Leadership by Example in the Implementation Phase of the Paris Agreement:
Comparing Current Climate Strategies of the EU, the US and China

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Abstract

The climate crisis and the fight against it is one of the most complex challenges humanity faces right now. In situations like this, theory and empirical research on international governance has highlighted the vital importance of leadership to promote action and cooperation. A closer look at theoretic and empirical contributions in the field, however, reveals massive research gaps that seriously hamper our understanding of climate leadership. This paper contributes to closing many of the gaps found. Studying exemplary leadership in the implementation phase of the Paris Agreement, we use qualitative content analysis and a thorough conceptualization of an "ideal" climate strategy to analyse and compare current climate strategies of the three major emitters and leadership candidates: the European Union, the United States and China. Our analysis unsurprisingly finds the EU the most ambitious actor and potential exemplary leader among the three, but also reveals that China's strategy is in various aspects more far-reaching than its US counterpart. In addition, our conceptualization of climate leadership and our analysis provide policy recommendations for improving real-life climate strategies.

1.   Introduction

The anthropogenically caused climate crisis and the limitation of its devastating impacts to a tolerable level is one of the most intricate challenges humanity faces right now and, on top, ridden by massive problems of collective action. In situations like this, theory and empirical research has highlighted the vital importance of *Leadership* to ensure action and cooperation. A closer look at theoretic and empirical contributions in the field, however, reveals massive research gaps: (1) Most theoretic considerations and empirical studies focus on the first two stages of regime formation, i.e., agenda-setting and negotiation, neglecting the equally important third phase of implementation that is of high importance for the final success of international agreements. (2) Very few analyses are based on a comprehensive definition of leadership, let alone a thorough conceptualization and operationalization of the concept. (3) Many empirical studies lack a sound methodological basis: Though some exceptions exist, most studies only engage in some sort of historic-descriptive storytelling and interpretation. (4) There are very few comparative studies, especially regarding the three major leadership candidates: the United States (US), the European Union (EU) and China. (5) Finally, there is a considerable lack of attention to the current implementation phase of the Paris Agreement (PA) and leadership in this context. Although a large body of research exits, substantial research gaps hence seriously hamper our understanding of (current) climate leadership.

With this paper, we aim to contribute to closing these research gaps by investigating leadership in the current implementation phase of the Paris Agreement. In order to do so, we analyse and compare the current climate strategies of the EU, the US and China, namely the European Green Deal (2019), the US Long-term Strategy (2021) and the Chinese Working Guidance for Carbon Dioxide Peaking and Climate Neutrality (2021) with regard to the question, which strategy is the most ambitious one. Since the three actors represent the major emitters of greenhouse gases (GHGs) and have been found to have exercised leadership prior to and during the Paris summit, they appear to be the most likely candidates for leadership during the implementation of the PA. In contrast to many studies so far, we will work with a robust method by conducting a qualitative content analysis and operate with a thorough conceptualization and operationalization of (exemplary) climate leadership.

The paper proceeds as follows. Section 2 will take a brief look at leadership theory and develop the premise of the importance of leadership by example during implementation. Section 3 then gives a short overview of empirical research on climate leadership. Section 4 outlines our research design as well as our conceptualization and operationalization of (exemplary) climate leadership. Section 5 then presents the results of our qualitative content analysis of the three climate strategies. Finally, we draw some conclusions and provide ideas for future research.

2.   Leadership Theory and Exemplary (Climate) Leadership

This paper is based on the premise that leadership is crucial for enabling and ensuring global cooperation and action. International relations are vexed by a number of difficulties that seriously complicate cooperation, such as high complexity and huge uncertainty about (re)actions on all sides. Most importantly, however, many issues in need for global cooperation resemble public goods or global commons – or combine characteristics of both – and are as such plagued by massive problems of collective action, i.e., overuse and free-riding. This is especially the case with climate action: Whereas the atmosphere as a global common is in danger of being exploited, with climate protection as a public good actors are inclined to remain inactive and benefit from potential protective steps by others instead of taking costly action themselves. These costs are particularly high when it comes to climate action as climate change (CC) is at its core driven by fossil fuels that have been the engine of prosperity since industrialization, which states are thus hesitant to impair. Since all actors face similar incentive structures, this leads to a situation of encompassing inactivity where the atmosphere as a global common is gradually exploited. This deadlock can only be overcome by countervailing forces among which leadership is widely deemed to take a central role and hence "a critical determinant of success or failure" for international governance (Young 1991: 281).

Though there is no common definition, many follow Underdal (1994: 178) that leadership is an "asymmetrical relationship of influence in which one actor [the leader] guides or directs the behaviour of others [the followers] toward a certain goal over a certain period of time". There are several conditions an actor has to fulfil to qualify as a leader: (1) The will to lead, i.e., he must want to induce others to follow; (2) the capability to exert leadership; (3) credibility, i.e., the current behaviour has to be consistent with previous actions; (4) recognition or, more bluntly put, followers; and (5) ambition, i.e., he must "push their followers forward rather than backward" (Groen et al. 2012: 175; cf. Parker/Karlsson 2010: 925-28). For this process of pushing followers forward, theory overall distinguishes four modes of leadership: (1) Structural leadership using material resources as bargaining leverage; (2) intellectual leadership working through raising consciousness for new problems and solutions; (3) instrumental leadership using negotiation skills to build compromises; and (4) leadership by example (Underdal 1994: 186-89). Leadership by example – or exemplary, directional or unilateral leadership – can take active forms such as persuasion or "naming and shaming" (Busby/Urpelainen 2020: 102), but at its core is a rather indirect form of influence, operating through demonstration effects: An actor domestically takes progressive action with the aim of proving to others that certain solutions or ways towards an ambitious goal are feasible, trying to induce them to follow the lead. In addition, it has the benefit to enhance the credibility of a leader and reduce uncertainty among actors about inactivity by others (Kilian/Elgström 2010: 260; Kurze 2020: 362).

It is clear that the various types of leadership work (best) at different stages of regime formation: While intellectual leadership is most important for agenda-setting, structural and instrumental modes are more decisive for negotiation, while exemplary leadership can work during both. However, the third phase of global governance – the implementation of agreements – is often neglected in literature. This is particularly damaging as it is likewise ridden by problems of collective action – especially the incentive of free-riding on the potential compliance of others – that consequently endanger the final success of treaties. As such, there is the same need for leadership during that stage as there is in the other two phases of regime formation with leaders here tasked to encourage all contracting parties to comply. In this context, Kurze (2020) makes the compelling argument that it is especially leadership by example that is vital here: Since it works through domestic action and demonstrating the feasibility of ideas and the commitment of actors, she argues that exemplary leadership is the type easiest to occur and with highest chances of success during implementation of agreements, an argument we support in this paper. In consequence, exemplary leadership seems equally important for the current implementation phase of the Paris Agreement – even more so in light of the fact that the PA with its bottom-up approach through Nationally Determined Contributions (NDCs) almost naturally provides for the occurrence of exemplary leadership – and at the same time fundamentally relies on it for success. Consequently, this paper takes a closer look at leadership by example to determine which actor might exercise leadership during implementation of the PA.

3.   The State of Empirical Research on Global Climate Leadership

Leadership in global climate governance and action has received substantial academic attention over the last thirty years. For the early beginnings of global environmental action in the 1970s and 1980s, research shows that they were mostly led by a progressive United States while the European Community has been an "environmental laggard […] dragged along by the USA's determined leadership" at that time (Wurzel/Connelly 2011: 3; cf. Kelemen/Vogel 2010; Vogler/ Bretherton 2006). Leader and laggard positions, however, started to change in the late 1980s and 1990s when the US became increasingly opposed to (global) environmental governance, slowly declining from its leadership position in consequence, while the EU started to enhance its climate goals and leadership ambitions (Falkner 2007; Parker/Karlsson 2010). However, credibility issues stemming from lagging climate action at home weakened EU leadership attempts for much of the 1990s, though some progress at the end of the decade started to decrease this gap. The 1990s are thus best described as a transition phase where "the United States and the European Union 'traded places' as leader and laggard in international environmental politics" (Kelemen/Vogel 2010: 431; cf. Falkner 2007; Oberthür 2007). This role reversal eventually manifested itself in 2001 when the US withdrew from the Kyoto Protocol and EU decided to

push for ratification. Moreover, the EU made considerable progress on its internal climate policy which contributed to closing the credibility gap of the 1990s. As a consequence, research quite unequivocally sees the EU as the "unrivalled" leader on climate action during the 2000s (Oberthür 2007: 79; cf. Kilian/Elgström 2010: 257). Moreover, the EU has especially been an exemplary leader during that time with the Emissions Trading System (ETS) and the Climate and Energy Package of 2007 seen as main evidence (Kilian/Elgström 2010; Parker/Karlsson 2010).

While the earlier decades of global climate action have been dominated by the US and especially the EU, the situation became considerably more diverse and unsteady since the Copenhagen summit in 2009. Although research shows the EU remained the most ambitious party and tried to exert various modes of leadership, it also was side-lined by the US and China that are widely found as having been able to "construct an accord of their own liking at Copenhagen" and seen leaders at the summit (Kilian/Elgström 2010: 267; cf. Groen/ Niemann 2012a; b; Parker/Karlsson 2018). Though such notions do not go uncontested due to both actors' lacking ambition, they are supported by Parker et al.'s (2015) interview data on leadership recognition from 2008 to 2011 that confirm the EU's historical low at Copenhagen, while showing that leadership perceptions of the US soared from 27% in 2008 to 53% in 2009. EU leadership recognition remained stable but low during subsequent summits, continuously over-shadowed by the US and China (Parker et al. 2015). Moreover, the EU also lowered its ambitions, affecting its credibility and its ability for exemplary leadership (Groen et al. 2012; 2013; Oberthür/ Groen 2014). At the same time, no other actor was ambitious enough for actual climate leadership, resulting in a "global leadership vacuum" in the years after Copenhagen (Kilian/ Elgström 2010: 267).

However, around 2011 the EU not only re-established its progressive stance, but also "made a slight, but clear, comeback returning as the most recognised leader" at the climate summits in 2011-2013 (Parker et al. 2017: 244). In addition, the EU changed its leadership style: Though still exercising exemplary leadership, it increasingly focused on instrumental leadership. As a result, some claim that the EU has found itself a new role comprising elements of a leader and mediator – a "leadiator", (Delreux/Happaerts 2016; Oberthür 2016). However, the EU did not regain its single leadership status. Leadership recognition continued to fluctuate, with the US taking over the pole position again in 2014 and the EU reaching a new low at the Paris summit, while China remained fairly stable at just over 50% (Parker et al. 2017). Even though the EU even fell below its 2009 low, Paris did not resemble a second Copenhagen as the EU exercised considerable instrumental leadership surrounding the summit, working together with the US and China (Bang/Schreurs 2016; Eckersley 2020; Li 2016).

After Paris, however, leadership faltered anew. With the US under Trump becoming increasingly hostile to climate action, the EU failing to establish ambitious climate goals, and China not ready or willing to shoulder unilateral leadership, the world faced a renewed climate leadership vacuum (Dröge/Rattani 2018; Trombetta 2019). However, with the publication of the EU's *Green Deal*, the Chinese announcement to enhance its NDC and the inauguration of the Biden administration with climate protection as one of the main concerns, all three previous leaders regained their potential for leadership over the last years (Froggatt/Quiggin 2021; Kurze 2020). Skjærseth et al. (2021), however, caution claims of Chinese and US leadership potential. Comparing domestic policy mixes, they find the EU to be by far the most ambitious one among the three, but overall the current phase might be cautiously described as one in which all three actors at least somewhat possess potential for leadership, though to varying extent.

Summed up, global climate leadership has been fluctuating and especially the EU, the US and China have exercised leadership over the decades, although to varying extent. However, a close look at the state of research also reveals surprisingly big research gaps. First, very few analyses are embedded in a comprehensive conceptualization and operationalization of leadership and many lack a sound methodological foundation. With the exception of Skjærseth et al. (2021), no analysis works with (qualitative) content analysis or develops a category system to study domestic policies and exemplary leadership. Second, there are very few comparative studies, especially regarding the three major leadership candidates. Finally, leadership in the implementation phase of agreements hardly receives any attention so far. Although considerable research exists, it is also marked by substantial gaps that seriously hamper our understanding of (current) climate leadership.

4.   Research Design, Conceptualisation and Operationalisation

With seek to close the fundamental research gaps found above: First, we work with a robust method, namely qualitative content analysis, which allows for a structured in-depth analysis of documents. Second, our study is based on a comprehensive conceptualization and operationalization of climate leadership, thereby closing one of the most striking gaps in research so far. Third, we carry out a comparative study by taking a closer look at the current climate strategies of the three major emitters, i.e., United States, the European Union and China. More precisely, we analyse and compare the European *Green Deal* (2019), China's *Working Guidance for Carbon Dioxide Peaking and Climate Neutrality* (2021) and the *Long-Term Strategy* of the United States (2021) with regard to their level of ambition and potential for exemplary leadership. Finally, we investigate the potential for exemplary leadership during the implementation phase of an agreement, namely the Paris Agreement.

In order to study (exemplary) climate leadership potential, climate leadership needs to be conceptualized and operationalized. A valuable approach is to consider how an "ideal" response to the crisis would look like. Obviously, actors' actual climate strategies will likely never be congruent with such an ideal nor is this necessary to qualify for leadership. However, leadership requires extraordinary ambition. For analysing actual climate approaches with respect to leadership, i.e., regarding the level of ambition they pursue, a reference point thus is needed for comparison – an ideal to which real-life strategies approximate to a greater or lesser extent. In this section, we develop an "ideal" climate approach that simultaneously provides categories for the qualitative content analysis.

At first, it needs to be stressed that an "ideal" climate approach nor climate leadership can exhaust itself in a mere objectives, no matter how ambitious the targets: While leadership by example per definition requires to prove that certain solutions and ways towards an ambitious goal are feasible (see section 2), an ideal response to the crisis obviously has to include ways to achieve goals as well. Moreover, it is clear that there cannot be a "single one-size-fits-all solution", but that there is a certain necessity for "[t]ailor-made [...] approaches" (Oberthür/Dupont 2015: 251). Nevertheless, this does not contradict the idea of conceptualizing an "ideal" approach: While it is necessary to tailor specific measures to the respective needs of the society they shall be applied to, this does not render the development of general components a climate strategy should include invalid or impossible.

A helpful start for conceptualizing a response to any problem is to take a look at the challenge it-self. Though basically caused by the burning of fossil fuels since industrialization and manifesting in a rise of global mean temperatures, the climate crisis surpasses this simplistic description by far. As such, certain societal processes, such as globalization with massive increases in transport, intensified its causes by escalating the hunger for energy. In addition, critical discourses stress subjacent systemic and belief-related root-causes, most significantly the prevailing imperative of economic growth which has led to a (self-)destructive prioritization of growth over environmental protection. Moreover, it is important to note that there are feedback loops a warming climate sets off, such as reduced reflection of sunlight due to melting ice caps, reduced carbon storage capacity by to warmer oceans and massive releases of GHGs from thawing permafrost regions which all intensify the greenhouse effect. What is more, the mere focus on "global warming" ignores further impacts of the crisis that will be dire and irreversible, become more severe the higher temperatures will rise, and possess enormous social, societal, economic and political explosiveness: Rising sea levels threaten coastal regions and island states; rising sea temperatures impact the Gulf Stream and monsoon systems, entailing stark changes in weather, living and farming conditions worldwide; extreme weather events like floods, storms, heat waves and droughts become more frequent and severe, causing health issues, famine, poverty, migration and conflicts over resources. Additionally, vulnerability to the crisis' impacts and responsibility for its causes are highly unjustly distributed: While mainly caused by industrialized countries, wealthy corporations and individuals as well as past and present generations, it is poorer regions, lower-income groups and future generations that will primarily be affected.

This overview highlights the immense complexity and multi-dimensionality of the crisis at hand, making clear that an ideal response must be just as complex. First of all, this needs to be reflected by

the goals pursed by a respective strategy. Though not sufficient, ambitious **Objectives** are both an integral part of leadership and necessary to address the crisis adequately.

Countering CC, first, raises the question of what constitutes a "tolerable" level of global warming, i.e., which ***Temperature Goal*** an ideal strategy would pursue. There is scientific consensus that the rise of mean temperatures has to be kept at maximum 2°C above preindustrial levels to prevent the direst impacts of the crisis. However, a limitation to +1.5°C is widely considered more desirable as it represents a major tipping point beyond which many dangerous impacts will unfold (World Economic Forum 2021). Moreover, any higher temperature goal would fall short of global ambitions codified in the PA. Targeting the 1.5° goal, in turn, raises questions about ***Mitigation***, i.e., which emission reductions are needed to achieve it. Ideally, a strategy would aim to reduce net emissions to zero, i.e., to achieve climate neutrality. The recommended deadline by the UNFCCC (2021) is to achieve this by 2050. As an intermediate step, substantial emissions reductions are needed. The IPCC (2022) estimates that "limiting warming to around 1.5°C […] requires global greenhouse gas emissions to peak before 2025 at the latest and be reduced by 43% by 2030", though a reduction by 50% (all compared to 1990 levels) would be safer. Ideally, a strategy would therefore aim to cut its emissions in half by 2030.

Since climate change is already under way, a model strategy would also aim at ***Adaptation***. This describes the adjustment to the environmental impacts of the crisis by "reduc[ing] vulnerability to climatic stimuli or […] tak[ing] advantage of new climatic conditions" (Leichenko et al. 2010: 137). As impacts are highly diverse across regions, how adaptation has to look like varies between actors, but an ideal approach would at least mention the general goal of adaptation.

To reduce emissions and achieve climate neutrality, a model approach would also aim at a ***Green Transition***, which is "an umbrella term that covers concepts such as green energy transitions, green mobility transitions, green consumption transitions, and green urban transitions"(Leichenko/O'Brien 2019). It goes beyond mere mitigation and encompasses processes needed to achieve it while also being an objective in and of itself: the vision of a sustainable way of living. However, the unjust distribution of vulnerability requires supplementing green transitions with the goal of a ***Just Transition***. Domestically, this means to "ensure that 'going green' does not contribute to increase poverty and inequality" (ibid.), whereas globally it implies to aid vulnerable states in their adaptation and transition and to prevent green transitions in industrialized states from having negative impacts on poorer regions. In the context of just transitions the concept of Sustainable Development (SD) has gained renewed attention as it links the objectives of sustainability and social justice (Lawn 2010).

Finally, the objective of ***Systemic Transformation*** has gained increasing academic and political attention. It refers to changes in structural set-ups and processes of political, economic and societal systems to align them with objectives such as sustainability and justice (Leichenko/O'Brien 2019). Most frequently it is discussed in the context of economy where it acknowledges that unlimited growth is incompatible with a sustainable future and that processes have to change or, rather, be deliberately transformed. In the long run, this means to "facilitate the [transformation] from a growth economy to what might be described as a qualitatively improving steady-state economy", i.e., "one comprised of a constant magnitude or non-growing stock of physical goods" (Lawn 2010: 95). If crafted correctly, this could also improve work and living conditions for many. While ultimately an ideal strategy would target a comprehensive restructuring of the economic system, an intermediate step could be a circular economy that would partially decouple growth from resource use. Besides economic transformation, a thorough response to the crisis will require transformations in societal and political systems as well, though it is clear that "many existing institutions, values, norms, and ways of living and working are already contributing to equitable climate change responses" (Leichenko/O'Brien 2019). However, as the exact nature of such transformations is still open topic of much debate, no ideal can currently be conceptualized for areas other than the economy.

As highlighted, ambitious goals alone are neither enough for an ideal approach nor for exemplary leadership as both require feasible ways to achieve these targets. In this respect, the complexity of the crisis requires a model strategy to pursue a "holistic" approach (Leichenko/O'Brien 2019). This holistic response can be constructed as a two-dimensional approach, consisting of a horizontal and a vertical dimension.

The **Horizontal Dimension** refers to the breadth an ideal approach would span, i.e., the policy areas included and characteristics policy measures would hold. Considering the crisis' complexity, it is hard to think of any field that could be left out of the **Policy Mix**, but a holistic response would at least cover and interlink the following. First, *Energy Policy* has to be at the ore of any strategy against CC as fossil fuels are the main driver of the crisis. Achieving climate neutrality will "require major transitions in the energy sector", which would also decrease emissions in many other areas (IPCC 2022). Rapidly phasing out fossil and building up renewable sources is the key to low emissions and must be the priority of any climate strategy. In addition, measures could enhance energy efficiency, promote electrification, and fund research on new sources like hydrogen. Its low emissions notwithstanding, nuclear power is not an alternative for fossil fuels as it generates tons of toxic waste.

As the sector is responsible for around a quarter of global emissions, *Industry Policy* must also be included. Renewable energy could already reduce many emissions here, but there are numerous options to make each industry more sustainable, with recycling, improved resource management, and the promotion of sustainable materials as trivial examples. Even more than industry, *Agricultural Policy* is vital to a holistic response as the sector accounts for a third of global emissions and is crucial for carbon capture, biodiversity, resources and human well-being. Actions, here, include subsidies for organic farming, reduction of meat and dairy production, and limited land use for biofuels. Linked to agriculture is *Environmental Policy*, which would support climate neutrality and adaptation through carbon capture by careful afforestation, prohibition of deforestation and drainage of moors, limitation of land conversion, and the creation of natural reserve (IPCC 2019; 2022).

Moreover, *Construction, Housing and Urban Design* are crucial. Improved isolation and heating play a central role in lowering emissions, while actions such as greener and "walkable" cities would benefit mitigation and carbon capture (IPCC 2022). Linked to this is the area of *Transport and Mobility*. Especially individual mobility and truck transport hold potential for mitigation and green transitions, though in the end all types of transport need to be targeted. Means include funding of low-emission fuels and free public transport, expansion of rail networks, and switching freight from roads to rails.

Furthermore, a holistic climate approach covers *Economic, Financial, and Tax Policy* to fund policy measures and support mitigation, just transitions and systemic transformation. Justice aspects also necessitate the inclusion of two other policy areas: *Social and Employment Policy* is vital to ensure a just transition at home, while *Trade and Development* is needed for the global justice dimension. Here, actions might include financial aid and technology transfer as well as to support vulnerable regions in their adaptation. Nevertheless, many regions will be hit severely by CC impacts. To address follow-up consequences, a holistic strategy must therefore also address *Health*, *Migration* and *Security Policy*.

Besides an extensive policy mix, a broad climate approach also implies that policy measures hold various characteristics. First, actions can be divided regarding the **Spheres of Change** they target (Leichenko/O'Brien 2019). Most commonly, provisions aim at changes in the *Practical Sphere* as they are the easiest to create, implement, and monitor. Practical solutions cover a wide spectrum such as the promotion of innovation, energy efficiency, renewable energy, technology transfer, public transport, reforestation, or renovation. While vital to address the crisis, practical means are insufficient for a holistic response since they are "unlikely to contribute to the types of structural and systemic changes needed to address the underlying causes of climate change" (ibid.). An ideal strategy would hence also target changes in the *Systemic Sphere* to achieve transformation, but also to aid mitigation as well as green and just transitions. Systemic means include changing and developing institutional and structural set-ups and decision-making processes, e.g. in financial and policy-making systems. Moreover, a thorough response needs changes in the *Value Sphere*. Shifts in personal and collective attitudes, norms and worldviews are crucial to address the deepest root-causes of the crisis. Means include information campaigns, discourse options and educational activities. Ideally, a strategy would contain a wide variety of measures that target changes in all three spheres outlined.

In addition, crisis response measures can be divided with respect to the **Working Mechanisms** they employ (Wurzel/Connelly 2011: 15). Many recommendations aim at *Encouraging Voluntary Action* by individuals, companies and other micro-level actors. To a large extent they are congruent with means to alter values as they primarily rely on information and education to change intrinsic motivations and

subsequent behaviour. However, actions to encourage voluntary behaviour suffer from a low degree of obligation. *Market Mechanisms*, therefore, go a step further and work with extrinsic motivations to alter cost-benefit-calculations by using (financial) incentives and discouragements. As they can be quite effective, market instruments are quite common among today's CC responses. They include subsidies and state investments, but often also take the form of emission-trading systems (ETS) that put a prize on emissions to induce reduction. However, while a well-crafted ETS can aid mitigation, administrative costs, sectoral coverage, "opportunities for playing the system", and risks of zero-sum games often threaten their success (Clémençon 2010: 454).

Both voluntary action and market mechanisms, though, "reduc[e] the problem to individual or corporate behaviours, rather than recognizing sustainability as a collective challenge tied to the structures of larger social, economic, and political systems" (Leichenko/O'Brien 2019). For a holistic response, *Regulation* is needed as well. Basically, "[r]ather than just enabling action by others", with regulation "the state becomes a major actor in restructuring economic activity and orientating it towards climate change agendas", which is vital to achieve major objectives in a timely manner (Welsh 2010: 47). This means setting deadlines, targets, standards and guidelines, but can also include emission taxes. While taxes also price emissions and are thus not clearly distinguishable from market mechanisms, other than ETS they are easier implemented and adjusted, more difficult to circumvent, can target the source of emissions, and generate revenues useable for just transitions or other areas (Clémençon 2010: 467). Overall, an ideal strategy would combine a wide range of measures employing all three working mechanisms with a strong emphasis on regulation.

Besides a broad approach, a holistic approach also requires a certain depth, which is described by the **Vertical Dimension**. This necessity not only arises from the globalized and interdependent nature of today's world, but also from the fact that the climate crisis is a global challenge with impacts highly diverse across regions and societal sectors. A holistic approach would, therefore, interlink bottom-up and top-down approaches and follow "a more polycentric […] framing of climate governance" with "a wealth of governance levels [and] public and private actors and fora" (Oberthür 2016: 2).

Accordingly, it would target all **Levels of Action**. This obviously includes action on the *National Level*, but due to the global scope of the crisis an ideal strategy would also target action on the *Supra- and International Level*, e.g. by aiming at active participation in global climate negotiations. Though (inter-)national action, management and coordination are crucial for a successful climate response, scholars like Ostrom (2014) rightly criticize the often lopsided focus on national and global solutions, stressing that the crisis' impacts are highly diverse across regions. An ideal strategy would hence also aim to act on the *Regional and Local Level* and customize responses to needs on the spot.

In addition to own activity on all levels, a holistic approach would target action by and cooperation with a multitude of **Actors** across levels and society. Due to the global nature of CC, this would, first, mean to aim at cooperation with other *States* as well as *International Organizations* (IOs). To do justice to the regional diversity of impacts, an ideal response additionally would aim to promote bottom-up approaches by cooperation with *Regional and Local Administrations*. Furthermore, since half of global emissions are caused by 25 companies worldwide (Sawe 2020), targeting action by the *Private Sector* is crucial for mitigation and green transitions, but also for justice and transformative aspects. In addition, private investment is needed to supplement public funding as crisis responses require enormous financial resources. Moreover, action by *Individuals* as consumers, workers and general citizens, especially wealthier classes, is crucial to lower GHGEs and enhance sustainable living. For further promoting behavioural changes, raising awareness for specific issues and increasing acceptance of governmental action, *Civil Society Organizations* are another important actor for cooperation. Finally, since innovation and research as well as changes in norms and behaviour are needed for successful climate responses, *Education and Research Institutions* are essential actors and partners to counter the crisis.

Summed up, an "ideal" climate strategy would follow a complex, multi-dimensional approach to the crisis. Table 1 below summarizes the aspects of such a holistic response and, simultaneously describes the category system for analysing actual climate strategies regarding their ambition.

Head category	First-tier sub-category	Second-tier sub-category
Objectives	Temperature Goal	
	Mitigation	
	Adaptation	
	Green Transition	
	Just Transition	
	Systemic Transformation	
Horizontal Dimension	Policy Mix	Energy Policy
		Industry Policy
		Agricultural Policy
		Environmental Policy
		Construction, Housing and Urban Design
		Transport and Mobility
		Economic, Financial and Tax Policy
		Social and Employment Policy
		Trade and Development
		Health Policy
		Migration Policy
		Security Policy
	Spheres of Change	Practical Sphere
		Systemic Sphere
		Value Sphere
	Working Mechanisms	Encouraging Voluntary Action
		Market Mechanisms
		Regulation
Vertical Dimension	Levels of Action	Supra- and International Level
		National Level
		Regional and Local Level
	Actors	Other States
		International Organizations
		Regional and Local Administrations
		Private Sector
		Individuals
		Civil Society Organizations
		Education and Research Institutions

Tab. 1: The category system based on the conceptualized "ideal" climate strategy.

5. Analysing Leadership Potential of Current Climate Strategies

We used the category system above to analyse the current climate strategies of the three major emitters, namely the EU Green Deal (GD; 2019), the US Long-Term Strategy (LTS; 2021) and China's Working Guidance (WG; 2021) regarding their ambition and potential for exemplary leadership during implementation of the PA. With 61 pages, the LTS is more than twice the length of the GD and the WG with 24 and 25 pages and thus appears as the most comprehensive strategy. However, our analysis yielded different results that are presented and discussed in the following section.

5.1 Objectives

The LTS is the only strategy that names a **Temperature Goal** rather explicitly by quoting scientific findings and the need to limit global warming at 1.5°C. Language and context of the respective passages further support the impression that the US aims at that target as the strategy, among others, states that its mitigation target "puts the United States ahead of the trajectory required to keep 1.5°C within reach" (US 2021: 4). Contrastingly, neither the EU nor China makes such a reference. However, both confirm their commitment to the PA, which – though codifying the +2°C limit as mandatory –states the ambition to reach the +1.5°C. The strategies' commitment can thus be seen as similar ambition. However, the EU (2019: 20/21) is far more pronounced in this respect, while China (2021: 19) stresses the principle of common but differentiated responsibilities between industrialized and developing countries ,which raises some doubts about its actual ambition. Nonetheless, as there is no explicit contradiction, each of the three actors can be considered to aim at the 1.5° target.

Regarding **Mitigation**, the EU (2019: 4) aims "to increase the […] target for 2030 to at least 50% and towards 55% compared with 1990 levels" and thereby matches the ideal recommendation outlined above. At first glance, this also seems to be the case for the US (2021: 1) who aims "to reduce net greenhouse gas emissions by 50-52% in 2030". However, the US uses 2005 GHGEs as comparison, which is inconsistent with IPCC recommendations and thus considerably less ambitious. It has to be stressed though that the US is the only actor dedicating extensive attention to non-carbon GHGs with a particular focus on methane, which will also be vital for reducing overall emissions. China's (2021: 6) mitigation goal to reduce carbon intensity by 65% until 2030 (to 2005 GHGEs), in turn, does sound striking at first and the 2005 level for comparison might even be enough in light of China's later development and rise of emissions. However, the target is in fact far from progressive or even sufficient. Not only does it solely refer to carbon emissions, neglecting other GHGs, it also implies that emissions by the largest emitter will even increase until 2030 instead of being cut in half, which is the opposite of sufficient climate action, let alone leadership. Nevertheless, all actors explicitly and repeatedly state the objective to become climate neutral. The US (2021: 3) and the EU (2019: 2) even target net zero emissions by 2050, thereby fulfilling the ideal above. China (2021: 3, 6), in turn, aims to achieve "carbon neutrality" until 2060. This leaves room for improvement but is nonetheless surprising in light of its GHGs reduction goal, although the 2030 target also raises doubts about attainability.

Concerning **Adaptation**, the results for all strategies are sparse. The WG does not contain any passage on that matter and the only reference the EU (2019: 5) makes is that "climate change will continue to create significant stress in Europe in spite of the mitigation efforts [so that s]trengthening the efforts on climate-proofing, resilience building, prevention and preparedness is crucial". The US (2021: 50) at least mentions to "reduce the dangerous risks of climate change". However, the LTS also announces a specific adaptation strategy (US 2021: 9), while the EU and China have already published such documents recently (China Dialogue 2022; European Commission 2021). Although adaptation is thus hardly discernable in the strategies analysed here, the specific documents (or their announcement) make clear that the issue is on the agenda of all three actors.

A **Green Transition** is a major goal for all actors. The EU (2019: 2) states that the GD "will accelerate and underpin the transition needed in all sectors" and aims at "[m]ainstreaming sustainability in all EU policies" (ibid: 15). Accordingly, it frequently uses the phrase "ecological transition" throughout and elaborates on green transitions in areas such as mobility, energy, industry, agriculture, construction, finance, and technologies. China (2021: 24), in turn, similarly aims to "promote green and low-carbon

development", which is the most frequently used term in the WG. It is applied to a huge array of areas such as energy, industry, transport, agriculture, construction, and finance, as China likewise aims at mainstreaming sustainability across the board. The US (2021: 1), finally, follows the "overarching vision of building a more sustainable […] economy". The goal of a green transition is also discernable in the similar aim to mainstream sustainability across sectors and the emphasis on promoting "clean" models in areas such as transport, construction, technologies, or industry, though the LTS is most pronounced on green transitions in the energy sector.

The aim of a **Just Transition**, in contrast, receives diverse attention in the strategies. The most elaborate one here is the GD which already states in the introduction that "this [green] transition must be just and inclusive. It must put people first, and pay attention to the regions, industries and workers who will face the greatest challenges" (EU 2019: 2). In addition, the EU (2019: 21) explicitly commits to "support a just transition globally" and "improving the quality of life of cur-rent and future generations" (ibid: 23/24). Moreover, the GD embraces the concept of SD by wanting to incorporate the UN's Sustainable Development Goals into policy-making (ibid: 3). The LTS, in contrast, only includes some brief references to ensuring a just transition at home, e.g. by outlining the "vision of building a more […] equitable economy" (US 2021: 1, emphasis added) or to "ensure that […] benefits […] are equitably distributed" (ibid: 17). Though explicitly recognizing unequal vulnerability worldwide, the LTS does, however, not target a global just transition. China's strategy, in turn, hardly addresses the aspect of a just transition at all. A minor passage that might be seen as such is the "need to respond appropriately to any […] social risks that may arise during the green [transition]" (China 2021: 5), though the notion is highly implicit here. In addition, phrases like "achiev[ing] sustained development of the Chinese nation" (ibid: 3) might be interpreted as such, as large shares of China's population still live in poverty. But overall the aspect remains highly vague and unexplored in the WG.

For **Systemic Transformation** it first needs to be stressed that, although all strategies mention "transformation", the term is used exclusively in the sense of green transitions and none states the explicit goal to change systemic processes or set-ups. Moreover, both the EU (2019: 2, 17) and US (2021: 2, 5) stick to economic growth. China, in turn, though emphasizing economic development, does not mention growth once. Though it is unclear in how far this is done on purpose and should thus not be overrated, it is nonetheless an interesting aspect and reinforced by the Chinese goal of "a green, low-carbon and high-quality development path that gives primacy to ecological civilization" that seems to prioritise qualitative development over quantitative growth (China 2021: 4). In addition, both China (2021: 6) and the EU (2019: 7) target a circular economy. In direct comparison, this is far more pronounced in the GD which repeatedly criticizes excessive resource use and is explicitly labelled "a new growth strategy […] where economic growth is decoupled from resource use" until 2050 (EU 2019: 2). China (2021: 8), in turn, though naming the target, sees 2060 as the deadline and focuses on improved resource use instead of thorough reduction. Nevertheless, the goal strengthens previous impressions from the Chinese strategy and balances the EU's adherence to economic growth. The US, however, sticks to growth without targeting a circular economy.

Overall, the EU targets a 1.5°C limitation, aims to cut GHGEs in half by 2030 compared to 1990 levels and targets climate neutrality by 2050, mentions adaptation (though mostly in an extra strategy), pursues a green transition as well as a just one at home, abroad and even inter-generationally, and seeks to establish a circular economy by 2050. As such, the GD actually meets all objectives conceptualized for an ideal strategy above, showing enormous ambition and exemplary leadership potential. The US and China, in contrast, fall short on a range of objective. Although the US states the 1.5°C goal, mentions halving GHGEs and achieving net zero emissions by 2050, refers to adaptation, and targets a green transition as well as a just transition at home, its LTS shows several shortcomings: It takes 2005 levels as comparison for emission reductions, strongly focuses on green transitions in the energy sector, and completely neglects a global just transition as well as economic transformation. China, in turn, seems to follow the 1.5°C goal, aims at climate neutrality (though by 2060), published an adaptation strategy, targets a green transition, and wants to establish a circular economy, but vastly neglects a just transition and names a mitigation target that would actually lead to an increase in GHGEs until 2030. Regarding objectives, the EU is the actor with the highest potential for exemplary leadership, while the LTS and WG leave considerable room for improvement.

5.2   Horizontal Dimension

Results for the Horizontal Dimension, i.e., the breadth of the approach pursued by the strategies, show several similarities but also considerable differences. Again, there is a clear picture regarding ambition, with the EU pursuing by far the broadest approach among the three ac-tors studied.

Policy Mix

All three strategies pursue a fairly broad policy mix, though there are significant differences in scope and focus. For the EU, *Energy Policy* plays a central role, where it explicitly aims at "phasing out of fossil fuels" (EU 2019: 18) and developing a "power sector […] that is based largely on renewable sources" (ibid: 6). Accordingly, it seeks to end subsidies for fossil fuels, promote technologies, infrastructure and research on renewables and hydrogen, and improve energy efficiency across sectors. The strategy does not mention nuclear energy.

The EU (2019: 7) also stresses the importance of *Industry* for achieving climate neutrality and a circular economy, targeting a thorough decarbonization and "a sustainable model of inclusive growth" in the sector (ibid.). Focusing on energy- and resource-intensive areas like steel in particular, the GD seeks to achieve these goals by speeding up digitalization, implementing a "right to repair", expanding recycling, reducing material use and concentration and promoting new technologies. Moreover, the GD targets *Agriculture*, including food production and fishery, stating that "European food […] should […] become the global standard for sustainability" (ibid: 11). The range of measures includes aligning national agricultural strategies with sustainability objectives, reducing pesticides and fertilizers, increasing organic farming, promoting research, and reducing environmental impacts. *Environmental Policy* likewise plays a central role in the GD. Besides linking environmental protection to many of the areas covered and seeking to align EU and member states' (MS) funding with climate goals, the GD also contains a section dedicated specifically to "[p]reserving and re-storing ecosystems and biodiversity" where it targets global action, extension of protected areas, restoration of ecosystems, and increasing biodiversity in cities (ibid: 13). Special attention is given forests that shall "improve, both in quality and quantity" through means such as deforestation-free supply chains (ibid.).

The GD also covers *Construction, Housing and Urban Design* where it focuses on renovation, ex-plaining that "[t]o address the twin challenge of energy efficiency and affordability, the EU and the Member States should engage in a 'renovation wave' of public and private buildings" (ibid: 9). Moreover, it mentions to promote sustainable building materials and greener cities. *Transport and Mobility* are extensively covered as well, including road and rail, aviation and shipping. The numerous means enlisted include shifting freight to rails and ships, promoting sustainable fuels, low-emission vessels and public transport, creating a road-pricing system and new emission standards, closing loopholes in fuel taxations, and expanding the coverage of transport under its ETS.

Another prominent field is *Economic, Financial, and Tax Policy*, which is linked to many areas covered and addressed in an extensive section of its own. The clear focus here is to align EU and member states' budgets as well as financial and tax policies with both environmental and justice objectives by implementing standards, changing taxation and redirecting funding as well as re-forming domestic and global financial systems to support sustainable solutions. Moreover, the EU wants to improve its Just Transition Fund and establish a Social Fund. Thereby, the GD also covers *Social and Employment Policy*, where it also stresses the need for affordability in various areas, mentions financial support for renovation, and wants to revise programs like its Youth Guarantee and Skills Agenda to qualify workers for jobs in green economy sectors. Besides, the EU also covers *Trade and Development* for a global just transition, focusing on Africa in particular where it stresses cooperation on sustainable energy, circular economy models, and biodiversity. Across the wider world, it names financial support for green transitions and states to use its economic clout to diffuse sustainability norms and practices.

The last three policy areas, though, are covered thinly, but are at least mentioned. Regarding *Migration* and *Security*, the GD aims to "work with all partners to increase climate and environmental resilience to prevent climate change challenges from becoming sources of conflict, food insecurity, population displacement and forced migration" and states that "[c]limate policy implications should

become an integral part of the EU's thinking and action on external issues, including in the context of the Common Security and Defence Policy" (ibid: 21). *Health*, finally, is only addressed in passing by means such as providing healthier food alternatives and reducing of air pollution (ibid: 12, 14).

The US policy mix, in turn, is far less extensive than the EU's with a clear focus on *Energy Policy*. Here, the US (2021: 5) aims at "100% clean electricity by 2035". It does, however, not want to end fossil fuels, but only to equip power plants with carbon capture technology to make them "sustainable". Moreover, it aims to build up nuclear power capacity in the upcoming decades (ibid: 27). In addition, a distinct focus lies on promoting energy efficiency across all sectors, especially through electrification as well as technological innovation. These measures play a particularly important role in the context of *Industry Policy*, which is equally stressed in the LTS as in the GD and where the strategy also mentions innovating production processes and improving recycling.

The LTS also addresses *Agriculture*, again naming innovation and technology development, but also improved land and fertilizer management and sustainable cultivation of biofuels. It does, however, also stress that "certain emissions […] from agriculture will be difficult to decarbonize completely" and "[r]eaching net-zero emissions will therefore require removing carbon dioxide from the atmosphere" (ibid: 6). In this context, it extensively covers forestry, aiming at protecting and expanding forests, which links to *Environmental Policy* as well. Here, the US also briefly mentions to protect and restore other ecosystems, but overall environmental benefits are largely named as a by-product of carbon capture and otherwise neglected.

More extensively covered are *Construction, Housing and Urban Design* where the LTS likewise focuses on renovation to enhance electrification and energy efficiency through public investments, technological development, and new energy standards. The US also wants to green its cities and criticizes the high dependency on individual car mobility. Accordingly, it also addresses *Transport and Mobility*, wanting to improve infrastructure that supports greener ways of individual mobility. In addition, there is again a strong focus on electrification and technological innovation, but the LTS also names a considerable range of other actions like sustainable fuels in aviation and shipping, emission standards, and promotion of low- and zero-emission vehicles.

Economic, Financial and Tax Policy, in turn, are covered poorly. Besides a recurrent emphasis on investment and promoting markets for green products and technologies, as well as a minor passage on integrating climate risks into financial systems, the US does not name any means in the field, neglecting taxes altogether. The LTS also only includes some trivial actions in *Social and Employment Policy*. In addition to repeating that green transitions will create jobs and measures have to be affordable, it briefly names retraining programs, enhancing worker protection, and financial support for renovations. Allusions to *Trade and Development* almost inexistent, which is unsurprising in light of the neglected global justice objective found above. The only minor reference to the field is that investment and innovation in the US "will have positive spillover effects including driving down the cost of carbon-free technologies and reducing the costs of climate induced disasters and conflicts around the world, particularly for lowest-income nations that are least able to adapt" (ibid: 50). Moreover, though elaborating lengthy on this crisis dimension, the LTS does not include any *Security* provisions, only stressing that fast climate action will reduce risks of conflicts worldwide. The same holds true for *Health*: Although extensively outlining health risks associated with CC, health benefits are only briefly named as a by-product of reduced air pollution. *Migration* is not addressed at all.

As in the other two strategies, *Energy Policy* plays a leading role in the WG, which gives explicit "first priority" to energy conservation and covers the aspect frequently throughout (China 2021: 5). Besides, China also seeks to enhance efforts on renewable energy sources and increase their share in energy consumption to 25% in 2030 and 80% in 2060 (ibid: 6/7). As means to this end, the WG wants to improve energy standards and management across the board, promote technological innovation and infrastructure, and create tax incentives, pricing mechanisms and market reforms. However, China (2021: 12) also aims to "actively develop nuclear power in a safe and orderly manner" and does not target an end to fossil fuel but only reductions and control of their use. Reducing energy consumption is especially stressed in the area of *Industry*, where the WG aims at "[f]irmly curbing irrational expansion of energy-intensive and high-emission projects" (ibid: 9). In addition, the strategy wants to develop

sustainable products and production processes, develop emission standards, improve recycling and digitalization, and reward companies overachieving on energy efficiency.

Besides the country's huge agricultural sector, *Agricultural Policy* figures surprisingly sparse in the WG with the only reference that China "will move faster to promote green agricultural development and improve carbon sequestration and efficiency in agriculture" (ibid: 8). *Environmental Policy*, in contrast, is addressed extensively, although there is a marked emphasis on carbon capture. Special attention is likewise given to forests with the goal to expand their coverage to 25% in 2030 (ibid: 6, 17). Nonetheless, the WG also enlists a wide range of other ecosystems that shall be protected, expanded, and restored (ibid: 4, 14). Moreover, the strategy seeks to create and enforce standards and guidelines for territorial protection, control land use and conversion, levy preferential taxes, and implement an "ecological compensation mechanism that reflects the value of carbon sinks" (ibid: 23).

China also targets *Construction, Housing and Urban Design* where it focuses on energy-efficiency and low-emission development through means such as energy consumption caps, sustainable renovation, electrification as well as greener cities. In contrast to the other two strategies, China (2021: 14) also puts considerable emphasis on spatial planning, stating that "[g]reen and low-carbon requirements must be applied to every link of urban and rural planning, development, and management". In addition, the WG addresses *Transportation and Mobility*, where energy use and GHGs shall be reduced by developing infrastructure, public transport, rail and water freight transport, electrification, low-emission vehicles, and stricter emission standards.

Moreover, China places huge emphasis on *Economic, Financial, and Tax Policy*. Wanting to "give full play to the guiding role of government investment", it seeks to align spending with climate objectives by limiting subsidies for high-emission sectors and increasing support for green transition projects (ibid: 21). Moreover, standards and guidelines shall make private investment more sustainable and new taxes shall support mitigation, green transitions, and environ-mental protection.

Social and Employment Policy, in contrast, is not included in the WG at *all and Trade and Development* only addressed briefly. Here China (2021: 19) states to "promote South-South cooperation [to] help other developing countries better address climate change" and mentions technology transfer, promoting green development in external relations and controlling trade of high-emission products. Migration, Security and Health, finally, are not covered in the Chinese strategy.

In summary, the EU not only utilizes the broadest policy mix among the three actors. It even addresses *all* categories and (except security, migration, and health) covers most of them extensively, thereby closely approximating the conceptualized "ideal" approach. Moreover, it targets an end of fossil fuels and a rapid switch to renewables without relying on nuclear energy and by its extensive coverage of trade and development, financial and tax as well as social and employment policy remarkably addresses just transition policies. The US, in turn, covers half of the policy areas fairly sufficient, though it clearly focuses on energy (efficiency). What is more, it does aim to end to fossil fuels and wants to build up nuclear energy and, except some minor social and employment means, largely neglects actions for a just transition at home and especially abroad. China likewise covers half of the areas satisfactorily, but also focuses on energy (and financial policy) and covers the rest of the categories only moderately. Moreover, just transition policies are almost absent from the strategy, which also sticks to fossil fuels and seeks to build up nuclear energy. Regarding the policy mix the EU is by far the most ambitious one among the three, closely approximating the conceptualized ideal.

Spheres of Change

Regarding the spheres of change targeted, the overwhelming majority of actions in all three strategies aims at the *Practical Sphere*. Measures, here, cover a wide range in each of the documents with many similar among them. These include expanding renewable energy by building up infrastructure and increasing funding and research; promoting energy-saving measures across sectors; renovating buildings and industrial plants; advancing public transport, low-emission vehicles and alternative fuels like hydrogen; promoting green materials, products and production processes; enhancing recycling, and utilizing public investments. In addition, all strategies name afforestation to enhance carbon capture

with the WG most pronounced on the issue as well as carbon capture through innovation and, though this is most prominent in the LTS. Technology and innovation, in turn, play a substantial role beyond this within the LTS, which focuses intensely on technological solutions throughout, highlighting their potential in all sectors and the need to promote their innovation and deployment. The emphasis is less distinct in the WG, but still discernable, whereas the GD is far less occupied with such solutions. Nonetheless, there is a strong emphasis on practical means in all strategies, though this focus is most distinct in the LTS and becomes even more pronounced when the other spheres are considered.

Measures targeting the *Systemic Sphere*, i.e., actions that aim to change political, economic or societal structures or processes, are fairly implicit but most noticeable in the GD. One of the central measures, here, is the considered "right to repair" that would represent a crucial change in the legal system contributing to reduced resource consumption and a circular economy. Another important passage is the EU's (2019: 2) aim to "be at the forefront of coordinating international efforts towards building a coherent financial system that supports sustainable solutions". Moreover, the GD announces the Climate Law that, among others, shall "ensure that all EU policies contribute to the climate neutrality objective and that all sectors play their part" and can be seen as a systemic measure changing policy-making processes across the board to align them with sustainability objectives (ibid: 4). Besides these fairly concrete passages, the EU enlists a high variety of regulations, standards, and guidelines, e.g. for the in-corporation of sustainability objectives, emission caps and mitigation, energy efficiency, and sustainable production and recycling (see Working Mechanisms), many of which would change operation modes in economic and financial systems to promote greater sustainability and just transitions by legally limiting options for action. The most explicit systemic measure in the WG, in turn, is to "build investment and financing systems tailored to the goals of carbon dioxide peaking and carbon neutrality" (China 2021: 21), which is similar to respective provisions in the GD. In addition, China considers to develop a carbon neutrality law and formulate and revise a considerable amount of laws, regulations and standards for energy efficiency, emissions, sustainability and a circular economy, which would likewise contribute to shifting the economic system towards greater sustainability. The LTS, finally, disappoints with respect to systemic changes as it only includes a minor passage about integrating climate risks into the financial system and vaguely refers to some regulations throughout.

Provisions directed at the *Value Sphere* are again most prominent in the GD. Though it hardly explicitly targets norms and beliefs, the EU includes several actions that aim to enhance understanding of the crisis by fostering dialogue and spreading information, which would also increase the value of sustainability in citizens' worldviews. The most important one among these is the so-called European Climate Pact, an offer for debate to European citizens that, among others, shall "encourage information sharing, inspiration, and foster public understanding of the threat and the challenge of climate change and environmental degradation and on how to counter it" (EU 2019: 22). In addition, the EU (2019: 19) wants to implement "a European competence framework to help develop and assess knowledge, skills and attitudes on climate change and sustainable development", distribute information on products and waste reduction, and integrate the issue of sustainability into education. The WG, in turn, only contains a minor passage that might aim at the value sphere, where it similarly seeks to integrate sustainability issues into the educational system and "build societal consensus" on such issues (China 2021: 8). The LTS is completely silent on the matter of changing values.

Overall, all actors focus on a broad range of practical solutions. However, this emphasis is most pronounced in the LTS which not only strongly relies on innovation and technology, but also neglects the other two spheres. China, in turn, at least scores fairly well on systemic measures, though largely ignoring value change. The EU, finally, complements a wide range of practical means with a series of provisions that would lead to systemic modifications as well as changes in attitudes and worldviews. Thereby, the EU again closely approximates the conceptualized ideal response to the crisis and holds the highest potential for exemplary leadership, followed by China and the US on the third rank.

Working Mechanisms

Regarding the working mechanisms of measures in the strategies, clear differences in scope and emphasis are discernable again. The GD, first, aims at *Encouraging Voluntary Action*. Here, the EU (2019:

8) among others seeks to expand production and consumption of "reusable, durable and repairable products" and to increase transparency on their origin and environmental impact, e.g. through a digital product passport. Moreover, the European Climate Pact plays a central role again which shall foster citizens' commitment to climate action by enhancing understanding of the crisis and creating "real and virtual spaces for people to express their ideas and creativity and work together on ambitious action, both at individual and collective level" (ibid: 22). Voluntary action is supplemented by a series of *Market Mechanisms* in the GD. Besides promoting private investment, it wants to use its own role as an investor and market actor to promote sustainable practices. This includes green public procurement, ending subsidies for fossil fuels and redirecting public investments and budgets of both the EU and the MS towards climate and justice objectives, e.g. sustainable steel, renovations, or re-skilling, with an explicit "25% target for climate mainstreaming across all EU programmes" (ibid: 15). Furthermore, the GD names several pricing mechanisms. For its ETS, allowances for aviation shall be reduced and shipping, road traffic and buildings be included, while the EU (2019: 20) also envisions "international carbon markets as a key tool to create economic incentives for climate action" and considers a "carbon border adjustment mechanism" to price imports according to GHGEs (ibid: 5).

The clear focus in the GD, however, lies on *Regulation* through the creation of new and the revision and enforcement of existing legislation, regulations, guidelines, and standards for a wide spectrum of areas. These include energy efficiency; sustainable construction; new fuels and vehicles and GHGEs by conventional engines; land and fertilizer use and protection of ecosystems; sustainable and circular production; waste reduction and recycling, including the "right to repair"; and greener public and private investments. Moreover, the GD targets regulation in the context of international cooperation, stating among others that "[t]he EU should use its expertise in 'green' regulation to encourage partners to design similar rules that are as ambitious as the EU's rules" (ibid: 21). Finally, it also mentions taxation, e.g. by closing loopholes for fossil fuels and using revenues for just transitions.

The US, in contrast, clearly focuses on *Market Mechanisms*. Besides greening government procurement and creating financial incentives for innovation and technology development, the clear focus lies on public investments, e.g. in renewable energy technology and infrastructure, low-emission vehicles, alternative fuels like hydrogen, energy-efficient buildings and renovations, retrofits of fossil fuel mines, and afforestation. Unlike the GD, however, which is quite precise on the amount of spending envisioned, the US strategy remains fairly vague in this respect. Moreover, the LTS targets a considerably smaller array of sectors and strongly focuses on funding (technological) innovation. What is more, the LTS recurrently refers to the "natural" operation of market forces that are said to have led and continue to lead to an increasing demand for green technologies, hence reducing costs and contributing to the green transition – without any government interference (ibid: 7, 14, 18, 26).

The focus on market mechanisms becomes even more pronounced in light of fact that the other two working mechanisms are largely neglected in the US strategy. The only passages that might classify as *Encouraging Voluntary Action* are some vague plans to boost private investment for green transitions and there are only some elusive references to *Regulation*. The most specific passages here are "standards to reduce pollution from power plants" (ibid: 14), "fuel economy and emissions standards in light-, medium- and heavy-duty vehicles" or "the advancement of building energy codes and appliance standards" (ibid: 15), which still remain opaque about content and ambition of these standards. Vagueness increases for other passages where the LTS only refers to the creation of policies, standards or regulations without further explanation. Taxes, finally, are not mentioned at all.

China, in turn, is often quite vague on the nature of its working mechanisms as it frequently just uses terms such as "promote", "develop" or "advance". Nonetheless, it does include all three mechanisms. Regarding *Voluntary Action* China (2021: 8) aims to "advocate living patterns that are green and low-carbon" and "move quickly to create a system for facilitating full public participation" in such patterns, though it is doubtful in how far behavioural changes could be called "voluntary" in light of China's social credit system. However, the WG also wants to "give full play to the role of *Market Mechanisms*, and create effective incentive and restraint mechanisms" (ibid: 5, emphasis added). It aims to green government procurement and reward industrial facilities for energy efficiency, but the focus also lies on public investment (of unclear amount) to support mitigation and green transitions, e.g. by

redirecting funds from fossil fuels to energy-efficiency measures, greener transport and construction, and carbon capture. Moreover, China (2021: 12) wants to develop various pricing mechanisms to support mitigation and green transitions and to advance its ETS "by gradually expanding its coverage, diversifying trading types and means, and improving the allocation and management of allowances".

Though less extensively and specific than the GD, the WG puts a similar emphasis on *Regulation*, also addressing it in a specific section. Among others, China (2021: 20) wants to "remove the contents in existing laws and regulations that are incompatible with the task of car-bon dioxide peaking and carbon neutrality", formulate a specific carbon neutrality law, and create, revise and enforce legislation, guidelines and standards for areas such as energy efficiency and GHGEs, export of high-emission products, conventional vehicles, environmental protection and spatial planning; and sustainable public and private investment. Moreover, the country aims to "actively participate in formulating international rules and standards" (ibid: 19). Finally, China also targets preferential taxation for energy use, renewable sources and environmental protection.

Summed up, clear differences in scope and emphasis are discernable for the working mechanisms targeted in the strategies. Again, the EU is by far the most ambitious one by including a wide range of measures for all three mechanisms with a strong focus on regulation. Though not as ambitious as the EU, China interestingly scores fairly well in this category as well, especially as it covers a considerable range of market mechanisms and puts a distinct emphasis on regulation. The US, however, again fails to meet ambition in this category as it neglects voluntary action, remains brief and vague on regulation, and focuses on public investments of unclear amount and "natural" market forces.

Overall, results for the Horizontal Dimension clearly paint the EU as the actor with the highest potential for exemplary leadership as its strategy strongly approximates the ideal crisis response developed above: The GD outlines a truly broad policy mix by naming all areas conceptualized and (except security, migration and health) covering many of them extensively, where it also aims to phase out fossil fuels and rapidly switch to renewables without relying on nuclear energy and extensively addresses areas for a just transition at home and abroad. Moreover, though focusing on practical solutions, the GD includes a number of provisions that aim to change systemic set-ups and processes as well as values and embraces all three working mechanisms with a strong focus on regulation. The US, in contrast, falls short in all categories of the Horizontal Dimension: Though covering a range of policy areas fairly well, it neglects areas for just transitions and strongly focuses on energy, where it does not even aim to end fossil fuels and relies on nuclear energy. In addition, the LTS focuses on practical measures (especially innovation and technology) and market mechanisms (especially vague public investments), largely ignoring systemic and value changes, voluntary action and regulation. China actually scores better than the US, though leaving room for improvement: Although addressing half of the policy areas sufficiently and aiming to expand renewables, it does not seek to phase out fossil fuels, wants to build up nuclear power and largely neglects areas for a just transition. However, though focusing on practical means and neglecting value changes, China also includes a number of provisions for systemic changes, and though brief on voluntary action covers all working mechanisms with a discernable emphasis on regulation. Regarding the Horizontal Dimension, the EU has again the highest potential for exemplary leadership, followed by China, while the US is far from ambitious.

6.3   Vertical Dimension

Findings for the Vertical Dimension, i.e., the levels named for own action in the strategies as well as the actors targeted for action and cooperation, likewise show the EU as the actor with the highest potential for exemplary leadership, while the US and China again fall short on ambition.

Levels of Action

Regarding the levels targeted for action, the three strategies show some similarities, but also striking differences. The latter are especially prominent for action the *Supra- and International Level*, on which the GD is the most pronounced (even when EU's "default level" of supranational action is left aside). Besides repeatedly stressing the global scope of the crisis, the GD strongly commits to international action throughout and dedicates an extra section to EU engagement on the global level. Among others,

the EU wants to promote worldwide action on sustainability and biodiversity, end subsidies for fossil fuels, advance renewables and green the international finance system by building standards for investments and products, and prevent CC induced conflicts from escalating. In addition, the GD elaborates on the importance of trade relations for diffusing sustainability norms and wants to use its experience and economic clout to induce others to step up their standards. What is more, the EU (2019: 20) wants to "increase the collective effort and help [states] to revise and implement their [NDCs] and devise ambitious long-term strategies", explicitly aiming to set "a credible example".

Global action is less present in the other strategies. Nonetheless, China (2021: 19) at least wants to green its diplomatic and trade relations, enhance climate cooperation among developing countries and engage in climate negotiations to "formulat[e] international rules and standards and promote the establishment of a fair and rational system for global climate governance". However, it also stresses differentiated responsibilities between industrialized and developing countries and to "resolutely safeguard [China's] developing rights" (ibid: 5), which raises doubts about the seriousness of its actual commitment to (global) climate action. Nevertheless, China is more vocal on global action than the US. Although including a short section on "[a]ccelerating global climate progress" where it forcefully calls upon its partners to enhance their ambition (US 2021: 55), there is hardly any reference to actual US engagement on the global level in the LTS. The most explicit passage is the mention of the Methane Pledge 2021 where the US states that it "co-leads with the EU" (ibid: 24), and a brief remark that "leadership and action" by the US and others will encourage higher ambitions worldwide (ibid: 56).

Action on the *National Level*, in turn, is obviously omnipresent in the WG and the LTS as it is their default level for action. However, it is also targeted in the EU strategy. Besides stressing the need for national reforms and ambition throughout, the GD in this context aims to align national budgets with sustainability objectives, wants to supervise and, if necessary, improve national climate, energy and agricultural strategies, and seeks to encourage national action on biodiversity. Furthermore, it targets joint and complementing action by the EU and its MS in fields such as renovations, investments, climate diplomacy, alternative fuels, environmental crime and protection, and just transition.

Regarding action on the *Regional and Local Level*, the EU (2019: 20) explicitly stresses the need for "tailor-made geographic strategies". It differentiates between urban and rural areas, wanting to assist in formulating "sustainable urban development strategies" and "help rural areas to harness opportunities in the circular and bio-economy […], taking into account their vulnerability to climate change and natural disasters and their unique assets" (ibid: 23). Action on the local level is also mentioned in the context of EU-Africa cooperation. China (2021: 3/4, 10-12), in turn, also targets action on the regional level, wanting to formulate regional strategies for sustainable development, improve spatial planning and tailor renewable energy development to regional conditions. Though repeatedly stressing that "U.S. climate action […] necessarily spans all levels of government" (US 2021: 7), the LTS does not mention action of the federal government on these levels. However, this is likely due to the huge autonomy of US states so that this lack has to be omitted from leadership considerations.

Overall, the EU pursues by far the deepest approach, targeting considerable action on the regional, national, and global level with a noticeable focus on the latter. China, in turn, also addresses all levels, though there is room for improvement on global action. The US, however, scores low again: Although the lack of regional action might be attributed to the governance system and hence be ignored, the equally strong neglect of global action strikes a harsh blow to US leadership potential.

Actors

Finally, the strategies vary considerably with respect to the actors named for action and cooperation, with the GD again the most far-reaching one. Regarding *States*, the EU (2019: 20) – besides aiming at working with its MS – declares to focus on cooperation with surroundings, especially the Western Balkans and its Southern neighbours, since "[t]he ecological transition for Europe can only be fully effective if the EU's immediate neighbourhood also takes effective action". Nonetheless, it also goes beyond and targets cooperation with a broad range of partners across the world, focusing on Africa but also naming Asia, Latin America, the Caribbean, and the Pacific (ibid. 20-22). The only country named explicitly is China (the omission of the US is likely due to the Trump administration holding office in 2019

which rendered transatlantic (climate) cooperation illusory). In addition, the GD pursues engagement in multilateral for a, naming several *International Organizations* in particular, e.g. the United Nations and the World Trade Organization as well as fora like the G7 and the G20. Global cooperation is supplemented with the aim to cooperate with *Regional and Local Authorities* in areas such as renovation and air pollution. In this context, it explicitly names the EU Convent of Mayors that shall "continue to be a central force" and partner for sustainable development of cities and serve as "an essential platform to share good practices on how to implement change locally" (ibid: 23).

Moreover, the *Private Sector* is mentioned for action and cooperation with special emphasis put on industrial companies. Here, the GD wants to support cooperative models like the European Battery Alliance and other resource-pooling initiatives and aims to boost innovation. Moreover, the EU wants to encourage private investment by businesses and banks to fund green transitions at home and abroad, aims to promote transparency and sustainability throughout the private sector and seeks to promote dialogue between social partners.

The GD also targets action by and cooperation with *Individuals* in various roles: As workers by re- and upskilling measures; as consumers through increased information and options for sustainable products as well as incentives for returning unused devices; and as general citizens. Here, the Climate Pact is central to the EU's strive to enhance individual climate action as well as EU-citizen dialogue and cooperation, though measures also include financial support, information campaigns, and simplified waste management. In addition, the GD wants to "improve access to administrative and judicial review at the EU level for citizens and [non-governmental organizations] who have concerns about the legality of decisions with effects on the environment" (ibid: 23). This is also the only reference to *Civil Society Organizations* on which the GD thus falls rather short. Covered just as briefly are *Education and Research Institutions* where the EU (2019: 18/19) only mentions universities and schools and the European Institute of Innovation and Technology that shall encourage cooperation between companies, research institutes and educational institutions to foster innovation.

The array of actors targeted is far more limited in the LTS and the individual categories are less extensively covered. Although the US does enlist a range of *States* and regions, e.g. the EU, Canada, Japan, South Africa and the Republic of Korea, praising their climate ambition and declaring that their "leadership and action" together with the US will advance action worldwide (ibid: 56), a closer look reveals that there is hardly any talk about cooperation. Instead, language conveys a strong sense of unilateral action and equal distribution of responsibility, which reinforces the lack of commitment to global action found above. This further intensified by the fact that the LTS does not name any *International Organizations* and though mentioning the G7 and G20 does so only when calling upon individual parties for action. However, *Regional and Local Administrations*, figure more prominently in the strategy. Besides highlighting their contribution to mitigation and green transitions, the LTS explicitly aims to interlink top-down and bottom-up approaches by complementing federal with "non-federal leadership" (ibid: 7). It repeatedly aims to cooperate with sub-national administrations, explicitly naming "Tribal governments, U.S. states, cities, counties, and other non-federal actors" as actors and partners for innovation, standard-setting, public investments, and social benefits (ibid: 19).

Moreover, the LTS targets the *Private Sector*, stressing its importance for (technological) innovation, but also mitigation and green and just transitions. As in the GD, a special focus lies on industrial companies, especially for enhancing energy efficiency. In addition, the US (2021: 51) repeatedly stresses the importance of "private sector businesses, industry, and investors" for climate responses, though and it remains rather vague on how their action shall be promoted in particular.

Although the US (2021: 55) also states that "our people" are vital for achieving the goals of the LTS, action by *Individuals* figures sparsely in the strategy. There are only some minor references to re-skilling and "engagement with […] workers" (ibid: 17), financial aid programmes for lower-income households, and cooperation with private land owners. However, action by and cooperation with *Civil Society Organizations* is slightly more pronounced than in the GD. Among others, the LTS stresses that "[e]ven more broad-based engagement on research, education, and implementation through […] non-governmental organizations […] will be required" to achieve the strategy's objectives (ibid: 55). In this

passage the LTS also highlights the importance of *Education and Research Institutions* (ibid: 8, 55), which are otherwise neglected in the document.

China (*2021: 19*), finally, does not name any *States* at all, but only vaguely states that it "will strive to promote South-South cooperation", "deepen exchanges and cooperation with other countries", and "make green development a defining feature in the joint pursuit of the Belt and Road Initiative" (its foreign development program). It also completely ignores *International Organizations*. *Regional and Local Administrations*, however, play a greater role. Besides wanting to encourage local initiatives on mitigation and green transitions, the WG more abrasively declares that "local [party] committees and governments at all levels must resolutely shoulder their responsibilities concerning carbon dioxide peaking and carbon neutrality" (ibid: 24). However, there is also a noticeable emphasis on top-down supervision through controls, reports, rewards, and legal accountability (ibid: 24/25).

This focus on top-down management and control is also discernable in the context of *Private Sector* action which plays a huge role in the WG for innovation, energy efficiency and mitigation. Similarly focusing on industry the WG, among others, wants to "support […] key industries and key enterprises in taking the lead in carbon dioxide peaking", while tighter ETS caps also target more ambitious action by the private sector (ibid: 24). In addition, encouragement of private investment through a wide range of measures plays a similar role in the WG as in the other two strategies.

Individuals are also addressed in the WG but rather briefly. Generally, the WG wants to "advocate simple, moderate, green and low-carbon living patterns" (ibid: 5) for which it consumers, wanting to enhance consumption of green products, as well as general citizens, aiming to "create a system for facilitating full public participation" in green living (ibid: 8). Here, it especially names rewards for sustainable behaviour, which underpins the emphasis on top-down management found above. *Civil Society Organizations*, in turn, are not mentioned, but China targets Education and Research Institutions, where it is the most elaborate among the three actors. Besides integrating the topic of sustainability into education, the country wants to "develop key national laboratories, national technological innovation centres, and major scientific and technological innovation platforms" and seeks to "encourage universities and colleges to establish disciplines and majors relevant to peak carbon dioxide emissions and achieve carbon neutrality" (ibid: 16).

Overall, results for the Vertical Dimension are as unambiguous as for previous categories, clearly depicting the EU as the most ambitious actor. The Union not only aims to act on the global, national, regional level, but also targets a wide range of actors, i.e., states, international organisations, regional and local administrations, the private sector, and individuals. Though falling slightly short on education and research institutions and civil society organisations, the GD thereby comes fairly close to the ideal climate response above, showing huge potential for exemplary leadership. The US, in contrast, cannot be considered ambitious again: Though the lack of action on the regional level might be ignored due to its governance system, it also disregards action on the global level which is intensified by the neglect of bi- or multilateral cooperation. Moreover, though addressing regional and local administrations and the private sector fairly well, the rest of the categories are covered briefly or not addressed at all. China, finally, at least suffices regarding the levels of action, naming global engagement and regional action. It does, however, fall short on the actors targeted: Although covering regional and local administrations, the private sector, and education and research institutions fairly well, and individuals at least moderately, states, international organizations and civil society actors are hardly addressed at all. What is more, there is a strong emphasis on control and supervision from the national level downwards instead of true encouragement of bottom-up approaches.

Table 2 now sums up the results of our qualitative content analysis regarding the current ambition and potential for exemplary leadership of the EU, the US and China:

	First-tier	European Union	United States	China

	sub-categories	*Green Deal (2019)*	*Long-term Strategy (2021)*	*Working Guidance (2021)*
Objectives	**Temperature Goal**	+1.5°C	+1.5°C	+1.5°C
	Mitigation	Reduce GHGEs by 55% until 2030 (compared to 1990 levels)	Reduce GHGEs by 50-52% until 2030 (compared to 2005 levels)	Reduce carbon intensity by 65% until 2030 (compared to 2005)
		Climate neutrality until 2050	Climate neutrality until 2050	Climate neutrality until 2060
	Adaptation	In special strategy	Announcing special strategy	In special strategy
	Green Transition	Major objective	Major objective	Major objective
	Just Transition	Major objective at home, globally and inter-generationally	Minor objective at home	Not mentioned
	Systemic Transformation	Circular economy	Not mentioned	Circular economy
	Policy Mix *(Energy, Industry, Agriculture, Environment, Housing/Construction, Transport/Mobility, Economy/Finance, Social/Employment, Trade/Development, Security, Migration, Health)*	Naming all areas, covering most of them extensively	Covering half of the policy areas, strong focus on energy	Covering half of the policy areas
		Ending fossil fuels	No end to fossil fuels	No end to fossil fuels
		Nuclear power not mentioned	Extend nuclear power	Extend nuclear power
		Many areas for just transition at home and abroad	Just transition areas largely neglected	Just transition areas largely neglected
	Spheres of Change *(Practical, Systemic, Value)*	Wide range of measures targeting all three spheres	Almost exclusive focus on practical means	Many practical means, some systemic measures
	Working Mechanisms *(Voluntary Action, Market Mechanisms, Regulation)*	Wide range of all three working mechanisms, focus on regulation	Strong focus on market mechanisms, some vague regulation	Range of all three mechanisms, discernable focus on regulation
Vertical Dimension	**Levels of Action** *(global, national and regional/ local)*	Targeting considerable action on all levels	Neglecting global action	Targeting all levels, some shortcomings on global action
	Actors *(States, Int. organisations, regional/local administrations, private sector, individuals, civil society organisations., education/research institutions)*	Targeting a wide range of actors; shortcomings on civil society organisations and education/ research institutions	Addressing regional administrations and private sector fairly well; shortcomings for the remaining categories	Targeting regional administrations, private sector, individuals and education/ research institutions fairly well; shortcomings for the remaining categories

Tab. 2: Results of the qualitative content analysis of the current climate strategies.

6.   Conclusion

Our qualitative content analysis of current climate strategies unsurprisingly revealed that the EU is the only one among the three major emitters that holds substantial potential for exemplary climate leadership during implementation of the PA. Based on the conceptualization of an "ideal" climate approach, our analysis has shown that the *Green Deal* is in many respects almost congruent with this ideal, showing a high understanding for the complexity of crisis at hand and outstanding ambition in its attempt to counter it: The EU pursues a truly broad and deep approach to become the first climate neutral continent by 2050 and to ensure that this process of a green transition is as just as possible. Minor shortcomings regard the areas of health, migration and security and cooperation with civil society organisations as well as education and research institutions, where the EU might step up its approach.

In contrast, we have found considerable shortcomings for the current climate strategies of the US and China, with the US interestingly scoring even worse than its transpacific counterpart. Though targeting climate neutrality, both actors' 2030 mitigation targets are far from sufficient and aspects of justice are largely neglected. However, China's approach is at least broader and deeper than the one outlined in the LTS that sticks to fossil fuels, focuses on energy (efficiency), technology and innovation, and market mechanisms, and neglects global action. Though likewise sticking to fossil sources, China at least succeeds to include a circular economy and some systemic measures as well as all three working mechanisms. And despite shortcomings regarding global action, overall it fares better regarding the levels of action and actors for cooperation included in its strategy compared to the US.

Thus, the EU holds by far the highest potential for leadership by example in the implementation phase of the Paris Agreement. What is more, its history of recurring (exemplary) climate leadership over the last decades and its extensive and progressive domestic climate regime lend considerable credibility to this leadership potential. Although it remains to be seen, in how far the progressive provisions announced in the GD will actually be implemented and the green investment taxonomy adopted in 2022 classifying nuclear energy as sustainable did represent a setback, central measures like the Climate Law (2021) have already been adopted by the EU and enactment of the GD is under way in many sectors. General credibility remains high and, overall, the EU is well-equipped to exercise credible leadership by example in the implementation phase of the Paris Agreement. In contrast, the low leadership potential found in the Chinese and US strategies is further diminished by recurrent setbacks in both actors' domestic climate policy and global engagement on the issue.

In order to keep global warming and its impacts at a tolerable level, especially the US and China as major emitters will have to considerably ratchet up their ambitions for which our conceptualized "ideal" and analysis yields provisional policy recommendations. Besides stepping up 2030 mitigation targets and aspects of justice in their approaches, both actors, but especially the US, need to broaden and deepen their approach, taking more policy areas into account, resolutely working to phase out fossil fuels and switching to renewables, pursuing greater systemic changes and stricter regulation, committing to global cooperation, and targeting a wider array of actors across society.

However, more research is needed of additional documents and domestic policy frameworks to assess the overall level of ambition and deduct comprehensive policy recommendations. Though surely in need for refinement, the category system developed here could be a valuable starting point for such future studies. With its development and the conducted qualitative content analysis, this paper has contributed to closing a substantial research gap, i.e., the lack of methodologically based analyses of climate leadership. Besides refining the category system and studying the broader policy frameworks of the three actors analysed here, subsequent studies should take a closer look at the implementation process of the strategies analysed here and study and compare strategies of other actors across the world to determine overall ambition and possible leaders and develop recommendations for improving real-life approaches. The world needs ambitious and comprehensive climate action fast and worldwide. So far, the EU *Green Deal* seems to provide a good real-political inspiration and an example to ratchet up worldwide approaches and keep a liveable future in reach.

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