is little competition between regions due to the impact-orientation of consensual knowledge. This means there is an expectation that consensual knowledge is only useful when its impact is highlighted and linked to its historical context. Therefore, the level of ownership of scientific knowledge is most likely to be high in this pathway. In addition, because policy gains are achieved through consensual knowledge that leads, for example, to the establishment of regional industry standards, cooperation between regions is more likely limited to exchanging good practices. At the same time, the existence of multiple regional standards and various combinations of policy mixes will most likely lead to multiple regional visions of sustainable futures that enjoy broader societal support and ownership.

Consensual knowledge-building in the economic-transition-driven pathway is fragmented and sectoral. Networks of scientific and expert knowledge concentrate on specific sectors such as the transport and energy sectors. The reason behind this is the autonomy of each sector in generating and disseminating knowledge. This includes the definitions of the problem issues as well as the designing of technical solutions that cater to the needs of each sector. Transnational knowledge-exchange between research institutes, universities and think tanks is fluid, although this fluidity necessitates existing cooperation agreements. Consensus knowledge-building evolves within sectors (e.g. industry, energy, transport). Each of these sectors is strongly organised around international governmental and non-governmental organisations that coordinate consensual knowledge-building within the sectors. Global sectoral policy frameworks identify the issues that require scientific and expert knowledge. Consensual knowledge-building is therefore more likely to be supply-side focussed.

3.2.2 Performance and context

The deliberated visions for sustainable futures set the scope for defining the type, intensity, scope and quality of the performance of governance modes and institutions. The rhetorical structure established through narratives on norms and standards is a powerful and necessary mechanism for change management. The next set of resources refers to how this rhetorical structure is translated into concrete actions through governance modes and institutions.

Table 2 illustrates the characteristics attributed to the resources available to the three pathways to achieve a sustainable future.

Table 2: Performance and context in the SDPs				
Characteristics		Political-transition-driven pathway	Societal-transition-driven pathway	Economic-transition-driven pathway
International cooperation and the world order (Armitage, 2008; Chan et al., 2019; Hernandez, 2014a, 2021; Martin, 2010; Schelling, 2009; Susskind & Crump, 2008; Thiel, 2017)	Associated variables: Concentration and source of power Qualifiers: Polycentric (state-centred or non-state-centred), monolithic order; formal, procedural, sanctioning (awards and sanctions), convening (agenda-setting), coercive, material (control of resources), information-associated, moral/symbolic	Polycentric and state-centred concentration of power; formal, procedural, material sources of power: International cooperation is an instrument of national policy-making. International agreements are measured by their pay-offs in the national sphere. The various "centres" of power are differentiated by power through formality, procedures and the materials involved. States will group themselves according to international organisations or alliances such as the European Union and African Union. Free-riding is limited.	Polycentric and non-state-centred; convening, information-associated, moral and symbolic sources of power: Global cooperation is an outcome of global citizenship. Local needs, traditions and identities are integral elements of international cooperation to achieve sustainable futures. Power is identity-based and highly dependent on value systems. Centres of power reflect these value systems. The power of the actor is measured by its "casting out" ability to convert different values to make them relevant, quantifiable and comparable.	Polycentric and non-state, information-associated, sanctioning, convening and material: State, non-state and subnational actors cooperate due to expected pay-offs. Centres of power are technology-driven with each having a distinct set of norms, standards and sanctioning mechanisms, which are shared by those actors supporting this centre. Free-riding is limited if not sanctioned. To achieve this, negative externalities are effectively addressed through international agreements.
Public policy (Breuer, Janetschek, & Malerba, 2019; Chou and Liou, 2012; Hernandez, 2014c; Hernandez & Misalucha-Willoughby, 2020; ICS, 2017; Newig, Gunther, & Pahl-Wostl, 2010)	Associated variables: Coordination between state and government agencies; policy cycle (agenda-setting, development, legitimacy, implementation and evaluation) Qualifiers: Strong coordination/policy coherence, fragmented coordination between state and government institutions; top-down/vertical, bottom-up/horizontal policy implementation; input-, process- or output legitimacy; economic, regulatory, persuasive policy instruments	Strong coordination/policy coherence, top-down implementation, input legitimacy: Agenda-setting, policy development, implementation and evaluation are formality- and procedure-driven. The authority of public policy is mostly legitimised through "input legitimacy". Due to the prioritisation of smooth transitions between administrations, electoral systems have high barriers for cheating and manipulation. The representation of minorities is guaranteed through special formulas for majoritarian and proportional representation. The top-down or vertical approach in policy implementation makes the state a significant and attractive employer of the population.	Fragmented coordination, bottom-up implementation, process legitimacy: Coordination between state and government institutions is fragmented in terms of specialised policies to adapt to the needs of the different target groups. Local government units enjoy a significant degree of autonomy in policy development and implementation. Agenda-setting is data-driven, which entails close collaboration between state and non-state stakeholders. The participatory and deliberative process in policy-making is the main source of legitimacy ("process legitimacy"). At the same time, there are adequate compensatory mechanisms to ensure that policy gains are not achieved at the cost of some.	Fragmented coordination, bottom-up implementation, output legitimacy: Public policy has a regulatory mandate to ensure that societal actors follow the rules of the game. Policy networks are fragmented and coordination between state and government institutions is reduced to a minimum to reduce transaction costs. The policy cycle is fast-paced and "lean" to assure quick response to emerging problem issues. Policies are often designed as sanctions, rewards or incentives. Legitimate policies are those that can achieve the goal with the least possible intervention. Policy implementation is highly data-driven and requires various types of public–private partnerships.

Table 2: Performance and context in the SDPs				
Globalisation, regions and economic flows (Dicken, 2015; Eichengreen, 2011; Hoogvelt, 1997; Kotz, 2005; Oluwafemi, 2012)	Associated variables: Global and/or regional value chains, volume of international trade, FDI Qualifiers: Weak vs strong / global vs regional	Weak economic and social globalisation but strong regional interactions: Regional value chains are preferred. States welcome economic flows when they see themselves as economically competitive. A degree of deceleration of globalisation accompanied by smaller geographical scope of coordination and greater fragmentation of ownership becomes evident.	Weak economic globalisation accompanied by strong social globalisation and focus on regional interactions: Strong social globalisation is reflected by global norms and institutions. Enhanced technical know-how and access to information strengthens the sense of solidarity. Consumers from more affluent countries are more willing to shoulder additional costs.	Strong (economic) globalisation with highly specialised networks: National governments strongly coordinate with each other to correct global inequities. Despite strong economic globalisation, there is scepticism towards a global government. Economic disputes between states are mostly solved through global but private dispute resolution.
Economic organisation and market dynamics (Brautigam, 1991; Cerqueti & Coppier, 2009; Dieye, 2020; Evans, 2012; International Monetary Fund [IMF], 1988; Robertson, 2004; Weintraub, 1993; Penetrante & Zartman, 2010)	Associated variables: Socio-economic model; types of policy instruments for sustainable development-related projects Qualifiers: Shared, caring, sparing; subsidies, incentives, public–private partnership, public investment	Sharing economy, incentives and subsidies: Economic growth as an indicator of economic development is complemented by sectoral security (e.g. food security). Policies evolve around the principle of sharing, especially in highly subsidised sectors with scarce resources or high carbon footprints. Regulations sanction excess capacity in goods and services. There are rigorous policies that protect property rights of locals by introducing higher barriers for foreign ownership. Public institutions function as trusted channels for dispute resolution.	Caring economy, public investment and public–private partnership: Economic growth is measured by how economic activities create value for human well-being. Profit-sharing arrangements define economic relations where profits and risks are equitably distributed. The state is an important player in public investment, public–private partnership and "corrective" investment. Civil society groups function as trusted channels for dispute resolution.	Sparing economy, incentives and public–private partnerships: The economy emphasises optimisation and (technological) innovation. It promotes peer-to-peer and platform approaches to lower transaction costs. Economic growth is driven by technological change, fair competition and diversification of the supply side. Public investment targets emerging technologies. There is deeper engagement of the private sector in achieving a sustainable future. Alternative dispute resolutions are conducted either by private actors or by trusted neutral state institutions.

International cooperation and the world order

States cooperate with each other to address common vulnerabilities that they cannot resolve unilaterally. In addition, cooperation is a learning process, whereas reciprocity plays a significant role in maintaining the attractiveness of cooperation (see Messner, Guarín, & Haun, 2013). Because T2S partly deals with global challenges that are resolved both globally and locally, international cooperation (and how it connects to domestic decision-making) plays an important role, not only when coming up with visions for a sustainable future, but also when creating solutions for challenges related to transitions. The relations between the "global" and the "local" can be understood as a spatial and quality category, with the boundary merely defined by the Westphalian principle of state sovereignty. The global and the local spheres, though interconnected, have distinct processes, actors and dynamics. At the same time, their relations are existential because the global cannot exist without the local and vice versa.

Recently, new subcategories have gained attention as the analytical usefulness of the global and the local is being questioned. One of these include the "regional", which refers to a limited space defined by spatial or "quality" proximity (see Middell, 2018). In addition, the category "sectoral" is emerging, which refers to relations evolving around a specific sector, such as energy. Sectoral can be global. At the same time, it implies a technology-driven approach in categorising interactions. The term "international" has a legal character that touches upon the principle of state sovereignty, with national governments representing states. Non-state actors can directly participate in international relations if they are perceived as a legal entity (e.g. sign legally binding international agreements). Other non-state and subnational actors can influence national governments, but they usually cannot sign agreements representing states. Therefore, agreements between national governments are "international", whereas functional and institutional interactions among state and non-state actors with a global reach are referred to as "global" (and regional if they have a regional reach) (see Aspinall, 2002; Martin & Simmons 2010).

International cooperation depends on how power is distributed among countries and among non-state and subnational actors. At the same time, as this paper assumes, even in the sharpest asymmetry of power, the interdependence between actors leads to the sense of a shared reality. This shared reality sets a stage to cooperate not just to resolve common vulnerabilities, but even to assist others to address their national problems. Therefore, this paper argues that hierarchies do not need to impede trust in international cooperation. The power game, that is, the set of expectations and leverages defined by power, motivates different sets of preparations, roadmaps, strategies and contingencies to achieve the goals (see Hernandez, 2014b; Zartman & Rubin, 2000). Although international cooperation is integrative and provides positive outcomes at its core, it cannot be separated from power calculations, and not just because it is both an independent and dependent variable to international cooperation (Dahl, 1957; Martin, 2010). At the same time, the power distribution among states reflects the world order (see Thiel, 2017). Changes in this power distribution lead to changes in the world order, whereas – as this paper argues – these changes in both the power distribution and world order lead to different ways in which state and non-state (or sub-state) actors prefer to cooperate. The scenarios reflect three possible references to international cooperation.

The strong pathway, driven by political transition, sees international cooperation as an instrument of national policy-making. International cooperation's functional value convinces states to temporarily give up elements of their sovereignty. In this pathway, cooperation with other states is defined by its self-perception of its power. The states exercise power as an instrument to advance national interests. Power is defined by the state's ability to enforce regulatory autonomy in the context of global interconnectedness. In addition, power in this world order is differentiated by power through formality, procedures and the materials involved. The state adjusts its negotiation strategy, depending on its environment. For example, a weaker state will tend to focus on building coalitions and alliances, whereas a powerful state will most likely prefer negotiations with a smaller number of states. Another example is that weaker states will more likely focus on issues, whereas powerful states will focus on processes and structures. A state enters an international agreement when it sees that the pay-offs of cooperation are higher than inaction. However, there are cases in which non-participation is itself a disadvantage because the benefits are only available to participants. Therefore, in this pathway, free-riding is politically and technically not possible.

In the strong pathway, when states are cooperating, their behaviours both define and are defined by the pathway. The states' negotiation behaviour and focus on pay-offs of international agreements imply a world order that is primarily polycentric in terms of the concentration of power. This means that commitments to the international agreements are most likely honoured when they are aligned to their national interests. If not, the states evaluate whether the gap between their national interests and the goals of the international agreements are structural. If yes, states will seek alternative regimes ("forum shopping") or a new regime is established. At the same time, this polycentricity is mainly defined by "functional" sources of power. This means that the various "centres" of semi-autonomous decision-making systems tend to derive their power and legitimacy through formality, procedures and the materials involved. For example, states will group themselves according to international organisations or alliances, such as the European Union, the African Union, the Organisation of Islamic Cooperation, MERCOSUR and ASEAN. These formal bodies will more likely mirror the different centres of power in the world order as well as the rallying point for countries.

The cohesive pathway, driven by societal transition, sees a polycentric world order and non-state-centred global cooperation as an outcome of global citizenship. In addition, global cooperation in this pathway is almost synonymous with multilateralism. States as well as non-state and subnational actors cooperate as part of their vision that there is only one global system in which every actor has a place. This cosmopolitan understanding of the world order implies that the Westphalian principle of state sovereignty is most likely limited to political issues, whereas social, economic and environmental issues are resolved through global actions. At the same time, this pathway highlights local needs, traditions and identities as integral elements of global cooperation to achieve sustainable futures in accordance with these needs and identities. This implies that global cooperation involves a "scaling up" and "scaling down" of best practices. Furthermore, the sources of power for state, non-state and subnational actors that define their global engagement are convening, information-associated, moral and symbolic.

As implied by the sources of power in this pathway, power is identity-based and therefore highly dependent on value systems. The different centres of power in this pathway evolve

around value systems. For example, a centre of power may be defined by the actors' (long-term) self-identification, for example, with the universality of human rights. An actor can have multiple long-term memberships in different value-based centres of power. The power of the actor is measured by its "casting out" ability (Raiffa, 2002, p. 19). Casting out refers to the ability of actors to convert different values in order to make them relevant, quantifiable and comparable. Such abilities include providing the needed technical and expert information, or presenting itself as an appropriate role model. Moral leadership in achieving a sustainable future is an important requirement in this pathway.

In the efficient pathway, driven by economic transition, state, non-state and subnational actors cooperate due to expected pay-offs. In this pathway, both international and global cooperation co-exist due to the role of international agreements in regulating the competitive interactions of these actors. At the same time, cooperation among non-state and subnational actors can occur quasi independently from state actors. In this pathway, the focus on value expands the scope of the pay-offs from cooperation, which also implies a broader definition of economic well-being. The global value chain approach in this world region foresees different but coupled sectors (e.g. energy, agriculture), all of which share their outputs to achieve sustainable futures. This pathway favours the increase in value as well as productivity (including livestock intensification) through optimisation and innovation. It emphasises economic transition through technological change, fair competition and diversification of output markets (supply-side) as well as through a sustainable value chain and circular economy. Furthermore, free-riding is limited, if not sanctioned, in this pathway. To achieve this, negative externalities are effectively addressed through international agreements.

The world order is polycentric in this pathway, whereas the centres of power are rather technology-driven. The sources of power are convening, information-associated, moral and symbolic (role model). These sources enable states to find the appropriate "dose" or "mix" of their global engagement. The power of the actor is measured by its "labelling" ability, which refers to the connecting of value to a specific label. For example, countries that arrive with the most convincing speech act (e.g. "Our industry is clean and sustainable") exercise leadership – assuming leadership allows the convening of agendas and setting the standards. Each centre of power has a distinct set of norms, standards and sanctioning mechanisms that is shared by those actors supporting this centre. For example, expertise in information technology can be concentrated in a few areas, and these areas will attract other types of expertise, and so on. Due to access to financial resources, these areas will more likely create and host powerful networks. Multiple memberships in these centres of power are likely limited, whereas there are existing mechanisms to harmonise and mutually recognise. Because cooperation between centres of power are most likely driven by specialisation, additional global institutions are needed to coordinate between these centres of power. Each centre fulfils a specific purpose, and when this purpose ceases to exist, the centre of power either disbands or seeks a new purpose. The duration of membership in a centre of power is most likely medium-term, and barriers to changing membership are mostly related to lock-ins. Therefore, the ability to change membership is more likely linked with the ability to shoulder transition costs. In addition, leadership in each centre of power is based on the ability to provide information, convene the agenda and provide the concrete materials needed for economic well-being.

Public policy

Public policy is one of the most important characteristics that can make or break T2S. Public policy is the face of T2S because it represents, as Paul Cairney (2012, p. 5) contends, "[t]he sum total of government actions from signals of intent to the final outcomes". Public policy is a web of decisions and actions by state and government agencies and institutions that are driven by values and also allocate values (Easton, 1953). Public policy and its organisation mirror the steering capabilities of state and government bureaucracies (Breuer et al., 2019; Hernandez, 2014c). For example, Anita Breuer et al. (2019) see the need for public policy organisations to effectively disentangle complex interactions between the SDGs and their targets. This can be done, for instance, in the case of implementing the SDGs by systematically mapping the linkages between SDGs (and their policies) and translating interdependencies into action. Particularly in the context of T2S, public policy (and its organisation) is increasingly linked with good governance and equated with evidence-based approaches (see Covarrubias et al., 2019; Pittman & Armitage, 2019). Any transformation process to achieve a sustainable future requires that every single element of public policy be measured by its rigor or quality in order to achieve sustainability goals. Public policy is an evident characteristic of the SDG-aligned futures scenarios. The comparison of the public policy of the three futures will look at how the policy cycle – that is, agenda-setting, formulation, legitimation, implementation and evaluation – will likely unfold in each of the pathways.

Public policy in the strong pathway, driven by political transition, follows the rationale that T2S can be achieved with strong, rigorous and high-quality steering through state and government institutions. The successful policy cycle is determined by the strength, rigor and quality of these institutions. Public policy in this pathway foresees the state both as a regulator to ensure that societal actors follow the rules of the game and as a co-player, especially in important sectors such as energy and health. The policy outcome can be enhanced by certain formats, designs and approaches, as reflected in each stage of the policy cycle. In this pathway, agenda-setting in public policy is typically formality- and procedure-driven, with certain institutions tasked to identify emerging issues and provide an overview of the costs of inaction and the benefits of early and adequate response. The formulation of policy is similarly formality- and procedure-driven. State and government agencies closely coordinate with each other as well as approach and engage with non-state and subnational actors through closed-door expert meetings.

The authority of public policy in the strong pathway is mostly legitimised through "input legitimacy". At the same time, authority, which is primarily defined by rights and duties, is keen on asserting power by correctly applying formal rules and procedures. The electoral systems of states in this pathway are highly sophisticated in order to represent national conditions. Due to the prioritisation of smooth transitions between administrations, electoral systems have high barriers against cheating and manipulation. In many cases, the principles behind the design of an electoral system follow the logic of preventing disruptive "winner-takes-all" outcomes. These principles include, for example, combining majoritarian and proportional representation to cater to the domestic constituency. The representation of minorities is constitutionally and/or informally guaranteed through special formulas in the electoral system, such as guarantees for proportional seats in the legislature or de facto quotas for minorities in the government cabinet. In addition, the legitimacy of public policy is often enhanced through plebiscites and referendums on policy outputs for pre-determined

sets of issues. The binding characters of these plebiscites and referendums can vary among states. In states with a significant authoritarian tradition in public policy, input legitimacy can still be important, particularly at the local level. In addition, shared meanings, group identities and internalised norms are additional major sources of legitimacy for governance structures in this pathway.

In implementing policies, state and government organisations depend on their bureaucracies. The top-down approach in policy implementation implies that the state is more likely to be a significant and attractive employer of the population. In addition, the bureaucracies are highly sophisticated and well-tuned. For example, there are clear protocols when responding to emergencies such as natural disasters and pandemics. While the state has flexibility in its prerogatives in implementing emergency measures, these protocols are intend to guarantee transparency and accountability. Complementing this flexibility is the high regard for close coordination between the central and local government units, while still maintaining clear and widely respected jurisdictions. In this world region, T2S serves as a cross-cutting issue that necessitates well-designed cooperation between state and government agencies and institutions. The evaluation of policies is done by independent state bodies with guaranteed powers to identify and sanction inefficiencies. Similar to policy development and implementation, the states seek assistance from international bodies to evaluate the design and gains of policies when these policies have effects on the policies of other states.

In the cohesive pathway, driven by societal transition, public policy is generally inclusive and integrative. Coordination between state and government agencies and institutions is fragmented in terms of the specialised policies necessary to adapt to the needs of the different target groups. Coordination between national and local government units represents an effective partnership to resolve local problems. Local government units enjoy a significant degree of autonomy in policy development and implementation. The state apparatus is supported by a broad coalition or network of political parties, national and local government units, and other non-state or subnational stakeholders to better cater to the local problem issues. This broad coalition embodies the broader definition of government in this pathway. Because political parties are used to collaborate and coordinate with each other, the continuity of policies is generally smooth. In most cases, the differences between the political platforms of political parties are marginal.

Agenda-setting in the cohesive pathway is data-driven, which entails close collaboration with non-state and subnational stakeholders. Because the design of the policies tend to be user-centred, end-users from local communities are de facto co-designers of policies. Policy implementation is bottom-up-oriented, with the implementation initiated by the target group or end-users. Consultations between government units, state institutions and non-state or subnational actors are participative, effectively legitimising the public policy organisation. This participatory and deliberative process in policy-making is the main source of legitimacy in this pathway, which can be coined as “process legitimacy”. In addition to this process legitimacy, the careful balancing of input (through improved formal representation) and output legitimacy (through welfare services) is achieved through evidence-based policy bargaining. In other words, formal representation is ensured by the principle that policies are implemented when there is broad consensus among stakeholders. At the same time, there are adequate compensatory mechanisms to ensure that policy gains are not achieved at the

cost of others. Policy evaluation is conducted within policy networks, with independent state and non-state actors collecting good practices for replication.

In the efficient pathway, driven by economic transition, public policy has regulatory mandates to ensure that societal actors follow the rules of the game. The organisation of public policy is perceived to be most effective when policy networks are fragmented and coordination between state and government agencies and institutions is reduced to a minimum to limit transaction costs. In addition, a significant level of competition among these institutions is accepted, if not encouraged. The jurisdictions and mandates of each institution are clear, and there are sets of self-constraining mechanisms to ensure that these institutions do not overstep their mandates. The competition is decided by the approving public. In addition, participation in policy networks, that is, the clearing houses of relevant public and private actors, is more likely exclusive to only those who can provide the most useful contributions. Memberships in these networks are limited to a small number of actors and often short-term, as the value of contributions change. Therefore, there is a high level of information-exchange, particularly within networks. At the same time, state and government agencies and institutions diligently observe and document the different interactions between non-state and subnational actors to correct disruptive developments.

The policy cycle in this pathway is fast-paced and "lean" to assure quick responses to emerging problem issues. Policies are often designed as sanctions, rewards or incentives. Policy instruments often target behavioural changes through incentives. This approach requires highly rational actors with access to evidence. The legitimacy of policies is ensured through outputs, that is, through the effectiveness of policies to achieve the targets. Legitimate policies are those that can achieve the goal with the least amount of intervention, for example in the economy. Policy implementation in this pathway is highly data-driven and requires various types of public–private partnerships, for example to finance necessary projects. Implementation requires access to information by public entities to effectively monitor the actions of non-state and subnational actors. Policy evaluation is regarded as a very important stage of the policy cycle. Policy evaluation is a social control conducted by both politically independent state institutions, such as the Central Bank, and networks of autonomous non-state or subnational entities with global or national scope, such as international rating agencies, NGOs and communities of scientific and technical experts. For example, sustainability standards or corporate social responsibilities set up by both private and public actors strategically complement public policies by covering the areas that the "lean" public policy organisation cannot. Voluntary sustainability standards, which are often more ambitious than regulations, are recognised as effective bottom-up instruments to entice and reward "good" practices (see Glasbergen & Schouten, 2015). Therefore, there is also a significant level of competition between private and voluntary commitments and regulations.

Globalisation, regionalism and economic flows

The transformation to sustainability is inherent to globalisation because sustainability as a concept has emerged in the context of intertwined vulnerabilities that transcend state borders (Hernandez, 2021). Nevertheless, it needs to be highlighted that globalisation primarily addresses the intertwined economic activities of countries caused by technological changes in production and distribution as well as behavioural changes as responses to these technological changes (see Baldwin 2016; Hoogvelt, 1997). Therefore, globalisation is

predominantly attributed to changes in the configuration of the global economy and to changing interpretations of and attitudes towards globalisation. Examples of causes of global shifts include the industrial revolution, colonisation, conflicts between countries, technological revolutions and even global discourses following enhanced access to real-time information (see Baldwin, 2016; Dicken, 2015; Eichengreen, 2011). The emerging "great green revolution" is particularly complemented by a new era marked by accelerated globalisation (see Bardhan 2010; Hernandez, 2021). In this paper, globalisation is primarily characterised by the scope and quality of global value chains, which depict the organisation of international production, trade and investments through different stages of the process across different countries (see Gereffi & Lee, 2016). Globalisation has served as the enabler of this organisation and is also expected to impact T2S. The differentiations between the world regions can be discovered by looking at the quality of global value chains, as indicated by the volume and direction of economic flows (supply, international trade and FDI).

The strong pathway, driven by political transition, sees weak (economic) globalisation but strong regional (political and social) interactions, whereas regions are primarily understood as technology hubs that may or may not fully correspond to geographical conglomerates of countries. Regional value chains are preferred over global value chains. Seeking sufficiency, states carefully combine "protectionist" policies, such as limitations to foreign ownership, with higher barriers for the privatisation of important sectors, such as energy, health and water. In addition, barriers to economic flows, trade and capital are put in place with the intention of maintaining state sovereignty. Selected system-relevant sectors such as energy, agriculture and water are highly subsidised or controlled by state-owned companies. At the same time, states welcome economic flows when they see themselves as being economically competitive. This pathway is dominated by regional value chains, not only for environmental reasons, but also to allow for more control of the economic flows. Therefore, this pathway can expect a degree of deceleration of globalisation, accompanied by a smaller geographical scope of coordination and greater fragmentation of ownership. In addition, because the ownership of each stage of the value chain is more likely to be assumed by developing countries, this pathway sees a reduction of income inequality among countries.

The cohesive pathway, driven by societal transition, is characterised as having weak (economic) globalisation and a focus on regional interactions. However, social globalisation is strong in this pathway, with several global institutions reflecting a convergence of norms and standards, for example, regarding human rights and political liberties. The enhanced technical know-how as well as access to information strengthens the sense of solidarity. Middle-power states as well as individual personalities emerge as "moral" leaders mobilising global support for an improvement in labour rights within all stages of global value chains. Consumers' improved access to information shifts consumers' preferences towards sustainability. These global institutions and degrees of solidarity are accompanied by global transfer mechanisms, for example allowing vulnerable countries to adapt to the negative effects of climate change. Consumers from more affluent countries are more willing to shoulder additional costs to ensure that sustainable standards in production are followed. At the same time, economic globalisation is decelerated, leading to a greater focus on regional economic flows because economic activities are highly influenced by social norms. In other words, states and global investors prefer to trade and invest in states with whom they share common values and experiences. Values and norms play a highly significant role in trade relations. This can serve as a pulling effect for various democratisation waves in other

countries. In this pathway, investment is also often defined as "corrective", which means that foreign investments will more likely not merely focus on highly profitable sectors, but also on sectors with high social importance, such as public health.

The efficient pathway, driven by economic transition, is characterised as having strong (economic) globalisation with highly specialised networks rallying behind global value chains. These networks are dominated by autonomous economic actors who can often decide and act without coordinating with their national governments. In addition, there are low levels of information asymmetry between these economic actors and national governments. Nevertheless, national governments strongly coordinate with each other to be able to correct resulting global inequities. Therefore, this pathway is (as a pulling effect) more likely to enhance international cooperation. Differences in political systems will be less contentious. At the same time, this pathway sees the importance of regional trade agreements, as countries specialise and assume leadership in specific technologies to gain competitive advantage. Regional forums offer more benefits than global ones due to lower transaction costs, familiarity with local standards and fewer market barriers. These regional trade networks often compete with each other to attract the most valuable actors. Global institutions do not have the full mandate to coordinate global economic interactions because of scepticism towards a global government. Economic disputes between states are mostly solved through global but private dispute resolution. In addition, because networks compete against each other, memberships in networks are a strategic decision.

Economic organisation and market dynamics

Economic organisation and market dynamics are characteristics of the governance of T2S, defined by the socio-economic model used to frame economic behaviour, activities and relationships (peer-to-peer, business-to-business and peer-to-business) as well as connections between the supply and demand sides (see Reisman, 1998; Weintraub, 1993). However, the usefulness of characterising market competition and economic organisation for understanding T2S can be clarified in two ways: 1) how these economic activities and relations promote paradigm shifts towards sustainability, and 2) how other achievements towards T2S change socio-economic models. The differentiation between the three world regions will focus on the different types of socio-economic models – *sharing, caring and sparing* – that will mostly endure, given the assumed priorities and qualities of governance modes and institutions, such as property rights (see Evans, 2012; Paltiel, 1989) and public accountability (see Brautigam, 1991).

In the strong pathway, market competition and organisation evolve around the model of a sharing economy (see McLaren & Agyeman, 2015). The economic paradigm is focused on the public sector providing the backbone of infrastructure and services in order to cater to the basic needs of the population. Economic growth as an indicator of economic development is complemented by sectoral security (e.g. food security). Political instruments and regulations are introduced to enforce a shared economy that involves the sharing of resources, creation, production, distribution, trade and consumption of goods and services in selected sectors or segments. State and government institutions see the benefits of a shared economy, particularly in highly subsidised (and therefore costly) sectors with scarce resources or with high carbon footprints. For example, pharmaceutical companies will be obliged to lend or lease their production sites to other companies, particularly during emergency times such as a pandemic. Cooperatives that share equipment and know-how,

for example in the agricultural sector, will be rewarded for enhancing food production in local communities. Therefore, political instruments will instead target market segments with high potentials, for example, for energy savings and environmental conservation. Market organisation is heavily dependent on information technology that enables the identification and distribution of excess capacity. Digitalisation helps reduce waste in food, energy and other resources. National governments therefore guarantee access to information technologies by subsidising innovation in this field. In this pathway, there are regulations that sanction excess capacity in goods and services, leading consumers as well as producers and other market actors to adapt their behaviours. A significant requirement for the sharing economy is the high level of trust because it heavily relies on the will of users to share and to make an exchange. Therefore, countries in this pathway will most likely have low crime rates and effective and trustworthy police.

In addition, for many countries in this pathway, there are more elaborated protectionist policies in system-relevant sectors such as energy, banking and health (e.g. limitations to foreign ownership or fixed/pegged currency and exchange rate regimes, import barriers, tariff rates, taxes on international trade – as a share of current revenue – and capital controls). These policies are complemented by rigorous policies that protect the property rights (including intellectual property) of locals by introducing higher barriers for foreign ownership. For example, there are limitations or additional barriers for foreigners who want to own real estate properties or assume ownership of local companies that provide goods and services in areas deemed system-relevant by the state. A pulling effect of this characteristic is the deceleration of economic globalisation in selected sectors that are of national significance. This could also lessen or even prevent speculation on vulnerable sectors such as food production, therefore promoting food security and income equality.

In the cohesive pathway, driven by societal transition, the "caring" socio-economic model defines economic activities and relationships. The economic paradigm evolves gradually beyond a capitalist market economy model. This means that economic growth is measured by how economic activities create value for human well-being. In other words, the production of values can consist of (paid and unpaid) products and services that have exchange (monetary) value on the market as well as value in terms of reciprocity, local exchange systems such as barter, cooperatives or solidarity values. A strong public–private partnership values the provision of social goods by both private and public actors, which further fosters a strong increase in human services and their integration into the economy. This also implies the possibility for everyone to produce for the market or the community. For example, there are policies that support private households or cooperatives in producing green electricity for the community. Another implication of the caring economy is that products and services that are destructive (e.g. weapons, artilleries) are considered as costs and liabilities for society. Furthermore, pay-offs for investments are not based on fixed interest, but on how the investments created value for consumers and society. In addition, profit-sharing arrangements define the relations between providers of financial capital and human capital (expertise, entrepreneurial experience, etc.), whereas profits and risks are equitably distributed according to the resources they provided (similar to the *Mudarabah* and *Musharakah* principles; see Dieye, 2020; IMF, 1988). The state is an important player in public investments through multiple types of public–private partnerships. Governments engage in long-term partnerships with the private sector to produce and distribute products and services, especially in cost-intensive sectors such as infrastructure.

In addition, the state maintains regulations that foster fair and reliable market competition. At the same time, the state regularly intervenes to "correct" dynamics that are outside the "tolerable window" (see Bruckner et al., 1999; Petschel-Held, Schellnhuber, Bruckner, Tóth, & Hasselmann, 1999). Moreover, transfer mechanisms that redistribute economic pay-offs are complemented by private schemes to ensure that good performance is still rewarded. "Corrective" investments by the public sector are established to address emerging market inefficiencies or to contain technological innovations that can disrupt intrinsic values that are important for the quality of life. Networks of non-state and subnational actors collaborate with public entities in identifying and resolving negative externalities. Economic policies are carefully complemented by "equitable" social policies, whereas social costs are directly shouldered by those receiving the largest economic pay-offs (similar to the "*soziale Marktwirtschaft*" concept) and not by the general public. Negative externalities are appropriately addressed through stricter definitions of property rights (to limit the influence of economic activities on unrelated parties), taxes on goods and services that lead to negative externalities and subsidies indirectly financed by those causing these externalities.

The efficient pathway, driven by economic transition towards sustainability, is characterised by a sparing economy that emphasises increasing productivity (e.g. livestock intensification) through optimisation and (technological) innovation. The economic paradigm is focused on aligning the market economy model with sustainable development goals. The sparing socio-economic model promotes peer-to-peer and platform approaches to lower transaction costs when connecting supply with demand. This economic model requires knowledge-driven approaches in collective and individual decision-making. Economic growth is driven by technological change, fair competition and diversification of the supply side (output markets). Because of this understanding of economic growth, public investment is motivated to target emerging technologies. Economic growth is therefore no longer predominantly defined by market competition but by how much of the resources and costs are "spared" or optimised.

In addition, the prominence of sustainable global and regional value chains in economic relationships leads to a strategic balancing between specialisation and the diversification of the supply side. Market competition is defined by an economic entity's ability to emerge as a first mover. For example, the ability to define sustainable industry standards is a competitive asset, as it poses additional barriers to those companies that do not adhere to the standards. In addition, these private commitments act as a form of social control of economic activities and allow a deeper engagement by the private sector in achieving a sustainable future. The adherence to sustainability standards is profitable due to the public sector's incentives and other market instruments to promote sustainable economic activities. This has a pulling effect in other countries and also affects the quality of state and government institutions because it becomes easier for policy-makers to advance more ambitious policies. In addition, with the private sector driving economic transition towards sustainability, the public sector is able to reserve more financial resources for welfare and education.

3.2.3 Social cohesion and legitimacy – how approval is achieved

The transformation to sustainability is both a result of a set of changes and a cause of further changes due to the adaptation to previous changes. These "cocktails" of changes can be disruptive when the social system ceases to be cohesive and therefore squanders the approval of society at large. As argued in the introduction, a society without a minimum level of cohesion cannot undergo a process of reckoning or a process of self-reflection about what society at large can approve or disapprove of. Whereas Dick Stanley (2003) defines social cohesion as the willingness of members of a society to cooperate with each other, Anna Manca (2014) characterises social cohesion as the process of mobilising the sense of belonging in a community that defines the relationships among the members within this community. This paper contends that social cohesion is achieved when society at large continues to approve of the various policies being introduced by the agents to address various challenges.

Social cohesion is dynamic and requires the careful balancing of policy-making (see Berger, 1998). On the one hand, social cohesion is undermined when the social system is stagnant and fails to adapt to changes. On the other hand, it is also undermined when the social system evolves too fast or so extremely that many societal actors feel disenfranchised and that their identities are being dismantled. To ensure that the transformation to sustainability does not risk undermining social cohesion and losing public support, a certain set of qualities of state and government institutions is needed. These qualities should allow actors to trust that governance modes and institutions can facilitate reciprocity to foster cooperative interactions. Table 3 summarises the characteristics that require a distinct set of qualities of governance modes and institutions to ensure social cohesion as the transformation process unfolds.

Human rights and the rule of law

Adherence to human rights and the rule of law are characteristics that can ensure social cohesion as T2S unfolds (see Caney, 2009). The United Nations has identified human rights as a key mechanism for achieving the SDGs (see UNGA, 2015). Human rights establish barriers for unsustainable pathways through informational and legal mechanisms of social transformation (see Haglund, 2019). For example, the obligation to adhere to human rights motivates acceptable policy choices to be more public-minded (Haglund, 2019, p. 13). In addition, human rights, particularly collective rights, prevent powerful actors from monopolising control over resources.

Governance entails citizens "surrendering" a certain degree of their liberties for the sake of all. At the same time, the "willingness to surrender" liberties is not infinite, and the threshold is determined by human rights. For governance modes and institutions to be conducive to T2S, they need to constantly earn the trust of the constituents and explain to them that the "pain" brought by policies will not go beyond predetermined thresholds. These thresholds are determined through executive, legislative and judicial processes as well as through global norms. The convergence of the principles of human rights and the rule of law is an inherent consequence of social and economic globalisation.

Table 3: Social cohesion and legitimacy

Characteristics		Political-transition-driven pathway	Societal-transition-driven pathway	Economic-transition-driven pathway
Human rights and rule of law (Adger, 2010; Brondizio, Ostrom, & Young, 2009; Caney, 2005; Haglund, 2019; Roberts, 2002; Zengerling, 2013)	Associated variables: Function of human rights for governing T2S; scale of advancing human rights Qualifiers: Duties, entitlement; top-down, bottom-up	Duties of the state, top-down: Human rights enable the state to discern and institutionalise the type of participation and representation that is needed to maintain social cohesion. In some cases, the state needs to persuade the public to implement corrective policies. The legal culture tends to favour precautionary principles.	Entitlement, bottom-up: Human rights inform the state of the entitlement of persons and communities. The viability of new technologies or policy options is measured and assessed through its value in connecting people and communities. The legal culture prefers the polluter-pays principle. (Collective) social rights as well as individual rights are highlighted.	Entitlement, bottom-up: Human rights inform the state of the entitlement of constituents to access and control resources as well as the benefits from sustainable systems. Economic rights such as property ownership and autonomy of contracts are key. The preventive principle is prominent in the legal culture.
Solidarity and welfare regime (Adger, 2010; Boström & Tamm Hallström, 2010; Kostka & Zhang, 2018; Li, 2013; Smith & Lipsky, 1993; Wu, 2013)	Associated variables: Quality and scope of welfare policies Qualifiers: Membership-based, communal, privatised/franchised	Membership-based: Recipients gain the right to access welfare either through birth or tax payment. Welfare aims to pacify potential political challenges. The top-down approach is reflected by state courts compelling executive and legislative branches to regularly improve welfare services due to the principle of equity and equality.	Communal: The bottom-up approach recognises the target groups (recipients) as co-designers and co-implementers. Social fitness is itself a commercial commodity. This high level of social capital can be attributed to "social enterprises" with adequate political leverage, ensuring retributive justice. Access is universal and open to all.	Privatised: The state maintains a privatised or "franchise system" of public services. The private sector is directly involved in implementing welfare policies. Contributions to the welfare system are privatised, which means that each citizen is obliged to contribute to the welfare system. The state dictates a minimum threshold to ensure human dignity.
Equality in income distribution (Atkinson, 2015; Cerqueti & Coppier 2009; Evans & Popova, 2014; Hunko, 2017; Krueger, 2012; Payne & Raiborn, 2018)	Associated variables: Transfer mechanisms Qualifiers: Tax system (progressive, regressive), universal basic income, social protection, public–private partnership, competition (by setting good example)	Tax (progressive), social protection, competition: Income inequality leads to political apathy and implies ineffectiveness of existing policies and structures. It is a political risk that can easily accelerate into disruptions or even system collapse. Policies resolve and preempt income inequality through progressive taxation, social protection and services, public funding of education and collective bargaining of non-state groups. The state sets the standards in equitable pay and social benefits.	Tax, (universal) basic income, collective bargaining: Income equality is addressed through the strengthening of collective bargaining. Universal basic income (based on collective wealth) ensures a minimum level of income, especially for the informal sector as well as for precarious jobs, homeworkers and other low-remunerated jobs.	Public–private partnership: Due to low levels of information asymmetry between all societal actors, there is a competitive payment system. Companies in less-profitable sectors or in less-profitable areas are still able to provide better salaries to their employees. Equality in income distribution is interlinked with other political and economic policy goals. Inequality can be reduced through sustainable growth.

The three pathways will differentiate human rights (and rule of law) according to their meaning for governing T2S.

For the strong pathway, driven by political transition, human rights and the rule of law fulfil the function of informing state and government institutions of their duties and also how these duties are translated into action and how they generate broader social change. Human rights frame policy discourses and draw public attention to the human dimension of transformative change. Due to the clear and transparent mandates and jurisdictions of government agencies and units, the public is able to attribute shortcomings to the failures of government officials and demand accountability and improvements from the responsible agencies. Without impunity, government agencies are keen on maintaining a good track record. State and government institutions are able to discern and institutionalise the type of participation and representation that is needed to maintain social cohesion and advance political transitions to achieve the envisaged sustainable future. For example, the top-down advancing of the rights of minorities such as women, children and the physically challenged through quota systems or equality policies are actively pursued by the state because they enhance political participation and therefore strengthen social cohesion. In some cases, corrective measures that aim to eliminate disadvantages of minorities are unpopular, and policies are complemented by persuasion efforts by the state. In addition, limitations to individual political liberties during extraordinary events (e.g. natural disasters, pandemics) are widely accepted because the citizens can trust state and government institutions due to the existence of constitutional limitations. Jurisprudence is highly dependent on technical and professional experts. The legal culture tends to favour "precautionary principles", through which risks are reduced or prevent irreversible damage (see Gollier et al., 2000).

Human rights in the cohesive pathways, driven by societal transition, fulfil the function of informing the state of the entitlement to live in communities with human dignity. Human rights, including the right to development and social rights (e.g. right to access social security benefits), frame policy discourses and draw attention to the socially innovative dimension of policies. For example, the social rights of indigenous communities highlight the entitlements of persons and groups that are guaranteed by norms and traditional practices as well as legally institutionalised by the state. These entitlements are formulated and implemented with a bottom-up approach, through which the target groups discern which additional protective mechanisms are needed to ensure that they can live with human dignity. Non-state and subnational actors assist national institutions in systematically collecting and analysing data to identify necessary actions. The level of social capital is high due to existing social protection policies (see Adger, 2010; Boström & Tamm Hallström, 2010). This high level of social capital can be attributed to "social enterprises" with adequate political leverage, ensuring retributive justice. These social enterprises are comprised of civil society groups, non-profit groups as well as the independent "charity arms" of multinational companies with the mandate to correct negative developments in society. Social innovation, a key element of T2S, is dependent on communities and kinship structures. This means that the viability of new technologies or policy options is significantly measured through their value in connecting people and communities.

In this pathway, human rights provide guardrails around what could be considered viable in terms of impactful policies. This implies that the legal culture tends not to tolerate legal loopholes because courts resolve the ambiguity in the law by taking the time to ask what

the lawmakers had in mind when formulating the law (see Asgeirsson, 2020). The interpretation of the law is dictated by its substantive purpose: What were the intentions of the lawmakers? Thus, the interpretation of the law is goal-oriented and case-specific. Because of this tendency, legal decisions tend to be evidence-based and rely on scientific facts when evaluating the impacts of these rules and regulations. In addition, the legal culture prefers the "polluter-pays principle", which can take advantage of the more prominent role of pluralist networks as well as of the "*locus standi*" practice, which automatically grants standing by act of law, for example to environmental groups (see Stenis & Hogland, 2002; Zengerling, 2013).

Human rights in the efficient pathway function as a clearing house that informs the state of the entitlement of constituents to access and control resources (including income and opportunities) as well as benefit from the advantages of sustainable systems. In addition, human rights assessments and impact analyses are institutionalised to prevent or redress the negative effects of economic, trade and development policies. Adherence to human rights is not limited to state and government institutions. Other non-state and subnational actors are also subjected to independent accountability mechanisms. Economic rights such as property ownership and autonomy of contracts are key to the discourse on human rights in this world region.

The rule of law is complemented by bottom-up approaches to resolve legal issues. This pathway is characterised by society's preference for arbitration or alternative dispute resolution mechanisms, such as mediation, over litigation (see Ginsburg, 2003; Penetrante & Zartman, 2010). The legal culture recognises that disputes in the market can be resolved without engaging the courts because the private structure of arbitration allows for the consideration of the actors' expectations. In addition, countries belonging to this pathway tend to have more elaborative laws, not only to protect private property rights and intellectual property rights, but also to ensure the autonomy of the private sector to engage in and enforce contracts – for example, non-disclosure agreements tend to be inviolable. At the same time, sanctions and penalties tend to be high for the private sector when rules and regulations are violated, reflecting the prominence of the "preventive principle" in the legal culture.

Solidarity and welfare regime

The integral planning of welfare services is a deliberate policy in all pathways and generally above (ideological) party politics. The main reason for this is that welfare is generally defined as an investment in society (see Li, 2013). All sustainable futures need various types of safety nets for all constituents to ensure approval. Solidarity is not merely an altruistic concept, but rather an intrinsic agreement between the members of society that the strongest is only as strong as the weakest. It is for the benefit of everyone that no one is left behind. Solidarity as a paradigm is deeply embedded in policy-making in all sustainable futures due to the adequate internalisation of negative externalities of other sectors, such as consumption vis-à-vis health, or energy production and distribution vis-à-vis environmental degradation. In the SDG-aligned futures scenarios, solidarity and the welfare regime that enforces it are key components of any pathway towards a sustainable future. Governance modes and structures are the inherent enablers of solidarity.

In the political-transition-driven pathway, public services and welfare policies are highly efficient and well-calculated. In this pathway, other metrics of societal well-being that go beyond production and consumption are used to define the provision of public good, decent income and access to basic needs. Welfare includes unemployment benefits, universal health care, family support, education support, housing benefits as well as recreation – these are state services that primarily aim to pacify potential political challenges. The top-down approach in designing and implementing welfare policies is reflected by state courts compelling executive and legislative branches to regularly improve or expand welfare services due to the principle of equity and equality. At the same time, there is a tendency that access to welfare benefits is reserved for citizens or residents (and their dependents) that have contributed to the common good. In other words, it follows a membership principle through which citizens gain the right to access welfare either through birth or tax payment. Welfare services have inherent political goals such as upholding income equality while considering individual contributions.

In the societal-transition-driven pathway, public services and welfare policies are highly efficient, communal and nearly universal. There is an emphasis on providing a broad range of excellent public infrastructure facilities and services. The bottom-up approach in designing and implementing welfare policies recognises the target groups (recipients) as co-designers and co-implementer. Welfare and social justice have become integral pillars of market competition and economic development because it is beneficial to include the public as early as possible in business projects (see Kostka & Zhang, 2018; Wu, 2013). Affluence is measured more broadly than just through gross production and income, with other indicators of well-being integrated into public policies (see Fleurbaey & Blanchet, 2013; Jones & Klenow, 2016). In addition, "corrective investment" as a political instrument is not perceived as being a cause of market inefficiencies because such instruments are expected to bring "social yields" that contribute to the common good and therefore benefit all. Because the remuneration for social and communal work is competitive, social goods and services are well-integrated into the economy. Social fitness is itself a commercial commodity. For example, the level of social capital is high due to existing social protection policies (see Adger, 2010; Boström & Tamm Hallström, 2010). This high level of social capital can be attributed to "social enterprises" with adequate political leverage, ensuring retributive justice. These social enterprises are comprised of civil society groups, non-profit groups as well as the independent "charity arms" of multinational companies with the mandate to correct negative developments in society. In addition, access to welfare services is universal and open to all documented and undocumented inhabitants within the state's borders due to the larger concept of world citizenship.

The economic-transition-driven pathway is characterised by the state maintaining a privatised or "franchise system" of public services. Welfare services are covered by the public sector through public–private partnerships or a franchise system (see Smith & Lipsky, 1993). The public sector provides know-how, procedures, use of business models and the right to private providers. For example, the public sector emphasises access to digital data and infrastructure as a public good. The profit margins in these sectors are constantly negotiated with the state. In addition, business and industry actors are also directly involved in implementing welfare policies through voluntary pledges to pay the welfare contributions of their employees. Welfare is generally understood by the private sector as a human capital investment. Some offer additional welfare benefits to attract the best-qualified employees. In addition, retirement and health care are individual responsibilities or even considered as rewards for good performance and should not be communalised. This implies that contributions to the

welfare system are significantly privatised, which means that each citizen is obliged to contribute to the welfare system while allowing considerable profit margins for the private providers. The amount and quality of welfare benefits are dependent on the amounts of the contributions, whereas the state dictates a minimum threshold for the contributions of the people and the benefits that need to be rendered by the private providers to ensure human dignity. At the same time, while the most productive segments of the population are covered by private schemes, there are public schemes for the less "productive", such as the long-term unemployed, low-skilled workers and other minority groups.

Equality in income distribution

Equality, particularly in income distribution, is a key requirement for social cohesion (see Hunko, 2017; Krueger, 2012). It is important to understanding how equality in income distribution relates to the achievement of sustainable futures and how it can further enhance T2S. Equality's pulling and braking effects require more scientific investigation. Existing empirical evidence proves that income inequality not only negatively affects the well-being of those directly impacted by lower incomes, but that it can also be disruptive due to increases in violence, mental illness, substance abuse and rises in right- and left-wing extremism (see Atkinson, 2015; Hunko, 2017; Shi, Zhao, Jang, Fu, & Chang, 2019). Equality in income distribution is a cross-cutting issue that requires a more integrated perspective. Therefore, any pathway towards a sustainable future needs to have functioning mechanisms that can curb income inequality and address challenges brought by the existing inequalities in income distribution.

In the strong pathway, driven by political transition, the state sees the need for political instruments to ensure equality and equity in income distribution (see Hunko, 2017; Rao & Min, 2018). Income inequality is perceived to be highly responsible for political apathy (Esquivel, 2010; Hunko, 2017), which makes it harder to implement further policies. At the same time, societies with significant levels of income inequality will most likely have low levels of social capital, which is needed, for example, when introducing unpopular policies that have positive long-term effects. In addition, inequality in income distribution implies the ineffectiveness of existing policies and structures. Therefore, addressing income inequality has the pulling effect of improving policy mechanisms (see Hunko, 2017; Shi et al., 2019). Moreover, income inequality is a political risk that can easily accelerate into disruptions or even system collapse. For example, inequality in income distribution often correlates to the rise of divisive politics and of right- and left-wing extremist parties that can further undermine social cohesion.

In this strong pathway, the state sees the need for policies that can resolve and preempt income inequality. The state resolves inequality in income distribution through progressive taxation and other extensive redistribution schemes (e.g. universal basic income), social protection and services as well as significant public funding for education to foster social mobility. Examples include regulations to support women to balance family and work. The state generally anticipates and prepares for economic downturns through transfer mechanisms, allowing a more equitable income distribution, also in times of economic crises – and doing this without destabilising governments due to imposed austerity measures. In addition, the state encourages bottom-up approaches by mandating non-state and subnational actors such as labour unions and citizen groups to engage in substantial dialogue with employers and to collectively bargain for more equal and equitable income

distribution. In addition, the state is an attractive employer and attracts highly qualified employees. The state sets the standards in equitable pay and social benefits, and it motivates the private sector to pay more if they want to attract good employees.

The cohesive pathway, driven by societal transition, sees inequality in income distribution as the major threat to achieving a sustainable future. The states in this pathway address income inequality through an integrated approach that follows the logic of solidarity when employing multiple political, social and economic instruments. Solidarity highlights intergenerational contracts, for example, to ensure income after retirement. At the same time, the states agree that bottom-up approaches are key to T2S by strengthening collective bargaining, which enables an end-user approach in resolving factors that lead to income inequality. Labour unions and human rights organisations are well equipped to enforce equalising effects by adapting salaries to the prices of commodities and services and creating more social protection measures and more equal conditions between groups of employees (e.g. men and women, high-skilled and low-skilled, etc.) (see Hunko, 2017). This collective bargaining power limits the possibilities for business entities to quickly cut human resources in times of economic crises. It improves the institutional memory on income distribution by constantly reminding employers that employees waived their right to salary increases during the last economic crisis, and that in times of favourable economic conditions, employees need to be rewarded.

A major instrument employed by the states in this pathway to limit inequality is universal basic income, which is complemented by performance-based remunerations as well as rigorous social messaging about the appropriate use of transfers (see Evans & Popova, 2014). The source of universal basic income is based on collective wealth, and it benefits low-income households that are employed in the informal sector, precarious jobs and other non-remunerated jobs such as homemakers. In addition to the basic income, they can receive additional state benefits to mitigate economic hardship. There are further training programmes to upscale skills to adapt to emerging changes when certain technologies become obsolete. These state benefits are financed through efficient and equitable taxation that limits tax benefits for top earners and eliminates legal and corporate loopholes (e.g. like-kind exchanges) for tax avoidance (see Cerqueti & Coppier, 2009; Payne & Raiborn, 2018).

In the efficient pathway, driven by economic transition, the reduction of the level of inequality is also a deliberate policy goal to achieve a sustainable future. Above a relative poverty threshold, a decent life is guaranteed. The economic transition towards sustainability brought new forms of business that do not focus on maximising profits. Inclusive growth and development in a more sustainable economy are only possible by having equity in income distribution. Income inequality is perceived to have negative impacts on economic performance and development. For example, an increase in the number of top earners is often believed to increase consumer demand. More income means more consumption. At the same time, middle-class and lower earners tend to save more. Therefore, a smaller middle class simply means smaller collective savings. In addition, excessive household debt, which is exacerbated by income inequality, is seen as a major risk factor for financial crises and failed investments (see Krueger, 2012). Commodity prices, especially of primary goods, tend to reflect the purchasing power of those who earn more (see Behzadan, Chisik, Onder, & Battaile, 2017). Furthermore, income inequality increases the barriers to investing in the upgrading of one's own skills, leading to higher

costs to train a future workforce (see Hunko, 2017). When social costs, including welfare, are also shouldered by the private sector through various transfer mechanisms, equality in income distribution becomes an integral part of business models.

In addition, due to low levels of information asymmetry and transparency between all societal actors, there are competitive payment systems, smaller pay gaps (including gender pay gaps) and limitations on excessive wages and rewards. Companies regularly review their job descriptions and compare them to similar jobs at competitor firms. Companies that do not follow the norms on salary are confronted with competitive disadvantages such as loss of prestige, difficulties in recruiting employees with the appropriate qualifications, high fluctuation rates and less productivity. In addition, through public–private partnerships and the franchise system, the companies in less profitable sectors such as health care and education or in less profitable areas have the resources to provide better salaries to their employees. In this pathway, it is assumed that equality in income distribution is interlinked with other economic policy goals. In addition to a progressive tax system, inequality can also be reduced through sustainable growth, which is driven by technological change, fair competition and diversification of the supply side; it is no longer solely defined by profit.

In addition, T2S is dependent on the quality and effectiveness of governance modes and institutions in "performing" their functions (e.g. guaranteeing property rights) as determined by the social contract. The effectiveness and efficiency of the governance modes and institutions serve as indicators of their performance. Public regulation is capable of thwarting oligopolistic trends and reducing entry barriers to new market actors. State regulators have the mandate to oversee oligopolies in a pre-emptive way in order to better identify the potential for market abuses and to open up concentrated markets to substantial competition (see Manns, 2021). The state's ability to enforce anti-monopolistic regulation ensures a continuous stream of start-ups and break-ups that further raise innovation levels. Furthermore, market instruments such as pollution taxes and subsidy schemes are successful in removing market externalities and in aligning market outcomes with other societal goals.

3.2.4 Resilience and learning – how to thwart disruptions and tolerate shocks

The transformation to sustainability requires the ability of governance structures and institutions to survive stress tests caused by endogenous and exogenous shocks and disruptions. Resilience pertains to another group of characteristics of governance modes and institutions to ensure T2S. Moreover, T2S is not linear in terms of its outcome because presumed achievements may lead to disruptive backlashes and paradoxes. Therefore, a careful analysis of the relations between resilience and transformation is needed. An example is the "Green Paradox", in which mitigation policies can accelerate the rate of extraction of fossil fuel stocks, thus accelerating climate change (see Long, 1975; Sinn, 2008). In this example, it needs to be asked whether policy instruments, when combined with a broader conflict context, can lead to paradoxes that may later undermine the ability of the social system to survive stress caused by the transformation process.

Nevertheless, the factor that makes the difference between entrenchment of sustainability and failure of the transformation process is how policymakers and stakeholders are able to learn incrementally. The perspectives from sociology, politics and economics (and their sub-disciplines) are connected by the common understanding that resilience is a tricky

balancing act, and additional institutions are needed to utilise the learning processes that come with shocks. To summarise, to achieve resilience of the social system as T2S unfolds, governance modes and institutions need resources to absorb change and disturbances and still maintain (1) the same relationship between populations, (2) the identity that connects people, (3) the ability of communities to communicate and negotiate with their environment, (4) the ability to allocate scarce resources efficiently, (5) the desired ecosystem services, (6) the specific relationships between interacting species and (7) the essential structures of natural capital (see Brand & Jax, 2007; Brown, 2014; Folke et al., 2010; Thorén, 2014).

According to Kathrin Brown (2014), the concept of resilience is a possible new wave of thinking around sustainability in an age of economic and political instability. She continues that the new popularity of this concept can be traced to its broad definition, which makes it applicable in various fields – from international relations (security and critical infrastructure) to human development (human well-being and agency) to climate change (adaptation and climate resilience) (see Adger, 2000; Brand & Jax, 2007; Folke, 2006). Moreover, resilience seems to be able to contribute an important puzzle part in understanding transformation. Carl Folke et al. (2010, p. 3) identified the scale dimension of transformations and discuss the multiple scales through which deliberate transformational change occurs. They explain that transformations will unfold in multiple scales. In this case, one or two scales can be costly, undesirable or socially unacceptable. Actors and organisations can target these one or two problematic scales without disturbing the non-problematic ones. According to them, containing these scales means introducing one or two more new state variables (i.e. dispute resolution, policy coordination) at lower scales, while maintaining the resilience of the system at higher scales as transformational change proceeds. As achieving a sustainable future is also expected to enforce radical, unplanned and detrimental normative transitions, particularly in energy and consumption, additional attention is needed to address stranded assets and monitor the negative impacts of related changes that could annul past achievements and destabilise socials systems (see Brown, 2014; Folke et al., 2010). Table 4 summarises the characteristics that can enhance the resilience in T2S given the sets of governance modes and institutions in the three pathways.

Table 4: Resilience and learning in the SDPs

Characteristics		Political-transition-driven pathway	Societal-transition-driven pathway	Economic-transition-driven pathway
Innovation, education and research (Becker, 1993; Brand & Jax, 2007; Chou & Liou, 2012; Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007; Ryan, Tilbury, Blaze Corcoran, Abe, & Nomura, 2010)	Associated variables: Expenditure on education as percentage of GNI Qualifiers: High (>5.5%), medium (4.47 to 5.5%), low (<4.47%)	High (>5.5% of GNI): Additional policies are in place to maintain the symbiotic relationship between the population and the state by enhancing the political responsiveness of society at large. The education system focusses on critical thinking. Transformative research supports evidence-based policy-making. Innovation is rigorously driven by government programmes, grants and subsidies with a focus on impact.	High-medium (4.47% to 5.5% of GNI): Resilience is heterogeneous and means the ability of the system to maintain its identity. The bottom-up approach in education involves target groups as co-designers of curricula. Innovation and research and development (R&D) are measured according to their impacts on the communities. Public expenditure on education is lower because the state saves transaction and coordination costs.	Medium-low (<4.47% of GNI): Resilience is technology-driven and refers to the ability of the system to withstand value chain disruptions as well as fiscal or environmental shocks without losing the capacity to allocate resources efficiently. Innovation, education and R&D are technology-driven. Private funding is significant, whereas public funding focusses on less-technology-related disciplines.
Conservation and natural resource management (Borlaug, 2007; Brown, 2014; Holling, 1973; Kremen, 2015; Marsden, 2013; Phalan, 2018; Rabb & Ogorzalek, 2018; Wilson, 2016)	Associated variables: Conservation tools Qualifiers: Sharing, caring, sparing	Sharing: More intrusive policy interventions are needed to motivate or enforce conservation. Sharing includes demand-side interventions, for example curbing growth of demand to ensure that the environment is able to slowly adapt to the increasing yields. Demand-side policies target behavioural changes through incentives and sanctions. Examples of sharing conservation policies include making agriculture-environment payments to farmers for maintaining or restoring the conservation value of the farmed land by providing non-farmed habitat elements and limiting the use of pesticides.	Caring: Focus is put on community resilience by highlighting the interlinkages between local communities and their surrounding ecosystems. Caring for nature is related to the capacity to do no harm to others, not only in the present, but also in the future. Consumption behaviour is revisited by altering social norms such as the social status of meat consumption or long-haul flights for tourism. To alter social norms, a combination of state policies, information-awareness programmes, leadership by example and improving meaningful communication between people are required. Non-state and subnational actors have developed productive alliances while examining their approaches to public engagement by informing, interacting and inspiring instead of applying coercion and sanctions.	Sparing: The ecological stewardship of humans is achieved when human development is decoupled from environmental impacts. This can be reached in two ways: (1) the use of optimisation technologies and/or (2) reserving large tracks of land for nature's exclusive use. Sparing is technology-driven. The reduction of stress on the environment further allows the continuation of extracting yields in the future. Mandatory and voluntary schemes of sustainability standards are utilised to steer demand and supply towards sustainability.

Innovation, education and research

Any pathway towards a sustainable future needs (technological and social) innovation, end-user and future-oriented education systems as well as transformative and transformational research. These characteristics define the adaptability of the social system transforming towards sustainability in being able to learn; combine experiences and knowledge; adjust responses to changing external drivers and internal processes; and continue the multiple transitions within the stability domain or basin of attraction (Berkes, Colding, & Folke, 2003; Hekkert et al., 2007). The three pathways have distinct governance-related approaches and resources available to prevent undesired critical transitions.

For the strong pathway, driven by political transitions, resilience means the ability to absorb changes and disturbances and still maintain the symbiotic relationship between the population and the state (see Brand & Jax, 2007). The state needs the responsiveness of society at large to develop, legitimise, implement and evaluate policies. Policy-makers embedding the stakeholders as early as possible in the policy process may maintain or enhance this responsiveness. The education system in this pathway focusses on critical thinking. Quality higher education is mainly provided by public institutions. There are no significant quality differences between public and private providers because the state equally supports private institutions. Universities and think tanks have the mandate to pinpoint possible threats to the system's resilience. Transformative research supports evidence-based policy-making by providing motivation to stakeholders engaged in participatory and inclusive policy-making. Publications and other research output are policy-relevant and evaluated through their larger societal impact. Innovation is rigorously driven by government programmes, grants and subsidies, rather than by economic competition, whereas the state supports innovation by defining the impact it needs to achieve. Thus, relevant education and research institutions that help empower stakeholders are supported by the state through long-term grants and funding that will secure their independence and rigor. Public expenditure on education is comprised of more than 5.5 per cent of a country's GNI, as indicated by the World Bank's World Development Indicators.

For the cohesion pathway, driven by societal transition, resilience is heterogeneous and means the ability of the system to maintain its identity in the face of internal changes and external disturbances (see Brand & Jax, 2007). For this pathway, education, R&D and innovation primarily pursues "rigidity" (Brand & Jax, 2007, p. 315), which refers to the maintenance of identity by enhancing interactions within communities. The bottom-up approach in education involves target groups as co-designers of curricula and extra-curricular activities. This motivates a broader and inclusive concept of education that caters to the special needs of the local communities. For example, public schools will offer a broader range of subjects such as performing arts, mathematics, science and history. In addition, the profiles of the schools will cater to the profiles of the communities. In diverse countries, local schools are allowed to use the native language of the locals as the language of instruction. The national government ensures that local schools can immediately adapt their curricula to the changing conditions in the local communities. In addition, schools serve as meeting spaces for local communities, and schools are deeply embedded in the consciousness of the residents, leading to more profound loyalty to their alma maters. Innovation and R&D are measured according to their impacts on the communities. This means that access to research funding from the state requires a broad consortium that includes both public research institutions, civil society groups and companies. This also

means that technological innovations will be driven by local needs. Technological innovations that do not have a significant impact on helping communities adapt to changes immediately become obsolete. Public expenditure on education as a percentage (between 4.47 per cent and 5.5 per cent) of GNI is slightly lower than that of the strong pathway because the state saves transaction and coordination costs.

For the efficient pathway, driven by economic transition, resilience is primarily technology-driven and refers to the ability of the system to withstand value chain disruptions as well as fiscal (including public finance) or environmental (e.g. drought leading to food shortage) shocks without losing the capacity to allocate resources efficiently (see Brand & Jax, 2007). Innovation, education and R&D establish knowledge to effectively facilitate market dynamics and value-creation, even in times of emergencies. Resilience in this pathway is conceptualised as a kind of buffer within the system (see Holling, 1973; Thorén, 2014). Ensuring resilience is a bottom-up process. Making the system resilient in this world region focusses on strengthening networks; connecting the different sections of the value chain; empowering small- and mini-holders, especially farmers and small-scale producers; reducing the time needed for distribution; enhancing the access of consumers to information to enable them to make sustainable decisions; and real-time interpretations of market signals through digital technologies.

Universities and research institutions are important actors in providing the needed knowledge to achieve these goals. For example, innovations in digital technologies that can better connect consumers with producers can provide early warnings should risks emerge. Higher education is therefore technology-driven in this pathway. Governments in these countries tend to be "reactive" to innovation, that is, governments instead establish regulations as a response to emerging technologies (e.g. Uber and other transport network companies) to correct or internalise negative externalities. In addition, there is a healthy competition between research institutions to come up with technological innovations. Therefore, there are more private universities than public universities that are heavily funded by the private sector. Public and private funding evolves around technological innovation. Public expenditure on education as a percentage of GNI (<4.47 per cent of GNI) is lower than that of the other two pathways because the state perceives the private sector to be in the better position to identify and apply the needed innovation. At the same time, public expenditure on higher education and research focusses on areas indirectly or only remotely related to technological innovation.

Conservation and natural resources

Although people and nature are interdependent systems, there is also the need to be able to separate the ecological from the social (see Steffen, Crutzen, & McNeill, 2007). This is true for local communities and their surrounding ecosystems, but the current level and pace of acceleration of human activities threaten to have effects on a global scale (Steffen et al., 2007). The concept of resilience has become popular since 2013, when it found its way into the reports and working papers of highly influential institutions such as the World Bank (2012) and the IPCC (2007, 2013). However, this popularity has further highlighted the ecological dimensions of resilience in terms of enhancing the adaptive capacities of systems, particularly where it concerns emerging shocks due to environmental degradation and climate change. In this regard, resilience becomes about creating the underlying capacity to maintain the desired ecosystem services in the face of recurring environmental disturbances

such as diseases and hurricanes (see Garmestani & Benson, 2013). This means that governing T2S will also require looking at socio-ecological systems and effectively anticipating the shocks to these systems that come from both the environment and humans.

Governance modes and institutions will need to help dismantle barriers and build bridges to establish humans' ecosystem stewardship of dynamic landscapes and seascapes in times of change (Gunderson, Holling, & Light, 1995). Following the conservation tools introduced by Green, Cornell, Scharlemann and Balmford (2005) – sharing, caring and sparing – the three pathways will depict three sets of features of organisations, institutions, governance structures, incentives, power relations and/or norms that can enhance or undermine social ecological conservation (see Chapin et al., 2006; Folke et al., 2010; Smith & Stirling, 2010).

The strong pathway, driven by political transition, primarily sees "sharing" as the compatible conservation tool. Transformation to sustainability is driven by the recognition of the need to share resources, time and space for reconciling human well-being and environmental integrity. As a conservation tool, sharing aims to manage the local and global commons within environmental boundaries, and therefore requires more intrusive interventions and regulations by state and government institutions to motivate or enforce conservation. Such intrusive interventions would require the engagement of a broad range of societal actors in dialogue and strategic collaborations, not only between government agencies, but also between government agencies and individuals. In this pathway, optimal solutions are drawn from many sources and actors to align affluence with environmental integrity. Sharing includes demand-side interventions, for example curbing the growth of demand to ensure that the environment is able to slowly adapt to the increasing yields (see Balmford, Green, & Phalan, 2015). Demand-side policies target behavioural changes through incentives and sanctions. Access to information that is driven by sensor technologies, big data and machine learning encourages the reflection of moral values of sustainable consumption patterns (e.g. food waste and losses) in production processes (e.g. recycling). Policies are developed and implemented to ensure the underlying capacity of an ecosystem in order to maintain desired ecosystem services, for example in light of changing demographics. Examples of sharing conservation policies include agriculture-environment payments to farmers for land-sharing. This entails, for example, producing both food and wildlife in the same parts of the landscape by maintaining or restoring the conservation value of the farmed land. This is done by providing non-farmed habitat elements (such as shade trees and ponds) and limiting the use of pesticides (Balmford et al., 2015). Other "sharing" policies include command-and-control measures, such as land-use planning and regulation, and providing public funds (agricultural subsidies, tax exemptions and grants) as financial incentives to landowners or cooperatives to spare large tracts of their land (Balmford et al,. 2015; Fisher et al., 2011).

The cohesive pathway, driven by societal transition, predominantly perceives "caring" as the appropriate conservation tool. Conservation is adopted as a precautionary approach that seeks to avoid doing harm by reducing both inputs to and outputs from managed or natural systems (see Vitousek et al., 1997). A special focus is put on community resilience by highlighting the interlinkages between local communities and their surrounding ecosystems. In this pathway, social and cultural costs as well as the ethical implications of environmental degradation drive T2S. In addition, conservation promotes social cohesion because it fosters the communication between different groups of people, particularly those who could not otherwise communicate. The caring as conservation tool encompasses harnessing caring

relationships between interacting species (e.g. humans vis-à-vis livestock) to ensure the well-being of the biota and the natural environment (see Garmestani & Benson, 2013). Nevertheless, caring (conservation) is not done purely for altruistic reasons. Conservation means managing assets of all kinds, such as food, commercial output and medicine, which ensures the integrity of ecosystems (Rabb & Ogorzalek, 2018). Conservation is also about ensuring food security, for example. Therefore, the responsibility to care for nature is also based on humans' dependence on nature. In addition, caring for nature also relates to the capacity to do no harm to others, not only those in the present, but also in the future. For the cohesive pathway, this caring approach to conservation means revisiting consumption behaviour by altering social norms such as the social status of meat consumption or long-haul flights for tourism. For example, the self-restrictions in consumption (e.g. food) increase the societal value of products and services. Local resource endowment and seasonal availability of products play an important role in food consumption (see Weindl et al., 2020). This implies the higher demand for products and services offered by small local shops, communities or directly from farmers in the case of food. To alter social norms, a combination of state policies, information-awareness programmes, leadership by example and improving meaningful communication between people is required. In this pathway, non-state and subnational actors have developed productive alliances while examining their approaches to public engagement by informing, interacting and inspiring instead of applying coercion and sanctions.

For the efficient pathway, driven by economic transition, sparing is the guiding conservation tool. The evidence of the economic costs of environmental degradation and of climate change incentivises technological innovation and efficiency while penalising polluters. In this pathway, the ecological stewardship of humans is achieved when human development is decoupled from environmental impacts. This can be reached in two ways: (1) the use of optimisation/sensor technologies, artificial intelligence and digital solutions (see Wezel, Soboksa, McClelland, Delespesse, & Boissau, 2015) and/or (2) guarantee of biodiversity by reserving large tracks of land for nature's exclusive use (see Borlaug, 2007; Wilson, 2016). Therefore, sparing can be regarded as a technology-driven conceptualisation of conservation that could promote resilience. Optimisation technologies can help increase food production per unit of cultivated area, for example. This means more land would be available for wildlife, thus reducing pressure on the environment (see Borlaug, 2007; Phalan, 2018). The reduction of stress on the environment further allows for the continuation of extracting yields such as food in the future. In addition to increasing yields while reducing stress on the environment, this pathway relies heavily on mandatory environmental due diligence and voluntary schemes of sustainability standards that intend to steer demand and supply towards sustainability. Conservation principles are deeply embedded in these standards and will be reflected in the private sectors' sourcing practices. Conservation and environmental protection are highlighted in all parts of the value chains.

4 Conclusion: Governing the transformation to sustainability

This paper claims that an integrated approach can help researchers from different disciplines go beyond merely comparing what the disciplines understand or developing a common understanding of a specific topic such as governance. An integrated approach can collect the different approaches and methods from each discipline in order to build an analytical framework to understand concepts and make them useful to structure the complexity of phenomena such as T2S. The literature review on governance focussed on the three disciplines – sociology, political science and economics – that host the most important academic discourses on governance. The literature review identified the "common narrative" of these disciplines on governance as: *The acts of steering various processes, regulating functional interactions, governing with authority, directing social affairs, managing conflicts, etc. are initiated by a problem either created by chance or by the failure to appropriately respond to a change.*

This common narrative allowed this paper to produce a working definition of governance that reflects the conceptual diversity of governance while covering the specificities of T2S. Governance was then defined as a plethora of control, authority mechanisms, regulations, sanctions and rewards, which are used to orientate individual and collective actions.

In the next step, this paper assessed the different disciplinary perspectives on governance as puzzle parts leading to the identification of the resources needed to effectively govern T2S. These puzzle parts were brought together through an analytical framework that evaluated the "functions" of these puzzle parts. The framework showcased that governance modes and institutions were needed to deliberate a vision, perform the tasks required, create coherence, legitimise actions and ensure resilience so that changes do not destabilise the organisation of society. This approach proved useful to comprehensively understand what governance means in facilitating T2S.

Using the analytical framework led to the conceptualisation of the three SDG-aligned futures. These SDG-aligned futures reflect different arrays of governance structures, institutions and even cultures. While each of these Weberian ideal types represents an aspiration about the future, these SDG-aligned futures can, for example, be compared with the current policies of a country in order to come up with a mix of policy reforms and cooperation frameworks between state and non-state actors to move towards the achievement of a sustainable future. As benchmarks, these three scenarios of sustainable futures serve as an orientation for the SDPs, which can be either a political-transition-driven (strong) pathway, a societal-transition-driven (cohesive) pathway or an economic-transition-driven (efficient) pathway. These pathways represent the entry and leverage points for countries to move to the SDG-alignment phase, whereby the three pathways initially converge and eventually move forward towards a sustainable future. In some cases, countries that are unable to meet the SDGs will either restart the same pathway or choose another pathway. This means that the pace of the pathway is different for each country, depending on the intensity and volume of the (institutional) lock-ins and path dependencies it needs to resolve.

This paper also pointed to the role of institutional lock-ins and path dependencies, as reflected by the different historical experiences of countries. Although the disciplinary perspectives confirm the limited theoretical and empirical value of analysing "alternative"

paths for transformation, these perspectives reveal that addressing path dependencies – even in the conceptualisation of governance – is a necessity. Therefore, analysing the historical components of current and future governance structures can only be useful for the analysis of transformation processes when the relevance of these historical components to the present and the future is explained. What was the meaning of German reunification for the current mitigation policies and goals of Germany? How are the decades of austerity policies in Jamaica limiting the country's set of feasible solutions to address current sustainability challenges? How is the United Arab Emirates' authoritarian regime impeding or benefiting the country's pathway towards a sustainable future? This paper highlighted the historicity of all pathways towards a sustainable future. This value of historical experiences lies in the identification of both the entry and leverage points for all countries when initiating their transformation process by committing to the necessary requirements on governance modes and institutions, as reflected by the SDG-aligned futures scenarios.

To conclude, the value of visions and aspirations such as the SDG-aligned futures lies in their ability to structure complexity. This structured complexity creates perspectives that further mobilise concrete ideas and actions, not only about the needed resources, but also the opportunities. As a Chinese proverb confirms ("A journey of a thousand miles begins with a single step"), a sustainable future begins with a step.

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