Transformative Climate Actions

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INTRODUCTION

Decades of climate research, environmental education, and climate policies have gone hand in hand with increased greenhouse gas (GHG)-emissions (IEA 2021). Progress in climate mitigation has been dismal, COP27 in Sharm El-Sheikh has been described as a "collective failure" due to the lack of progress on limiting future fossil-fuel emissions (Siva, 2022). This creates doubts about the effectiveness of conventional climate actions and poses challenges for climate research. This paper builds on the growing body of literature that undertakes a critical appraisal of climate actions (e.g. Stoddard et al., 2021; United Nations Environment Programme, 2020; Blühdorn et al., 2022) with the intention to improve their impact. Climate actions in general cover all climate-relevant activities, including instruments (e.g. an eco-tax), a bundle of measures (e.g. for expanding public transport), and policies (e.g. implementing a walkable city).

This paper builds on research that investigated why climate action so far has had so limited impact on mitigating global heating (Blühdorn, 2022; Brand et al., 2021; Brand-Correa et al., 2020). A key reason relates to the fact that the climate crisis is not the only crisis threatening modern societies and human conviviality. There are multiple, complex and interwoven crises (Bärnthaler et al., 2021; Brand et al., 2021; Gills, 2020)**.** Besides the human-induced climate crisis (Stuart et al., 2020), the COVID-19 pandemic (Foundational Economy Collective, 2020; Heintz et al., 2021), the Russo-Ukrainian war, and soaring costs of living are only the latest additions to ongoing multiple socioecological and political-economic crises (Jessop, 2015, p. 201). Alongside these developments, the awareness that we live in times of profound change is increasingly acknowledged not only by scientists and grassroots activists but also by the general public, public policymakers, and business interest groups (Stuart et al., 2020; WBCSD, 2021). However, there is

a huge gap between calls for systemic change on the one hand and intentions, e.g. as expressed in Nationally Determined Contributions (NDCs), as well as actual outcomes on the other (Brand, 2016; Stoddard et al., 2021; United Nations Environment Programme, 2020). Furthermore, discourses of climate delay are widespread (Lamb et al., 2020, p. 20) and objection to climate policies is politicized by a reactionary right, as exemplified by US Republicans and Brazilian ex-president Bolsonaro (Novy, 2022).

Reflecting on the causes of sustained unsustainability, this paper introduces a new concept to denote a specific type of climate action: transformative climate action (TCA). As a subset of climate actions, we define TCAs via three elements and six characteristics that are actualized in a more or less effective way in different contexts. This conceptualization permits distinguishing the broad variety of climate actions in general from those considered transformative. This paper is structured into five chapters. After an introductory chapter 1 chapter 2 describes the three elements of TCAs as actions that are simultaneously *desirable*, *effective,* and *feasible.* Chapter 3 explains the six characteristics of TCAs, while chapter 4 focuses on context-sensitivity as constitutive for judging the context-specific effectivity of climate actions. This has two important implications: TCAs are not isolated actions but are always articulated as part of a portfolio of actions. Following from this, they are context-specific portfolios of actions coordinated by diverse actors that aim at shaping the desired transformation. Chapter 5 concludes and outlines implications for research and policymaking.

ELEMENTS OF TRANSFORMATIVE CLIMATE ACTIONS

To identify constitutive elements of TCAs, we drew on two related concepts. The first refers to *successful actions*, elaborated in IPCC AR6, Working Group II on adaptation. Successful actions

are characterized as "effective, feasible and just" (IPCC, 2022a, 1-4)[1]. As justice in AR6 is defined broadly, covering social and climate justice, including fairness and equity (IPCC, 2022a, SPM-5), it refers to what we call "desired". The second concept that inspired our reflections is *transformative innovation,* which has a twofold ambition: to avoid utopianism and to argue against incrementalism (Novy et al., 2022). Transformative innovations are not only desirable but also (i) feasible in the short run and (ii) effective in the long run (ibid.). In this definition, actions are feasible if they can be implemented here and now, given specific constraints of actors´ capabilities and power relations. This understanding of feasible bridges the gap between a desired transformation on the one hand and the current spatio-temporal capacities and selectivities (Jessop, 2005) that restrain the available options on the other. It acknowledges that it is illusionary "to assume a society shaped by man´s will and wish alone" (Polanyi, 2001, p. 266). The desirable is not always possible, and definitively only in exceptional cases in the short-run. Combining elements from both concepts ("transformative innovation" and "successful action"), we propose three *necessary* elements for TCAs: desirability, effectiveness, and feasibility. In other words, if a climate action is not desirable, effective, and feasible – it is not transformative.

Desirable are actions based on collectively self-defined goals, be it in a neighborhood or by the international community (Bärnthaler, forthcoming). Exploring desirability must not be confused with 'adding up' individual preferences, but entails explicit or implicit meaning-making on notions of a good life, e.g. via deliberation (Hammond, 2020). In climate politics, it is increasingly assumed that desirable means enabling a good life for all within planetary boundaries. This is the goal of the SDGs as well as the Paris Agreement, including actions for mitigation and adaptation.

[1] The page numbering of the IPCC is chapter-specific. "1-4" indicates Chapter 1, page 4, not a page range. This format will be used for all IPCC reports in this paper. Related, SPM-5 refers to the chapter titled "Summary for Policy Makers", page 5.

However, this noble objective is all too often subordinated to other apparently more urgent objectives of ordinary people as well as economic and political power holders. A strengthened reactionary right is currently challenging TCAs exactly because it aims at a good life only for the select few, be it a nation, a race, or members of a common faith (Novy, 2022).

Effective are actions that have the potential to achieve the desirable (Bärnthaler, forthcoming), in the case of climate actions a good life for all within planetary boundaries. This must not limit actions to remedy symptoms with incremental adaptations policies (eg. building walls against flooding). Effective actions change causes, not only their symptoms (Buch-Hansen & Nielsen, 2020; Jessop, 2015) by reducing vulnerability and increasing resilience (IPCC, 2022a, SPM-6). Effective climate actions often simultaneously contribute to mitigation and adaptation, also protecting biodiversity, thereby, shaping less exploitative and more sustainable society-nature relations.

Feasible are actions that actualize potentials here and now, in a concrete context and conjuncture (Bärnthaler, forthcoming). Feasibility, though often neglected, is crucial. Lack of feasibility is often a main hindrance to implementing desirable and effective actions. Research has to investigate practices and power relations in concrete situations, also called conjunctures, identify powerful actors as well as feasible strategies here and now (Blühdorn, 2022; Eckersley, 2020a; Novy et al., 2022).

CHARACTERISTICS OF TRANSFORMATIVE CLIMATE ACTIONS (TCAs)

To specify TCAs, chapter 3 identifies six key characteristics that are likely to make an action or a portfolio of actions desirable, effective and feasible. The six characteristics are informed by our specific interest in the policy field of settlement structures – and may differ from those key in other

policy fields. In the following, each sub-chapter explores one of the key characteristics. Although not all characteristics must necessarily be fulfilled for an action to be considered a TCA, the more characteristics an action or portfolio of actions embodies, the more *effective* a TCA is likely to be. This increases the likelihood that an action's transformative potential is actualized. In so doing, each sub-chapter briefly describes the characteristic, then relates it to insights in reports from the IPCC and the APCC (Austrian Panel on Climate Change), and, third, complements these insights by drawing upon relevant literature from social and political ecology, ecological economics and degrowth, sustainability and social-ecological transformation. Finally, a concrete example of a TCA is provided to complete the sub-chapter. The six characteristics are listed below to guide the reader.

Transformative climate actions (TCAs) aspire to …

(1) … broaden climate targets to social-ecological goals;

(2) … shape framework conditions for climate-friendly living to transform forms of life;

(3) … link pragmatic and radical actions;

(4) … ensure basic provisioning and limit overconsumption;

(5) … prioritise *avoiding* harm; and

(6) … operate on multiple levels.

Broadening Climate Targets to Social-Ecological Goals

The primacy of mitigation concerns in climate policies has prioritized objectives of decarbonization, net carbon, and zero carbon over other objectives, leading to climate-only actions and siloed climate politics. Often based on an eco-modernist approach, proposed mitigation policies have privileged market solutions and technological innovations. Prominent examples are CO2-pricing and the electrification of mobility, which are sometimes proposed as a panacea, a silver bullet, to solve the climate crisis but fail to deliver (Tapia Granados & Spash, 2019). Such climate-only actions fall behind insights from social-ecological research (Brand et al., 2021; O'Neill et al., 2018). In policy debates, actors in the Global South have often voiced demands to combat poverty, hunger, and other deprivations to support more comprehensive development efforts (UNCTAD, 2019). Nevertheless, these concerns have gained broader support in the research and the climate-policy community only recently – not least because current crises increasingly also affect the Global North. In contemporary debates, first voiced by the *Gilet jaunes* movement and most pronounced in the current cost of living crisis, it has become obvious that climate-only actions, especially price increases, lack public legitimacy. For climate actions to become feasible, goals of climate policies have to take into account broader social-ecological goals, like employment, health, education, and care (Brand-Correa et al., 2020; Brand-Correa & Steinberger, 2017).

IPCC and APCC have recently integrated these insights, thereby overcoming shortcomings in previous reports. WGII of IPCC AR6 defines climate-resilient development as "a process of implementing reduction of greenhouse gases and adaptation solutions, supporting sustainable development for all" (Möller et al., 2022, 10f.). Hence, climate-resilient development pathways explicitly aim at both, the Paris targets and the SDGs, in other words - at emission reductions and

sustainable development. Similarly, ASR on *Structures for climate-friendly living* (APCC, 2023a) not only aims at climate-neutrality, as e.g. defined in European targets[2], but at climate-friendly living, defined as durably ensuring a climate that enables a good life within planetary boundaries (APCC, 2023b, p. 2). The broader goal of "a good life within planetary boundaries" has become widely accepted in research (Brand et al., 2021; O'Neill et al., 2018; Raworth, 2017). Taking this seriously has profound consequences for climate actions, as other environmental, social, and socioeconomic objectives have to be systematically taken into account too.

An example for broadening climate objectives: The current gas crisis and the resultant soaring costs of living show that market measures are effective policies: Higher prices lead to more efforts to save energy. For the first time in the history of climate politics, there have been substantial price increases in fossil fuels in 2022. Indeed, higher energy prices would reduce energy demand, which leads to reduced emissions. However, this was applauded enthusiastically by hardly anybody, as it also endangers access to the amount of energy necessary to satisfy basic needs (e.g. heating cold homes). Therefore, increased energy prices have led to public pleas to counter these demand-reducing effects. Effective climate policies were sometimes even denounced as utopian and destructive due to the short-term detrimental socioeconomic effects, while several policy interventions to cut energy prices were implemented. It is widely acknowledged that additional actions are necessary to compensate for increased costs of living; cash benefits are a start to respond to short-term concerns. In the long run, however, more is needed: changes in practices require heavy investment in social-ecological infrastructures that contribute to mitigation and

[2] Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law').

adaptation while also facilitating people's capacity to live a good life, e.g. affordable or even free public transport for all and decarbonized social housing.

In a nutshell: TCAs aim at enabling climate-friendly living for all, integrating concerns for reducing emissions with affordability, resilience, and sustainable development. TCAs have to include an array of ecological, but also socioeconomic objectives that secure social cohesion as a precondition for effective, but often ambitious and controversial, ecological actions.

Shaping Framework Conditions to Transform Modes of Living

Climate policies often aim at changing individual behavior within the market economy: firms should offer green products, and consumers should buy them. For a long time, the widespread bias in climate research and education towards individualized action has led to an excessive concern for lifestyle choices: 'consumers can save the planet'. Corporations and politicians are inclined to praise consumer sovereignty, apparently empowering consumers. However, related climate actions that focus on raising awareness and shifting responsibility to individuals have been outstandingly ineffective (Shove, 2010). Emphasis is thus shifting towards research on structures that frame the available space of maneuver for individuals. This is essential as structures always precede agency: "People are born and socialized into an already existing world, into existing framework conditions and provisioning systems" (Barnthaler et al., forthcoming). Therefore, expecting too much from individual capacities to act within given structures and blaming wrong lifestyle choices for climate calamities is a fallacy. This has clear implications for climate research and policies: less focus on individual behavior and more attention on how to shape framework conditions, which delimit – i.e. constrain and enable – individual space for maneuver.

These debates resonate with recent insights from the IPCC and the APCC. These debates resonate with recent insights from the IPCC and the APCC. While IPCC AR5 still focuses on supply-side measures to increase efficiency via technological improvements, AR6 for the first time dedicates a chapter to "demand-side mitigation" (chapter 5 of WG III). It shows that well-being and decent living standards for all can be provided with much less energy and resource input. In principle, foundational, everyday needs like housing, food, health, and energy can be satisfied for all inhabitants of this planet, if the provision of goods, services, and infrastructures of this foundational economy (e.g. affordable housing) are prioritized over goods and services from the tradable sector (e.g. tourist apartments) (Bärnthaler et al., 2021; Brand-Correa et al., 2020). However, framing mitigation possibilities primarily via a choice of products and emission-saving production techniques tends to ignore the underlying systemic restrictions and power relations as well as the potential of collective action to change unsustainable framework conditions (IPCC, 2022a, 5-84). APCC (2023) argues that it is difficult for individuals to live in a climate-friendly way in Austria, as how one lives is heavily influenced by framework conditions, especially socioeconomic factors like income, routines, and infrastructures. However, changing frameworks can only be accomplished together with others. It needs coordinated and goal-oriented actions of a diversity of actors (private and public, business, administration, politics, and civil society) to change infrastructures (e.g. providing green energy in cities), social norms (e.g. increasing the prestige of refurbishing initiatives), planning regulations, and climate laws. Such climate actions are more effective than behaving well individually within given structures (APCC 2023a). Modes of living[3] are clusters of practices that individuals pursue as routines, like taking the car in the

[3] The terms "mode of living", "forms of life" and "way of life" are used interchangeable in this article. For differences and similarities see (Jonas et al., 2023); Jaeggi, 2014; and Brand and Wissen, 2018).

morning or eating a vegan lunch. Lifestyles occur within a mode of living and are thus enabled and restricted by taking the given as self-evident and unchangeable (Jaeggi, 2014, p.67ff). Therefore, climate policies need to focus more on how to change the unsustainable, but globally dominant, emission-intensive mode of living. It is an "imperial mode of living" (Brand and Wissen, 2017), that enables some to live at the cost of others. However, this "Western mode of living" (Novy, 2019) has, besides being exploitative, several attractive components, especially with respect to individual freedom, human rights, and liberal democracies.

An example: Post-war welfare capitalism has created the framework conditions for suburban living as an attractive middle-class way of life. Powerful economic and political actors created pressure to pursue this mode of living by framing conditions in its favor. Suburban living was heavily subsidized by the state, strongly promoted by certain industries, especially the car and oil industry, and went hand-in-hand with a cultural shift towards individualized mass consumption. Suburban living has been based on car-centered mobility, single-family dwellings, and stable family relations (Aglietta, 2015). It has offered relatively cheap housing in the suburbs, while creating huge social, economic, and ecological costs, accelerating the climate crisis and segregating societies (Mattioli et al., 2020). Not all individual arrangements in suburban living are the same. Suburban lifestyles can favor a passive house; household members can use electric cars or plant backyard gardens. Such individual, ecologically sensitive lifestyles reduce the individual ecological footprint but do not change suburban living as a form of life. These ecologically sensitive lifestyles tend to stabilize the emission-intensive status quo, although sometimes more efficiently (Shove, 2018). What is needed, is a systematic change of the rules of the game that stops favoring this unsustainable mode of living. TCAs are portfolios of measures that create rules, which limit material-intensive modes of living, rewarding climate-friendly living, especially through zoning regulations or a stop to

further soil sealing. They set limits on maximum housing size while supporting households that retrofit existing buildings and firms that design multi-dwelling communal buildings (e.g. co-housing). And they stop subsidizing the social costs of the car-centered mobility system.

In a nutshell: Instead of moralizing individual behavior and lifestyles, TCAs shape structures and change framework conditions, e.g. via land-use policies, tax incentives, subsidies, and social-ecological infrastructures.

Linking pragmatic and radical actions

Modernity is characterized by dualist thinking, leading to 'either-or' choices: small or big changes, pragmatic or radical, incremental or systemic. This insinuates the necessity to choose between more piecemeal and reformist actions on the one hand and more disruptive, revolutionary ones on the other. Such dualism, however, tends to restrict our understanding of reality. As an alternative to dualist reasoning, dialectical reasoning and acting have several advantages (Novy et al., 2022, p.14). Acknowledging multi-perspectivity improves the understanding of challenges and widens the scope of available actions (Novy et al., 2020). Such an 'as-well-as_ strategy combines different actions and facilitates a broader set of objectives. Furthermore, it expands support for climate actions, as it favors different segments of the population: while actions to increase energy efficiency are often supported by industry, actions to reduce costs of living, e.g. by offering sustainable and affordable social-ecological infrastructures, are often supported by low(er) income residents.

The IPCC AR5 distinguished incremental and transformative action, fundamental change in society on the one hand and minor, marginal, or incremental changes on the other (IPCC, 2014, pp. 101f). Transformational adaptations lead to actions that change systems, like shifting away

from a mobility system centered on private ownership of cars. Incremental adaptations lead to actions that often reproduce systems, like supporting privately owned electric cars. In AR6, both concepts continue to be used, but the dualism is dampened, arguing that transformations can be achieved by different pathways based on multiple narratives (IPCC, 2022a, 1-6 and 1-68), including more pragmatic and incremental actions. In AR6, climate-resilient development aims at integrating adaptation, mitigation, and development efforts (IPCC, 2022a, 1-66f). Furthermore, widening policy spaces is linked to enriched narratives for achieving a green economy that goes beyond mainstream *ecomodernism*. While *ecomodernism* privileges market and technological solutions and focuses on incremental changes, *degrowth* is perceived as an alternative narrative that aims at deeper transformations by focusing on radical climate actions as well (Barlow et al., 2022). Related to this reasoning, APCC (2023a) introduces multi-perspectivity (Novy et al., 2023) as a technique to mobilize a broader portfolio of actions. Different perspectives are based on distinctive concepts, pre-analytic visions, values, and methods. Different perspectives on what actions are (or are not) suitable to realize a societal transformation, e.g. incremental or radical, can implicitly or explicitly valorize or exclude certain types of actions. What 'is in' and what 'is out' when discussing actions for transformation is key for understanding TCAs.

An example of TCAs combining pragmatic and radical climate actions is the revitalization of town centers. It can start as a small-scale transformative innovation organized by local stakeholders. Revitalizing town centers can become a TCA, if the revitalization is combined with other climate actions, especially with respect to mobility and planning. This can result in broader transformations of towns and rural areas. A revitalized town center has the potential to combine short-term improvements with long-term goals such as substantially reducing emissions protecting biodiversity and avoiding heat islands. First, a strengthened foundational economy (Arcidiacono

et al., 2018; Bärnthaler et al., 2021) can offer place-based retailing, health, and care services as well as leisure and recreational infrastructures. This enables strengthening traditional, but increasingly lost, forms of conviviality already in the short-run: creating public squares and streets for strolling, or supporting local retailers and social services (Bärnthaler & Baumgartner, 2022). Second, regenerating local economies by means of decentralizing the provisioning of foundational goods, services, and infrastructures is a key prerequisite for a climate-friendly mobility system that changes the car-centered mode of living in towns and rural areas. In the long run, a climate-friendly mobility system enables satisfying needs with less mobility.

In a nutshell: A climate action, be it pragmatic or radical, is not *per se* either a TCA or not. Its transformative potential depends on how climate actions are combined in a specific context. Therefore, TCAs are portfolios of climate actions that entangle pragmatic and radical actions. They link small with profound changes by offering short-term as well as long-term benefits. It is important to valorize effective and pragmatic first steps towards radical change, which, at the same time, foreshadow a different future in emblematic showcases.

Ensure Basic Provisioning and Limit Overconsumption

Currently, multiple crises are leading to uncertainties, which complicates the *feasibility* of climate actions and increases the desire for protection against the unpredictable. Insecurity is spreading due to these multiple and overlapping crises. This reinforces an increased desire for security and protection and strengthens conservative values. Prioritizing the need for protection to sustain existential provision for all can secure decent living standards by providing foundational goods and services, like housing, food, energy, and other basics (Bärnthaler et al., 2021). At the same time, those with more income and wealth contribute above-average emissions and resource usage

(United Nations Environment Programme, 2020). This puts the topic of limits at center stage (Brand et al., 2021; Novy, 2019; Blühdorn, 2022): Rich individuals should contribute more to climate protection and to financing basic services for all.

The IPCC AR6 argues that the provision of basic services, infrastructure, food systems, and employment enhances livelihoods, especially of low-income people and marginalized groups (IPCC, 2022b, p.24). Further, it identifies basic services and infrastructure as key to supporting the integration of climate adaptation and social protection programs (*ibid*, p.25). Thereby, the report links the provision of basic services with future climate resilience. Further, it describes the provision of low-energy services as a "key component of current and future efforts to reduce carbon emissions" (IPCC, 2022b, 5-17). Basic provisioning is just one part of the puzzle, another key piece is limiting overconsumption. The IPCC also explicitly names the challenge of "address[ing] the upper limits of consumption", even discussing the establishment of minimum and maximum standards of consumption (*ibid*). Reducing GHG emissions associated with high levels of GHG emissions and material throughput above a 'Decent Living Standard' (DLS) has the potential to address both emissions and inequalities (IPCC, 2022b, 5-18). Similarly, APCC (2023) has a dedicated chapter on inequality that stresses the specific challenge for rich countries like Austria: even the poorest in Austria emit above-average emissions, reinforcing the need for systemic solutions and global justice (Essletzbichler et al., 2023).

An example of ensuring basic provisioning and limiting overconsumption is the guarantee of free public transport for all while limiting the number of private vehicles. Subsidizing public transport is a climate measure with a distributional impact in favor of poorer households. In Vienna, an annual public transport fee of 365 EURO is a best practice, as is the Austrian climate ticket of unlimited public transport in the whole country for 1095 EURO. These are pragmatic steps towards

a more radical measure: to offer free public transport for all residents. Subsidized or free access to public mobility mitigates insecurity related to one key aspect of life. This expansion of public transportation, however, has to be accompanied by limiting individualized forms of mobility, especially – but not only – those sustained by combustion engines. To achieve broader ecological objectives, limiting the number of private vehicle ownership per household is a prerequisite to promoting and expanding low-carbon collective provisioning. In this context, AR6 WGIII describes car-dependent infrastructures as a "carbon intensive way of satisfying human needs", suggesting that infrastructure re-configurations and adaptation are necessary for needs satisfaction in low-carbon ways (IPCC, 2022b, 5-17).

In a nutshell: Many *desirable* and *effective* climate actions are only *feasible* if sustainable forms of collective mobility are provided in an affordable and high-quality way, while private car usage is limited and taxed heavily. Put differently: today, in Austria, climate actions that do not take this widespread desire for security and protection into account might be radical, but they tend to not be TCAs. TCAs are climate actions that ensure basic provisioning, thereby reducing insecurity, while simultaneously ensuring justice by limiting unsustainable private consumption.

Prioritizing avoiding harm

Social sciences have insisted that climate policies must go beyond improving the energy efficiency of the production of goods and services (Fuchs, 2017). Behavioral changes are necessary as well. However, individual behavior is in general embedded in routined practices that are hard to change – even more so modes of living, defined as bundles of practices. Most relevant and persistent is consumerism, the assumed matter of course that needs are satisfied by newly produced goods. It is of paramount importance for a successful transformation to organize needs satisfaction

differently, aiming at sufficiency, and having "enough" in the double sense of the word (Spengler, 2016) to live well with less resource use and emissions. Sufficiency-oriented climate actions focus on providing *enough*, e.g. by providing a necessary minimum of energy to avoid energy poverty *and* imposing a maximum that impedes overconsumption, especially of luxuries (Gough, 2022).

In chapter 5 in AR6, WG III, the Avoid-shift-improve (ASI)-model takes a key role, distinguishing three climate actions: *"*

> *'**Avoid'** refers to all mitigation options that reduce unnecessary (in the sense of being not required to deliver the desired service output) energy consumption by redesigning service provisioning systems; '**shift'** refers to the switch to already existing competitive efficient technologies and service provisioning systems; and '**improve'** refers to improvements in efficiency in existing technologies.* (IPCC, 2022b, 5–9, accentuation added).

While Improve-options are generally feasible, they are the least effective. Sometimes they even contribute to lock-ins, like improvements in combustion engines or liquid gas extraction. Therefore, AR6 prioritizes climate actions that avoid emissions. However, this requires answering an unconventional question that is hardly raised in AR6: What do we have to stop doing? Climate policymaking, so far, has focused on inventing more sustainable products and services. This tends to simply add to the existing pool of actions, goods and services and, thereby, reproduce a logic of "more". E-cars, E-bikes, and E-scooters together are not climate-friendly, because of their resource intensity. Secondary homes, by themselves, are problematic, even if the dwelling is a passive house; it seals the soil, increases car dependence, and uses land that is no longer available for affordable housing. Climate actions with the potential to reduce emissions are the promotion of retrofitting existing buildings as well as new building on brown land and already sealed surfaces, e.g. by constructing multi-story buildings. It is not surprising that implementing climate actions

that avoid and shift emissions faces resistance from powerful and wealthy actors (Brand et al., 2021; Blühdorn, 2022).

An example of the need to prioritize climate actions that avoid and shift emissions is car dependence. Key pillars of car dependency are the dominant position of the car industry, a car-friendly mobility infrastructure, car-friendly land use patterns, the undermining of public transport, a car culture that stresses convenience, and the car as a status symbol (Mattioli et al., 2020). The ASI-model is helpful to implement a fossil-fuel-free mobility system as it helps challenge these pillars: "ASI seeks to mitigate emissions through *avoiding* as much transport service demand as possible …, *shifting* remaining demand to more efficient modes … and *improving* the carbon intensity of modes utilized" (IPCC, 2022b, 5-9). A change of the entire mobility system is necessary instead of a simple substitution of combustion by electric vehicles. Until today, incumbents have successfully prioritized climate actions that improve current technologies. These actions are feasible, but lack effectiveness, while climate actions that avoid and shift emissions are so far hardly feasible, although they would be more effective.

In a nutshell: TCAs are climate actions that avoid and shift emissions with a broad portfolio of actions. This includes avoiding emissions through telework and reduced commuting, e.g. with mixed-use urban zoning to shorten commute distances, but also shifting emissions, e.g. through better public transport replacing passenger vehicles (IPCC, 2022b). However, even climate actions that improve efficiency, like electric buses powered by renewables, can be transformative, if they are part of a transformative portfolio.

Acting on Multiple Levels

So far, neither international bodies pleading for transformative action (IPCC, 2022a) nor bottom-up prefigurative movements (Parker, 2021) have managed to change the trend of unsustainable production, consumption, and distribution (Mathai et al., 2021). There have been fierce debates about the respective effectiveness of bottom-up and top-down policies. Today, there is broad agreement in favor of as-well-as-strategies (Martinelli et al., 2013; Stöhr & Taylor, 1981). Climate actions have to mobilize diverse potentials at different levels, aware of their distinct competencies and limits (Eder & Novy, 2021, p. 202; Jessop, 2004). They have to avoid the localist trap, acknowledging that the local alone cannot solve the problem (Kazepov et al., 2019; Purcell & Brown, 2005), but need also be aware of the limitations of centralized top-down policies. The degrowth literature often investigates national policies (Cosme et al., 2017), while simultaneously valorizing the local scale (Xue, 2014). Therefore, the respective strengths and weaknesses of climate actions at different levels can be identified (Barlow et al., 2022).

In AR6, *multi-scale agency* is considered crucial for climate actions that lead to *systems change* instead of merely resulting in *changes within a system* (IPCC, 2022a, 17-29). While WGII describes the *personal*, the *political* and the *practical* as "interacting scales" (*ibid*, 1-68), AR6 WGIII investigates niches, regimes, and landscape (based on the multi-level-perspective-framework, see Geels, 2004) and actor-oriented decision-making (characterized by three domains informed by the satisficing-, optimizing-, and transforming-behavior framework, see Grubb et al. 2014). Neither of these approaches prioritizes one level at the exclusion of others. Furthermore, multi-level governance investigates the interplay of different policy levels, ranging from local to regional, national, and EU (Hooge & Marks, 2010; Stephenson, 2013).

An example of the need for agency at multiple levels is shaping spatial structures for climate-friendly living (Haderer et al., 2023). Spatial structures for climate-friendly living are (i) settlements or commercial areas that are compact and green, low sealing, and involve climate-impacting planning; (ii) living, working, utilities, green spaces, and leisure facilities are near to each other; and (iii) conveniently accessible by foot, bike or public transport (APCC, 2023c, p. 51). They should support decarbonisation of the energy system by provisioning energy from renewable sources, increasing energy efficiency, and reducing energy demand. Spatial structures for climate-friendly living are also climate-resilient, having "the capacity (…) to cope with a hazardous event, trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure" (IPCC, 2022a). Spatial structures are shaped by multiple actors and stakeholders on multiple governance levels (e.g. in Austria: planning decisions on the local level, planning regulations on the federal state level, energy regulations on the federal level, etc.). Therefore, a niche project that funds an e-bike charging station in a community will have little impact on the mobility system unless there is also broader funding and incentives at higher levels. That is why the actors on multiple levels need to communicate with each other to bring the needs and necessities at the local level into the regulations and frameworks at higher levels (and vice versa).

In a nutshell: TCAs act at more than one level; they need cooperation and coordination across levels. On the one hand, local actors can overcome the localist trap. Bottom-linked climate actions are place-based, but network at other scales and promote changes at multiple levels (Moulaert et al., 2019). On the other hand, central administration, policymakers and politicians can avoid the top-down trap of assuming that a masterplan fits all contexts. Top-linked climate actions guarantee universal climate actions that effectively avoid and shift emissions by centrally-induced means of

regulations and planning, but integrate multiple stakeholders in the elaboration of plans and the implementation of specific climate actions.

CONTEXT-SENSITIVITY OF TRANSFORMATIVE CLIMATE ACTIONS

Instead of coming up with one more list of best practices, this paper suggests a different modus operandi. In a first step, Chapters 2 and 3 have identified three elements and six characteristics of TCAs. First, TCAs are climate actions that are simultaneously *desirable*, *effective,* and *feasible*. Second, TCAs have key characteristics. The proposed six characteristics aim to (1) broaden climate targets to social-ecological goals, (2) shape framework conditions for climate-friendly living to transform forms of life, (3) link pragmatic and radical actions, (4) ensure basic provisioning and limit excess consumption, (5) prioritize avoiding emissions and resource use, and (6) operate on multiple levels. For an action to be a TCA, it has to embody all three elements, but not *per se* all six characteristics. In other words, the three elements define an action as transformative, whereas the six characteristics offer criteria to judge whether an action is transformative. The more characteristics are fulfilled by an action, the more transformative it is likely to be. Taken together, the three key elements and six characteristics offer a framework for judging climate actions in specific contexts. The judgment will be based on an analysis of the conjuncture and depend on how actions are articulated in a specific portfolio.

A context consists of a specific time-space constellation of actors, institutions, and power: e.g. the EU-energy market framing reactions to the Russian invasion of Ukraine. A conjuncture is a specific form of context that constitutes a time-space-specific interplay of the past and the present and, therefore, of a given structure and emerging agency (Brand et al., 2022; Jessop, 2005, p. 49). Every community has different basic requirements, wishes, stakeholders, characteristics,

problems, and, above all, power relations. In addition, there are different regulations and subsidies in each federal state. In order to find suitable bundles of measures, it is therefore necessary to weigh up the context and identify the most desirable, effective, and feasible action. Contextual, as well as conjunctural analyses, are decisive for judging the feasibility of actions and sometimes even for evaluating whether actions are desirable and effective too. They help to identify "the next best steps" (Eckersley, 2020b, p. 256) in a specific time and place (Novy et al., 2022). To shape transformations, actors have to understand the drivers of climate change and identify key players, their resources, and objectives: Car dependency is so persistently sustaining practices that are detrimental to climate-friendly living due to deep-rooted routines and cultures of decision-makers and ordinary people. This is reinforced by infrastructures and the power of the automotive industry and its lobby. It is challenged by climate activists with disruptive measures, while climate-friendly policymakers aim at changing infrastructures and practices. A specific climate action, like the promotion of e-mobility, is never transformative by definition. Whether or not its transformative potential is actualized, heavily depends on power relations in the specific situation in which the action takes place. The proposed elements and characteristics of TCAs are a framework for judging climate actions in such contexts. The judgment will depend on the analysis of the conjuncture and differ dependent on the actors that undertake the analysis. Most probably, social movements – like the degrowth movement – will come up with a different judgment than professionals in public administration. While the first might stress the necessity of radical measures as indispensable for TCAs, the second might insist on the value and necessity of quickly actualizing pragmatic first steps.

A priori, TCAs can only be identified in a preliminary way. Ex-post evaluation will depend on the long-term effectiveness of a TCA. Some actions like saving energy, traveling less or prohibiting

soil sealing are always effective actions. In specific situations, propagating effective, but radical measures might increase popular resistance and hamper TCAs. An example: Trying to impose energy-saving measures on poor households threatened by energy poverty and middle classes fearing downward social mobility might lead to resistance that obstructs these measures in the short run and strengthens anti-climate alliances in the long run.

TCAs profit from strategic agency. A "strategic assemblage" is an intentional mix of context-sensitive strategies and actions that are informed by an analysis of what is necessary for transformation (Barlow, 2022, p.84). This resembles the plea for "coordinated and goal-oriented" climate actions in APCC (2023a). Similar concerns are voiced in AR6 in which actors and context have become increasingly important. To evaluate the "economic and institutional feasibility" (IPCC, 2022a) of climate actions, actors have to know their proper strengths and weaknesses and those of their opponents. In pluralist societies, with diverse value systems and competing interests, conflict is unavoidable (Mouffe, 2006). It is illusionary to achieve consensus on how to solve the resultant antagonism. The only peaceful way of arriving at common rules are compromises between different social milieus and diverse socioeconomic and political actors, like associations, chambers, trade unions, social movements, and political parties. Such a compromise-oriented approach is the constitutional foundation of liberal democracies (Kelsen, 2006). It defends individual freedoms and a plurality of lifestyles but does not exclude societal alliances to democratically implement radical reforms that limit consumer choice and promote TCAs.

In general, a specific climate action becomes transformative as part of a context-sensitive portfolio of climate actions that is adapted to – while dialectically changing – specific place-based values, infrastructures as well as power constellations. To take two examples of how to judge a TCA and its articulation with other actions in specific contexts: First, the current conjuncture is full of

vagaries which makes it an indispensable prerequisite to care more about social aspects in all climate actions. Being less radical ecologically, e.g. with respect to fossil fuel price increases, might be necessary to form alliances to implement a feasible portfolio of measures. In this context, cash benefits for households affected by soaring energy costs might help to sustain fossil-fuel energy systems or might be accompanying measures for a radical and quick transition to renewable energies. A final judgment will depend on the specific portfolio of cash benefits and investments in renewables. Second, radicalizing conflicts about the configuration of infrastructures, e.g. on whether to reproduce fossil infrastructures or build social-ecological ones, might be indispensable for climate actions to be effective, even if chances for success seem remote in the short run – as in the case of runways. For both examples, the proposed interpretation of TCAs does not lead to one uncontested solution.

CONCLUSION AND OUTLOOK

This paper investigated transformative climate actions (TCAs) with several methodological implications for further research to understand and promote TCAs. Local knowledge is crucial to identify problems as well as potential solutions, as locals often know best which actions are feasible. Due to the importance of contexts, case studies are a privileged method to analyze TCAs. For policymaking, transdisciplinary research that cooperates with multiple local and non-local stakeholders might contribute to understanding and implementing TCAs (Jahn et al., 2012; Max-Neef, 2005). AR6 proposes country-, region-, and place-specific climate-resilient development pathways, which consider local institutions, cultures, and values, also taking power relations into account (IPCC, 2022a). This affects desirability and feasibility. Further research could explore how prioritizing the six characteristics of TCAs may shift in different contexts. It could explore which characteristics are crucial in specific sectors (e.g. transforming the energy sector *must*

emphasize avoid strategies while broadening climate goals might be secondary) and in different institutional contexts (e.g. in countries with an effective public administration it might be easier to link pragmatic and radical actions).

The renewed emphasis on feasibility acknowledges the crucial role of social sciences in climate research. Investigating contexts, practices, modes of living and producing as well as power relations have to guide action and research in a moment of social and ecological crises in which desirable, effective, and feasible responses are urgently needed. The proposed definition of TCAs is a plea for "empowerment without hubris" (Block, 2018, p. 181), radicality as well as pragmatism. It throws light on the boundary between on the one side- a clear-eyed assessment of what is prudent (and what is not)- and on the other- clearly acknowledging that the exact portfolio of actions will be heavily context-dependent. Thus, TCAs should not be considered a pre-fixed recipe nor a relativistic and all-too-easy position that "every place and actor knows which TCA is best". This balancing act is not easy in research or practice, but it is a first step toward transformation.

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REFERENCES

Aglietta, M. (2015). *A theory of Capitalist Regulation. The US Experience*. Verso.

APCC. (2023a). *Strukturen für ein klimafreundliches Leben* [APCC Special Report]. https://klimafreundlichesleben.apcc-sr.ccca.ac.at/

APCC. (2023b). *Strukturen für ein klimafreundliches Leben (Structures for Climate Friendly Living)—Summary for Policymakers* [APCC Special Report]. https://klimafreundlichesleben.apcc-sr.ccca.ac.at/

APCC. (2023c). *Strukturen für ein klimafreundliches Leben (Structures for Climate Friendly Living)—Technical Summary* [APCC Special Report]. https://klimafreundlichesleben.apcc-sr.ccca.ac.at/

Arcidiacono, D., Barbera, F., Bowman, A., Buchanan, J., Busso, S., Dagnes, J., Earle, J., Engelen, E., Folkman, P., Froud, J., Haslam, C., Johal, S., Jones, I. R., Minervini, D., Moran, M., Mostaccio, F., Pauli, G., Plank, L., Salento, A., … Williams, K. (2018). *Foundational economy: The infrastructure of everyday life*. Manchester University Press.

Barlow, N. (2022). Taking stock: Degrowth and strategy so far. In *Degrowth and strategy: How to bring about social-ecological transformation*. MayFly.

Barlow, N., Regen, L., Cadiou, N., Chertkovskaya, E., Hollweg, M., Plank, C., Schulken, M., & Wolf, V. (2022). *Degrowth & Strategy: How to bring about social-ecological transformation*. MayFly.

Bärnthaler, R. (forthcoming). Towards eco-social politics: A case study on transformative strategies to overcome form-of-life crises. *Environmental Politics*.

Bärnthaler, R., & Baumgartner, B. (2022). Lebensweisen und Infrastrukturen: Transformative Innovationen für eine zukunftsfähige Alltagsökonomie am Beispiel Atzgersdorf. *SWS Sozialwissenschaftliche Rundschau*, *22*(3), 266–286.

Barnthaler, R., Haderer, M., Novy, A., & Schneider, C. (forthcoming). *Shaping Provisioning Systems for an Eco-Social Transformation*.

Bärnthaler, R., Novy, A., & Plank, L. (2021). The Foundational Economy as a Cornerstone for a Social–Ecological Transformation. *Sustainability*, *13*(18). https://doi.org/10.3390/su131810460

Block, F. (2018). Karl Polanyi and Human Freedom. In M. Brie & C. Thomasberger (Eds.), *Karl Polanyi´s Vision of a Socialist Transformation* (pp. 168–184). Black Roses.

Blühdorn, I. (2022). Planetary boundaries, societal boundaries, and collective self-limitation: Moving beyond the post-Marxist comfort zone. *Sustainability: Science, Practice and Policy*, *18*(1), 576–589. https://doi.org/10.1080/15487733.2022.2099124

Blühdorn, I., Butzlaff, F., & Haderer, M. (2022). Emancipatory Politics at its Limits? An Introduction. *European Journal of Social Theory*, *25*(1), 3–25. https://doi.org/10.1177/13684310211048116

Brand, U. (2016). 'Transformation' as a New Critical Orthodoxy: The Strategic Use of the Term 'Transformation' Does Not Prevent Multiple Crises. *GAIA - Ecological Perspectives for Science and Society*, *25*(1), 23–27. https://doi.org/10.14512/gaia.25.1.7

Brand, U., Krams, M., Lenikus, V., & Schneider, E. (2022). Contours of historical-materialist policy analysis. *Critical Policy Studies*, *16*(3), 279–296. https://doi.org/10.1080/19460171.2021.1947864

Brand, U., Muraca, B., Pineault, É., Sahakian, M., Schaffartzik, A., Novy, A., Streissler, C., Haberl, H., Asara, V., Dietz, K., Lang, M., Kothari, A., Smith, T., Spash, C., Brad, A., Pichler, M., Plank, C., Velegrakis, G., Jahn, T., … Görg, C. (2021). From planetary to societal boundaries: An argument for collectively defined self-limitation. *Sustainability: Science, Practice and Policy*, *17*(1), 265–292. https://doi.org/10.1080/15487733.2021.1940754

Brand-Correa, L. I., Mattioli, G., Lamb, W. F., & Steinberger, J. K. (2020). Understanding (and tackling) need satisfier escalation. *Sustainability: Science, Practice and Policy*, *16*(1), 309–325. https://doi.org/10.1080/15487733.2020.1816026

Brand-Correa, L. I., & Steinberger, J. K. (2017). A Framework for Decoupling Human Need Satisfaction From Energy Use. *Ecological Economics*, *141*, 43–52. https://doi.org/10.1016/j.ecolecon.2017.05.019

Buch-Hansen, H., & Nielsen, P. (2020). *Critical Realism: Basics and Beyond*. Macmillan Publishers. https://forskning.ruc.dk/en/publications/critical-realism-basics-and-beyond

Cosme, I., Santos, R., & O'Neill, D. W. (2017). Assessing the degrowth discourse: A review and analysis of academic degrowth policy proposals. *Journal of Cleaner Production*, *149*, 321–334. https://doi.org/10.1016/j.jclepro.2017.02.016

Eckersley, R. (2020a). Greening states and societies: From transitions to great transformations. *Environmental Politics*, 1–21. https://doi.org/10.1080/09644016.2020.1810890

Eckersley, R. (2020b). Ecological democracy and the rise and decline of liberal democracy: Looking back, looking forward. *Environmental Politics*, *29*(2), 214–234. https://doi.org/10.1080/09644016.2019.1594536

Eder, J., & Novy, A. (2021). *Beyond Globalization and Deglobalization – where to start? A Polanyian multi-level development strategy to provide a good life for all within planetary boundaries*. IKPS.

Foundational Economy Collective. (2020). *What comes after the Pandemic? A Ten-Point Platform for Foundational Renewal*.

Fuchs, D. (2017). *Consumption corridors as a means for overcoming trends in (un)sustainable consumptionConsumption corridors as a means for overcoming trends in (un)sustainable consumption*. https://doi.org/10.15501/978-3-86336-918-7_13

Gills, B. (2020). Deep Restoration: From The Great Implosion to The Great Awakening. *Globalizations*, 1–3. https://doi.org/10.1080/14747731.2020.1748364

Gough, I. (2022). Two Scenarios for Sustainable Welfare: A Framework for an Eco-Social Contract. *Social Policy and Society*, *21*(3), 460–472. Cambridge Core. https://doi.org/10.1017/S1474746421000701

Haderer et al., M. (2023). Chapter 28: Theorien des Wandels und der Gestaltung von Strukturen: Gesellschaftsperspektive. In *PCC Special Report: Strukturen für ein klimafreundliches Leben (APCC SR Klimafreundliches Leben)*.

Hammond, M. (2020). Sustainability as a cultural transformation: The role of deliberative democracy. *Environmental Politics*, *29*(1), 173–192. https://doi.org/10.1080/09644016.2019.1684731

Heintz, J., Staab, S., & Turquet, L. (2021). Don't Let Another Crisis Go to Waste: The COVID-19 Pandemic and the Imperative for a Paradigm shift. *Feminist Economics*, *27*(1–2), 470–485. https://doi.org/10.1080/13545701.2020.1867762

Hooge, L., & Marks, G. (2010). Types of multi-level governance. In H. Enderlein, S. Wältli, & M. Zürn (Eds.), *Handbook of Multi-level Governance* (pp. 17–31). Edward Elgar.

IEA. (2021). *Global Energy Review: CO2 Emissions in 2021. Global emissions rebound sharply to highest level ever*. International Energy Agency (IEA). https://iea.blob.core.windows.net/assets/c3086240-732b-4f6a-89d7-db01be018f5e/GlobalEnergyReviewCO2Emissionsin2021.pdf

IPCC. (2014). *Fifth Assessment Report of the Intergovernmental Panel on Climate Change—Working Group II: Impacts, Adaptation and Vulnerability*.

IPCC. (2022a). *Sixth Assessment Report of the Intergovernmental Panel on Climate Change—WGII (Impacts, Adaptation and Vulnerability)*.

IPCC. (2022b). *Sixth Assessment Report of the Intergovernmental Panel on Climate Change—WGIII (Mitigation of Climate Change)—Full Report*.

IPCC. (2022c). *Sixth Assessment Report of the Intergovernmental Panel on Climate Change—WGIII (Mitigation of Climate Change)—Summary for Policymakers*.

Jaeggi, R. (2014). *Kritik von Lebensformen*. Suhrkamp.

Jahn, T., Bergmann, M., & Keil, F. (2012). Transdisciplinarity: Between mainstreaming and marginalization. *Ecological Economics*, *79*, 1–10. https://doi.org/10.1016/j.ecolecon.2012.04.017

Jessop, B. (2004). Multi-Level Governance and Multi-Level Metagovernance. *Multi-Level Governance*, 49–74.

Jessop, B. (2005). Critical Realism and the Strategic-relational Approach. *New Formations*, 40–53.

Jessop, B. (2015). The Symptomatology of Crises, Reading Crises and Learning from Them: Some Critical Realist Reflections. *Journal of Critical Realism*, *14*(3), 238–271. https://doi.org/10.1179/1572513815Y.0000000001

Jonas et al., M. (2023). Chapter 27: Theorien des Wandels und der Gestaltung von Strukturen: Bereitstellungsperspektive. In *PCC Special Report: Strukturen für ein klimafreundliches Leben (APCC SR Klimafreundliches Leben)*.

Kazepov, Y., Colombo, F., & Saruis, T. (2019). The multi-scalar puzzle of social innovation. In S. Oosterlynck, A. Novy, & Y. Kazepov (Eds.), *Local social innovation to combat poverty and exclusion: A critical appraisal* (pp. 91–112). Polity Press.

Kelsen, H. (2006). *Verteidigung der Demokratie: Abhandlungen zur Demokratietheorie*. Mohr Siebeck.

Lamb, W. F., Mattioli, G., Levi, S., Roberts, J. T., Capstick, S., Creutzig, F., Minx, J. C., Müller-Hansen, F., Culhane, T., & Steinberger, J. K. (2020). Discourses of climate delay. *Global Sustainability*, *3*, e17. Cambridge Core. https://doi.org/10.1017/sus.2020.13

Martinelli, F., Moulaert, F., & Novy, A. (2013). *Urban and Regional Development Trajectories in Contemporary Capitalism*. Routledge.

Mathai, M. V., Isenhour, C., Stevis, D., Vergragt, P., Bengtsson, M., Lorek, S., Mortensen, L. F., Coscieme, L., Scott, D., Waheed, A., & Alfredsson, E. (2021). The Political Economy of (Un)Sustainable Production and Consumption: A Multidisciplinary Synthesis for Research and Action. *Resources, Conservation and Recycling*, *167*, 105265. https://doi.org/10.1016/j.resconrec.2020.105265

Mattioli, G., Roberts, C., Steinberger, J. K., & Brown, A. (2020). The political economy of car dependence: A systems of provision approach. *Energy Research & Social Science*, *66*, 101486. https://doi.org/10.1016/j.erss.2020.101486

Max-Neef, M. A. (2005). Foundations of transdisciplinarity. *Ecological Economics*, *53*(1), 5–16. https://doi.org/10.1016/j.ecolecon.2005.01.014

Mouffe, C. (2006). *On the Political*. Routledge.

Moulaert, F., Maccallum, D., Van den Broeck, P., & Cabeza, M. (2019). *BOTTOM-LINKED GOVERNANCE AND SOCIALLY INNOVATIVE POLITICAL TRANSFORMATION* (pp. 62–63).

Novy, A. (2019). Kritik der westlichen Lebensweise. In F. Luks (Ed.), *Chancen und Grenzen der Nachhaltigkeitstransformation. Ökonomische und soziologische Perspektiven* (pp. 43–58). Springer Gabler.

Novy, A. (2022). The political trilemma of contemporary social-ecological transformation – lessons from Karl Polanyi's The Great Transformation. *Globalizations*, *19*(1), 59–80. https://doi.org/10.1080/14747731.2020.1850073

Novy, A., Barlow, N., & Fankhauser, J. (2022). Transformative Innovation. In L. Pellizoni, E. Leonardi, & V. Asara (Eds.), *Handbook of Critical Environmental Politics* (pp. 593–609). Edward Elgar.

Novy, A., Bärnthaler, R., & Heimerl, V. (2020). *Zukunftsfähiges Wirtschaften*. Beltz.

Novy et al., A. (2023). Chapter 2: Perspektiven zur Analyse und Gestaltung von Strukturen klimafreundlichen Lebens. In *PCC Special Report: Strukturen für ein klimafreundliches Leben (APCC SR Klimafreundliches Leben)*.

O'Neill, D. W., Fanning, A. L., Lamb, W. F., & Steinberger, J. K. %J N. S. (2018). *A good life for all within planetary boundaries*. *1*(2), 88.

Parker, M. (2021). The romance of prefiguration and the task of organization. *Journal of Marketing Management*, 1–9. https://doi.org/10.1080/0267257X.2021.2006755

Polanyi, K. (2001). *The Great Transformation. The Political and Economic Origins of Our Times.* Beacon Press.

Purcell, M., & Brown, J. C. (2005). Against the local trap: Scale and the study of environment and development. *Progress in Development Studies*, *5*(4), 279–297. https://doi.org/10.1191/1464993405ps122oa

Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*. Random House Business Books.

Shove, E. (2010). Beyond the ABC: Climate Change Policy and Theories of Social Change. *Environment and Planning A: Economy and Space*, *42*(6), 1273–1285. https://doi.org/10.1068/a42282

Siva, N. (2022). COP27: A "collective failure". *The Lancet*, *400*(10366), 1835. https://doi.org/10.1016/S0140-6736(22)02407-2

Spengler, L. (2016). Two types of 'enough': Sufficiency as minimum and maximum. *Environmental Politics*, *25*(5), 921–940. https://doi.org/10.1080/09644016.2016.1164355

Stephenson, P. (2013). Twenty years of multi-level governance: 'Where Does It Come From? What Is It? Where Is It Going?' *Journal of European Public Policy*, *20*(6), 817–837.

Stoddard, I., Anderson, K., Capstick, S., Carton, W., Depledge, J., Facer, K., Gough, C., Hache, F., Hoolohan, C., Hultman, M., Hällström, N., Kartha, S., Klinsky, S., Kuchler, M., Lövbrand, E., Nasiritousi, N., Newell, P., Peters, G. P., Sokona, Y., … Williams, M. (2021). Three Decades of Climate Mitigation: Why Haven't We Bent the Global Emissions Curve? *Annual Review of Environment and Resources*, *46*(1), 653–689. https://doi.org/10.1146/annurev-environ-012220-011104

Stöhr, W. B., & Taylor, F. D. R. (1981). *Development from above or below? The Dialectics of Regional Planning in Developing Countries*. Wiley.

Stuart, D., Gunderson, R., & Petersen, B. (2020). The climate crisis as a catalyst for emancipatory transformation: An examination of the possible. *International Sociology*, *35*(4), 433–456. https://doi.org/10.1177/0268580920915067

Tapia Granados, J. A., & Spash, C. L. (2019). Policies to reduce CO2 emissions: Fallacies and evidence from the United States and California. *Environmental Science & Policy*, *94*, 262–266. https://doi.org/10.1016/j.envsci.2019.01.007

UNCTAD. (2019). *Trade and Development Report. Financing a Global Green New Deal*.

United Nations Environment Programme. (2020). *The emissions gap report 2020*. https://www.unep.org/emissions-gap-report-2020

WBCSD. (2021). *Vision 2050: Time To Transfrom*. World Business Council for Sustainable Development. https://timetotransform.biz/wp-content/uploads/2021/03/WBCSD_Vision_2050_Time-To-Transform.pdf

Xue, J. (2014). Is eco-village/urban village the future of a degrowth society? An urban planner's perspective. *Ecological Economics*, *105*, 130–138. https://doi.org/10.1016/j.ecolecon.2014.06.003