

Concept Paper

# From Claiming to Creating Value: The Psychology of Negotiations on Common Resource Dilemmas

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**Abstract:** Current sustainability challenges often reflect common resource dilemmas where peoples' short-term self-interests are at odds with collective interests in the present and future. In this article, we highlight the key role of joint decision-making processes in negotiations to facilitate the management of common resource dilemmas and to promote the transition toward sustainability. By reflecting on psychological drivers and barriers, we argue that the limited availability, the restricted accessibility, and the dynamic alterability of resources in negotiations on common resource dilemmas may cause a myopic mindset that fosters value claiming strategies and, ultimately, results in distributive-consumptive negotiation outcomes. To promote value creation in negotiations on common resource dilemmas, we argue that agents must perform a mindset shift with an inclusive social identity on a superordinate group level, an embrative prosocial motivation for other parties' interests at and beyond the table, and a forward-looking cognitive orientation towards long-term consequences of their joint decisions. By shifting their mindset from a myopic towards a holistic cognitive orientation, agents may explore negotiation strategies to create value through increasing the availability, improving the accessibility, and using the alterability of resources. Applying these value creation strategies may help achieve integrative-transformative negotiation outcomes and promote sustainable agreements aimed at intersectional, interlocal, and intergenerational justice. We conclude by discussing additional psychological factors that play a pivotal role in negotiations on common resource dilemmas as well as further developments for future research.

**Keywords:** negotiation; common resource dilemma; sustainability; creating value; claiming value; problem-solving; social justice; mindset; strategies



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## 1. Introduction

Sustainability challenges such as climate change, water pollution, or biodiversity loss are shaped by humanity through conserving and exploiting common resources. These challenges appear as common resource dilemmas in which agents face social conflicts between their short-term self-interests and the long-term collective interests [1–3]. Although agents in common resource dilemmas often decide individually on their preferred course of action (for reviews, see [4–6]), many real-world dilemmas require them to find mutually acceptable agreements on how to manage the conflict of interests between short term self-interests versus long-term collective interests by interacting, communicating, and jointly deciding with others. Whenever decision-makers seek to solve their conflicts of interests through joint, interactive decision-making processes to achieve mutually acceptable agreements one refers to these decision processes as a negotiation (e.g., [7,8]). We argue that negotiations on common resource dilemmas reflect exactly this joint decision-making process. However, in these specific common resource dilemma negotiations, parties seek to find mutual agreements on how to manage resources with limited availability, restricted accessibility, or dynamic alterability. By managing these challenging resource characteristics wisely, agents can jointly resolve the social conflict between short-term self-interests

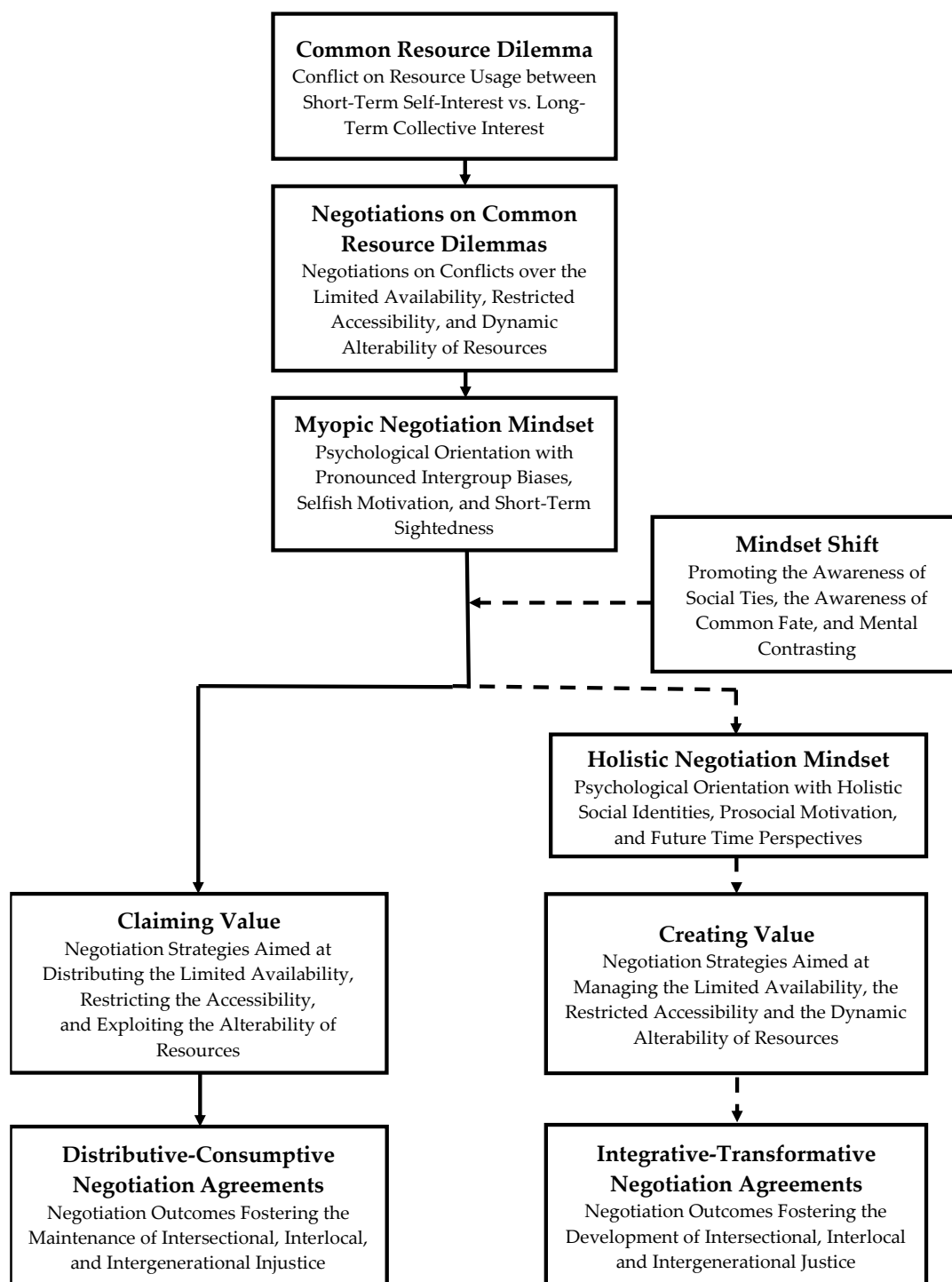
and collective long-term interests. The collective interest in common resource dilemma negotiations goes beyond the present parties' interests at the table. It also includes the interests of external parties absent from the negotiation whose interests would also be affected by the negotiating parties' agreement. We propose a new framework to structure key psychological processes in common resource dilemma negotiations, highlight psychological barriers to solving these dilemmas, and, ultimately, provide guidelines to apply innovative negotiation strategies that are geared towards creating value in negotiations on common resource dilemmas.

Traditional psychological research on negotiations has predominantly focused on classic transaction negotiations (e.g., buyer-seller negotiations or B2B-negotiations; for reviews see, e.g., [7,9,10]). By contrast, negotiations on common resource dilemmas have received far less attention (for exceptions see [11–14]). Given the ecological, economic, and social impact of negotiation processes across all levels of society, it is remarkable how little is known about psychological processes that shape agents' perceptions and behaviors in negotiations on common resource dilemmas (as the term 'agent' is widely used in sustainability science (e.g., change agents; [15], juristic agents, [16]; governance agents; [17]), we specify the term 'agent' in our framework concerning the psychological dimension. We refer to agents in negotiations on common resource dilemmas as group representatives who psychologically perceive social ties with their group constituency (perceived social identification, e.g., [18]), are provided with a mandate to negotiate on behalf of the interests of their group constituency (perceived mandate, e.g., [19]) and perceive a feeling of accountability concerning the agreements they have reached with their counterparts (perceived accountability, e.g., [20]). We focus on the psychological processes and first describe barriers that foster the tendency to claim value by using distributive and competitive negotiation strategies (e.g., [21–30]). Given these barriers, the superordinate goal of our proposed framework is to provide negotiating agents with guidelines on how to create value in common resource dilemmas. We identify innovative and integrative strategies that aim to promote sustainable agreements. By introducing a framework on psychological processes in negotiations on common resource dilemmas, we seek to contribute to sustainability science, psychology, and negotiation research in several important ways: First, from the perspective of sustainability science, the present framework highlights a micro-level perspective and elucidates the pivotal role of psychological processes in the transition towards sustainability. Second, from the perspective of psychology, we introduce specific psychological processes that affect joint, interactive decision-making in common resource dilemmas and that play a pivotal role in driving sustainable change. Third, from the perspective of negotiation research, we provide insights into a socially relevant negotiation setting that requires strategies that have received little attention in the negotiation literature thus far. Finally, from a practical perspective, we propose hands-on guiding principles that may help agents to apply problem-solving and value creation strategies to foster sustainable agreements.

## 2. A Framework of Structural Barriers and Psychological Processes for Negotiating Common Resource Dilemmas

Building on experimental games research (for reviews, see [4–6]), we argue that psychological research must kick-start research on the communicative, interactive, and joint decision-making processes in common resource dilemmas to offer new insights on how to overcome barriers to value creation. Figure 1 introduces our proposed framework for negotiations on common resource dilemmas that we outline in the following. Particularly in negotiations, agents can solve their conflicts of interest by exploring opportunities to create value. Therefore, those agents who seek to create value must apply innovative and integrative strategies that systematically address the limited availability (e.g., limited freshwater in arid areas), the restricted accessibility (e.g., restricted access to vaccines), or the dynamic alterability (e.g., mutation of nuclear resources into radiant waste) of the negotiated resources. If agents fail to systematically address these resource-related

challenges, they become trapped in a psychological orientation that is characterized by increased levels of egoistic motivation (e.g., [13,14,31–33]), a reduced sense of collective identification (e.g., [34–36]), and an enhanced focus on short-term outcomes (e.g., [37–39]). We refer to this psychological orientation as a ‘myopic mindset’. We further predict that such a myopic mindset fosters strategies of claiming value and obstructs strategies of creating value [24,40,41]. Agents with a myopic mindset demand resources of limited availability (e.g., claiming fresh water in arid areas), confine the sharing of resources with restricted accessibility (e.g., defending mining rights for rare resources), and disregard the dynamic alterability of resources (e.g., neglecting waste products from nuclear energy production). Consequently, negotiators with a myopic mindset are therefore likely to settle on unsustainable, consumptive, and distributive agreements that ultimately may contribute to existing intersectional, interlocal, and intergenerational injustice. To prevent agents from entering a vicious circle of destructive strategies and claiming value, we propose that agents must be encouraged to perform a mindset shift that induces a feeling of shared belonging based on their common-ingroup identities (e.g., [42–44]), increase their prosocial motivation based on the awareness of mutual interdependencies and common fate (e.g., [45,46]), and strengthen their future-oriented decision-making based on the comparison of future developments and the current status quo (e.g., [47–49]). A shifted mindset with a holistic psychological orientation may help negotiating agents to apply innovative and integrative strategies that directly address the limited availability, restricted accessibility, and dynamic alterability of resources. By applying novel integrative negotiation strategies such as resource compensating, resource- sharing, resource- scaling, resource re- or upcycling, resource- inventing, or resource-converting, they may discover unexplored opportunities to create value (In our framework, we describe value claiming and value creating as two independent and unrelated strategic approaches to negotiation, and thereby highlight their distinct functions in negotiations on common resource dilemmas. From an applied perspective, however, creating value and claiming value are strongly associated: “Value creating and value claiming are linked parts of negotiation. [ . . . ] value that has been created must be claimed.” ([24], p. 33). Accordingly, the separation of claiming and creating value in this framework serves the description of their different functions rather than their practical dissociation.). Negotiators may solve (part of) their social conflicts in common resource dilemmas by either (a) increasing the availability of limited resources, (b) improving the accessibility of restricted resources, and/or (c) managing the alterability of dynamically changing resources. Ultimately, negotiators may reach integrative and-transformative agreements that do not only serve parties’ short-term self-interests, but also take the long-term interests of the collective into consideration.



**Figure 1.** Structural barriers and psychological processes in negotiations on common resource dilemmas.

### 3. Research on Psychological Processes in Common Resource Dilemmas

In the transition toward sustainability, decision-makers must constantly manage the use of limited, restricted, and dynamically changing resource conditions to solve the social conflicts between short-term self-interests and long-term collective interests [1,50–52]. This conflict of interests is referred to as a common resource dilemma, which is “[...] a situation where a collective cost or risk is incurred or generated through the combined negative external effects of various individuals who act (relatively) independently of one another” ([2] p. 286). Such social conflicts may refer to many different resource dilemmas, for

instance, with ecological resources (e.g., preservation of biodiversity, groundwater, and primeval forest land), economic resources (e.g., distribution of natural resources, farmland, and fishing grounds), or social-cultural resources (e.g., retention of cultural monuments and sharing of technological knowledge). In these common resource dilemmas, agents must either determine individual decisions (i.e., consume or preserve resources without knowing the other agents' individual decisions) or they must engage in social interactions of joint decision-making to reach agreements over their decisions (i.e., consume or preserve resources based on the mutually accepted agreements reached between the agents). Even though both decision situations share several commonalities (e.g., mixed-motive situations), they also differ in important aspects from each other and, thus, reflect different lines of psychological research.

### 3.1. *Experimental Game Research versus Negotiation Research*

Research on individual decision-making in resource-dilemma games has provided important insights into how psychological processes affect defection and cooperation in different types of experimental games (e.g., sender-receiver games—e.g., [53]; public goods games—e.g., [54]; intergenerational games; e.g., [55]). Defection refers to a situation in which an individual decision-maker chooses to maximize short-term self-interests at the cost of the collective long-term interests (e.g., [5,56]). Contrarily, cooperation refers to a situation in which an individual decision-maker chooses to maximize long-term collective interests at the cost of short-term self-interests (e.g., [57,58]). Even though communication processes have not been the major focus of experimental game research, several studies started to investigate how different types of communication affect defection and cooperation in experimental games (e.g., cheap talk—[59–61]; binding talk: [62–64]). A part of these studies also investigated whether communication increases trust in the counterparts' promises (i.e., cheap talk—[59–61]), while other studies examined whether communication increases compliance to own promises (i.e., binding talk—[62–64]).

Even though the role of communication has already been addressed in experimental game research, the role of communication in negotiations goes beyond the effects of cheap or binding talks. As opposed to experimental game research, decision-makers in negotiations commonly lack knowledge of their counterparts' pay-offs, priorities, and interests [41,65]. Therefore, decision-makers in negotiations must communicate with each other to uncover missing information and explore opportunities to create value through integrative and innovative negotiation strategies. Communication between the negotiation parties, however, does not only serve the exploration of opportunities to create value, but is also an indispensable and integral part of the interactive and joint decision-making process in negotiations. In particular, mutually acceptable agreements in negotiations can only be reached through the ongoing process of communication. To differentiate between experimental games and negotiations, experimental games have, thus, been described as 'games of coordination' or 'games of moves' based on the agents' individual decisions, whereas negotiations have been referred to as 'games of agreements' based on the agents' joint decisions [32,41]. Given the important differences between decision-making processes in experimental games versus negotiations, several authors have warned against a simple generalization of findings from one field of research to the other (e.g., [32,41]).

### 3.2. *Negotiations on Common Resource Dilemmas*

The solution of conflicts of interests through negotiations has been an important topic in psychological research for decades (e.g., [8,9,32,41,66,67]). Unlike in experimental game research, where defection versus cooperation is well investigated, the sustainable solution of conflicts between short-term self-interest versus long-term collective interests has gained far less attention in negotiation research. Applying the idea of negotiations on common resource dilemmas to the field of sustainability may, however, require a broader reconsideration of the concept of 'collective interest', as it has been commonly used in experimental game research. Specifically, the concept of collective interest refers to the effect



of ‘externalities’ in the context of sustainability (e.g., [68–70]). Externalities are indirect costs or benefits to an uninvolved but interdependent external party that arise as an effect of other parties’ activities or decisions (e.g., [71,72]). In negotiations on common resource dilemmas, externalities occur when agents make decisions on managing and using resources that affect not only the interests of the negotiating parties but also the interests of external parties living at other locations (interlocal externalities), belonging to different groups (intersectional externalities), or being part of future generations (intergenerational externalities). Thus, the investigation of psychological processes in negotiations on common resource dilemmas in the realm of sustainability affords that external parties’ interests that are affected by the agreements are incorporated into research on collective long-term interests. Menkel-Meadow [73] raised awareness of the pivotal role of externalities in the context of many negotiations: “What seems like a ‘two-party’ problem is, in fact, much more complicated and often affects many other parties [...]. We can almost never assume that a bilateral agreement of two parties will be sufficient to solve anything but perhaps the most simple buyer-seller agreement” (pp. 421–422).

Different types of externalities pose a highly challenging task to negotiators in common resource dilemmas. Specifically, agents must not only solve their conflicting short-term self-interests at the negotiation table, but further must take the interest of different social groups (e.g., different ethnical, political, or religious groups), at different locations (e.g., locally near or far), at different times (e.g., short-, intermediate-, or long-term consequences) into consideration (e.g., [73,74]). Despite the key role of externalities in the transition towards sustainability, only very little is known about (1) the psychological barriers to sustainable agreements that negotiators face and (2) how they can be encouraged to apply strategies that aim for integrative-transformative and sustainable agreements.

#### 4. The Myopic Mindset as a Psychological Barrier to Sustainable Agreements

We argue that the social context of negotiations on common resource dilemmas (i.e., exploiting resources in agents’ short-term self-interest vs. conserving resources for the long-term collective interest) fosters a destructive psychological orientation: negotiators tend to claim value in their short-term self-interest while neglecting opportunities to create value in the long-term collective interest. This cognitive orientation is, in turn, reinforced by the inherent struggle over the challenging characteristics of common resources, namely, their limited availability, restricted accessibility, and dynamic alterability. We refer to this psychological orientation as a ‘myopic mindset’. The concept of the mindset was first introduced as the sum of cognitive procedures that constitute a cognitive orientation to achieve task completion (e.g., [75,76]). Building on this, Gollwitzer [77,78] describes mindsets as a cognitive orientation that helps individuals to solve certain tasks such as setting goals or implementing goal-directed behaviors. Accordingly, mindsets can be defined as psychological orientations that determine the way how individuals handle certain tasks or challenges on the cognitive, affective, and behavioral levels. A plethora of research has shown that mindsets affect individuals’ behaviors and strategies in various social contexts (e.g., [78,79]), including negotiations [80–82].

Noteworthy, mindsets do not always facilitate task accomplishment but may also trap individuals in self-defeating cycles [83]. In most negotiations on common resource dilemmas, agents must deal with limited or scarce resources. The scarcity of resources plays a decisive role in the emergence of social conflicts (e.g., [33,84–86]). For instance, people who perceive resource scarcity mainly focus on the satisfaction of their short-term self-interest (e.g., [84,87]), reveal more self-serving behaviors (e.g., [13]), and are less cooperative [33,88]. In conclusion, we assume that the limited availability of resources will induce an egoistic psychological orientation that constitutes a fundamental part of agents’ myopic mindset ([89–91]; also see: [92,93]).

In other cases, sufficient resources are available, but the access to these resources is restricted. For instance, in June 2021, the global alliance of vaccines and immunization (GAVI) negotiated an international agreement that regulated the global production of

vaccines. The decision-makers (including China, Germany, Russia, the USA, and others) kept the access to technical knowledge or reproduction rights restricted, and thereby contributed to desolate vaccine coverage in African countries, while holding on to a great surplus of vaccine doses [94]. From a psychological perspective, the restricted accessibility of resources promotes an intergroup bias (e.g., [34–36,95]) that is reflected in negative attitudes (prejudice), derogating cognitions (stereotypes [96]), and discriminating behavior (discrimination; e.g., [97]) towards members of other groups. Reflected in intergroup distrust

the intergroup bias can either take the form of in-group favoritism (e.g., providing a surplus of vaccines to the in-group) or out-group derogation (e.g., restricting access to vaccines to the out-group). Notably, in-group favoritism and out-group derogation not only occur in actual conflicts over scarce resources (realistic group conflict [101,102]) but also when resource scarcity is not a crucial element of the conflict (e.g., [35,103]). This can be explained by deep-rooted human motives such as the need for positive self-esteem and distinctiveness [34,35], self-preservation [104], or social dominance [105]. Given these fundamental motives, we assume that the restricted accessibility of resources will foster the intergroup bias and cause conflict escalations in negotiations on common resource dilemmas.

Finally, even without restricted access or limited availability, negotiators may still experience conflicts of interest concerning the dynamic alterability of resources. On the one hand, resources can be unstable and, therefore, alter autonomously through environmental change, economic transition, or social development (e.g., the thawing of water-covered permafrost releases methane from decomposed plants into the atmosphere). On the other hand, resources can change their quality through active human consumption. Therefore, agents must take the negative long-term consequences of resource consumption into consideration (e.g., nuclear waste resulting from the production of nuclear energy). From a psychological perspective and as indicated by an extensive body of psychological research, this dynamic alterability of resources may foster negotiators' tendency to neglect long-term, time-delayed consequences of their decisions, and instead concentrate on immediate outcomes (i.e., temporal discounting [37–39,106]). This tendency can be found across a variety of contexts and outcome domains, such as economic and environmental outcomes (e.g., [37,39,107]). Due to their preference for immediate outcomes, we assume that negotiators fall prey to a two-fold temporal short-sightedness: They (1) primarily focus on the present state of resources and negotiate how they can generate beneficial outcomes for their present interests and (2) ignore the transformation of resources over time and discount potential long-term burdens of their decisions.

## 5. Claiming Value in Negotiations on Common Resource Dilemmas

Agents with a myopic mindset are assumed to primarily process the information on the differences between themselves and others (intergroup bias [34,35,42,95]), react with egoistic and self-serving behaviors (egoistic motivation [31,108,109]), and focus on immediate short-term outcomes while neglecting future consequences (temporal discounting; e.g., [37–39]). A myopic mindset in negotiations on common resource dilemmas is, thus, predicted to have a strong impact on agents' behaviors and strategies.

Negotiation strategies can be classified into two main categories: creating value focuses on the integration of all parties' interests versus claiming value focuses on enforcing the individual interests of the parties [8,24]. While creating value is reflected in cooperative, constructive, and integrative negotiation behaviors aimed at "enlarging the pie" (e.g., logrolling and contingency contracts), claiming value is reflected in distributive, competitive, and contentious behaviors aimed at "slicing the pie" (e.g., self-serving demands and the misrepresentation of interests). The social conflicts in negotiations on common resource dilemmas and the resulting myopic mindset are expected to foster agents' tendency to claim value and obstruct the tendency to create value. Importantly, this may result in conflict escalations as claiming value increases the likelihood that other parties will mirror

these behaviors (e.g., [110]). This tendency to claim value ultimately reinforces each other's fixed-pie assumptions and increases the risk of escalating conflict circles (e.g., [8,9]).

We conclude that a myopic mindset in negotiations on common resource dilemmas will trigger negotiation strategies that primarily serve agents' short-term self-interests. Negotiators with a myopic mindset tend to make contentious demands on limited available resources, restrict the accessibility of resources, and exploit the dynamic alterability of resources. These tendencies can manifest, for instance, in that negotiators apply competitive tactics such as committing themselves to adamant demands (e.g., [29]), hinder other parties to use shared resources [14,111], or devalue other parties' proposals on how to change future developments (e.g., [112]).

## 6. Distributive-Consumptive Outcomes

Through value claiming and the corresponding competitive strategies, agents with a myopic mindset are predicted to pursue negotiation outcomes that serve their short-term self-interests while ignoring the long-term collective interests. While agents' focus on their short-term interests may even help them to find win-win solutions for those at the table [29], negotiators will neglect externalities that result from their decision at the negotiation table, imposing negative effects and harmful consequences on others absent from the table [5,6,50–52]. Ultimately, agents' unsustainable solutions and distributive-consumptive agreements will maintain or even foster intersectional, interlocal, and intergenerational injustice.

## 7. Shifting Agents' Mindset in Negotiations on Common Resource Dilemmas

From the perspective of micro-level psychological processes (e.g., human needs, motives, emotions, and cognitions), the transition to sustainability can only progress when agents' myopic mindsets change to a holistic view of the challenges in common resource dilemmas. The importance of this perspective is also reflected in the well-established definition of sustainability as a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” found in the Brundtland Report [113]. This definition points out that the decision-makers in sustainability-related negotiations are challenged to meet the interests of different social groups within and between generations [106,114]. We, therefore, specify social justice as a normative standard of sustainable agreements in negotiations on common resource dilemmas (for reviews, see [115,116]). It is important to note that social justice as described in the definitions of sustainability [117] can hardly ever be met in its ultimate sense. Precisely, negotiations on common resource dilemmas take place in an ever-changing environment with multidimensional outcomes, multilateral externalities, and intertemporal dependencies [118,119]. The striving for sustainable agreements in terms of intersectional, interlocal, and intergenerational justice should, therefore, only be understood as a guiding principle that must be constantly and iteratively reassessed in the ongoing process of sustainability-related negotiations. (For instance, in climate change negotiations, agents may adopt normative standards that all parties agree to a certain threshold of temperature or sea-level rise. Such general goals may serve as the guiding principle for intersectional, interlocal, and intergenerational justice on a superordinate level. Even though agents may have agreed on such general goals as guiding principles in their negotiations, they, nevertheless, will face enormous challenges of social injustice when it comes to the concrete implementation of goal-directed measures at the local, regional, or national levels that will force agents to agree to painful trade-offs.) Accordingly, from a psychological perspective, the search for sustainable negotiation agreements must be seen as a chronic rather than temporal goal state [120,121].

Inducing a mindset shift has been a very challenging endeavor for psychological research over recent years (e.g., [77,122–124]). Interestingly, interventions to induce a mindset shift have also gained considerable attention in negotiation research (e.g., [80–82,125]). Even though a detailed discussion of factors that may help agents to shift their mindsets goes beyond the scope of the present framework, we would like to summarize different



approaches to how a mindset shift could be initiated in sustainability-related negotiations. In general, a mindset shift may either be caused by internal pressure that pushes agents to change their psychological orientations, or by external pressures that pull agents to adjust their maladaptive orientations. For instance, agents may experience an inner pressure to avoid harmful externalities that may promote future social conflicts with external parties resulting in severe conflict escalations [111]. In addition, agents may feel a need to shift their mindset due to negative experiences or learning processes. For instance, agents may experience that the failure to solve their social conflicts in the past may prevent them from reaching their goals in the future. Concerning their learning experience, psychological research has also pointed out the promising role of mindset-trainings (e.g., [77,122,123]) that can also be applied in the context of negotiations (e.g., [80,126]). Moreover, agents can be encouraged to develop a new mindset by observing the behaviors of renowned or successful role models in the field of science, economics, or politics (e.g., [127,128]). Even if agents do not perceive an inner obligation to change their mindset, external factors may, nevertheless, force them to adjust their psychological orientation to meet the demands of their environment, such as disasters, economic downturns, or social unrest (e.g., [129]). Without the immediate pressure of social, economic, or ecological upheaval, public pressure provoked by social movements, political protest, societal debates, or other forms of collective action may force agents to change their mindset [130–132]. Finally, agents may be encouraged to shift their mindset in negotiations on common resource dilemmas by scientific reports and model projections that call for collective effort to solve pressing economic, social, and ecological challenges and reduce the impact of detrimental developments in the future (e.g., [133]).

Although agents may feel a need for a mindset shift, they may still lack knowledge of the psychological processes that may help them to apply integrative and innovative strategies in negotiations. In this case, various psychological processes may help negotiators to handle the challenges of sustainability (e.g., mindfulness [134,135] and connectedness to nature [136,137]), however, in our framework, we concentrate on the role of three psychological mechanisms. We believe that these could help agents to develop a holistic mindset to deal with the specific challenges of common resource dilemmas. Specifically, we elaborate on the role of social identity processes [35,44,138], prosocial motivation [139,140], and mental contrasting [49,141] as important psychological processes.

### 7.1. Promoting a Holistic Social Identity

Social categorization of own versus other groups (i.e., “we” as the same group vs. “they” as other groups) provokes an intergroup bias [42,95,142], increases intergroup polarization (e.g., [143]), triggers intergroup distrust (e.g., [98]), and increases intergroup greed (e.g., [100]). These detrimental intergroup effects may even occur in ostensible conflicts of interests without resource scarcity (e.g., [44,100,144]). Hence, one of the most crucial challenges in common resource dilemma negotiations is to move agents’ cognitive categorization of the intergroup context towards the perception of a social context, in which different subgroups are embedded in more comprehensive social networks. These superordinate group-memberships include the social ties between these different subgroups. In the common-ingroup identity model, Gaertner and Dovidio [44] propose that agents recategorize themselves and other out-groups as members of one superordinate common-group without giving up their identification with their original subgroups. Numerous psychological studies have shown that the awareness of a superordinate in-group identity decreases intergroup biases, increases intergroup trust, and improves social relations (e.g., [145,146]).

Referring to the social-identity approach [138,147,148], the feeling of shared belongingness and the perception of social ties can be strengthened by raising the awareness of similarities between different social groups on the superordinate group level. For instance, agents of different social groups can be made aware of their similarities concerning their basic human needs, or fundamental motives and interests. Previous research shows that

perceived similarity between groups improves intergroup relations and reduces intergroup discrimination [149,150]. For instance, research on global identity and identification with humanity (e.g., [43,151]) reveals that agents with a salient social identity on the global level are more concerned about distributive justice, act more cooperatively in social conflicts, or show more pro-environmental behaviors. Given these promising findings, we argue that strengthening the perception of similarities and the awareness of social ties on the superordinate group level might help agents overcome their intergroup bias, distrust, and greed.

### *7.2. Promoting a Holistic Prosocial Motivation*

Although promoting agents' holistic social identity can improve intergroup relations, the inherent structural characteristics of negotiations on common resource dilemmas (i.e., limited availability, restricted accessibility, and dynamic alterability of resources) may lead agents to focus on the negative interdependence between their self-interests and the collective interest (e.g., [1,152]). If all agents sought to fulfill their interests regardless of the collective interest, everyone would end up with inferior outcomes in the long run. Despite the prevalent salience of this negative interdependence, however, common resource dilemma negotiations inherently involve common fate and, thus, also imply positive interdependence (i.e., mixed-motive dilemma [152–154]). If all agents managed to use resources cooperatively and considered the collective interest, everyone could benefit from superior outcomes in the long run. Hence, negotiators must resolve their negative interdependencies with respect to their short-term self-interests and, at the same time, manage their positive interdependencies with respect to long-term collective interests (e.g., [74]).

To increase the willingness to cooperate in negotiations on common resource dilemmas, agents must be encouraged to reflect on their common fate in the transition toward sustainability. As mentioned above, agents may become aware of common fate for different reasons, such as negative future consequences due to the neglect of externalities, conflict escalations due to disputes with external parties, or public pressure due to political movements or scientific reports. Becoming aware of the common fate with others at and beyond the table will help agents to take a broader perspective on social interdependencies. Specifically, by accepting common fate with others, agents reflect on the need for mutual cooperation to manage the transition towards sustainability. In support of these considerations, previous research on common fate has shown that agents who perceive a positive interdependence with others show more cooperative behaviors, are more willing to make integrative trade-offs, and are more likely to explore sustainable conflict solutions (e.g., [46,155,156]). Thus, we suggest that making agents reflect on their common fate will increase their awareness of positive interdependencies and strengthen their willingness to cooperate in negotiations on common resource dilemmas.

### *7.3. Promoting a Holistic Time-Perspective*

Raising awareness of agents' social ties with other groups and making them reflect on their common fate may still not suffice to overcome agents' temporal short-sightedness anchored in the present. Specifically, due to the strong human tendency to focus on the present, agents are likely to think only about the immediate consequences of their actions or non-actions, disregarding how their behaviors might affect the collective in the long run (e.g., [157,158]). To counter this tendency, research on individual decision-making suggests that actively thinking about the future can help agents better understand their current decision as part of a sequence of future outcomes. This procedure can increase agents' awareness of potential future risks, reduce temporal discounting, and improve future-oriented decision-making (e.g., [159,160]).

Psychological research on future-oriented goal pursuit, however, suggests that reflecting on the future is not sufficient to promote effective future-oriented decision-making and actions (e.g., [47,49]). To generate a strong commitment to the future and to promote

forward-facing behaviors, agents must not only reflect on wanted (or unwanted) future states but should also mentally contrast these future states with present obstacles that may hinder them from approaching (or avoiding) their desired (or undesired) outcomes (e.g., [47–49]). For instance, deliberating on the difference between a wanted future state (e.g., regeneration of fishing grounds or afforestation) and the opposing status quo promotes a systematic reflection on the feasibility and desirability of future outcomes (e.g., [77,161]), increases agents' commitment to their future goals (e.g., [47]), and promotes forward-facing actions and behaviors (e.g., [162,163]). Referring to empirical findings on mental contrasting in negotiations (e.g., [164,165]), we predict that agents who compare (desired or undesired) future states with the status quo will be more likely to consider the future consequences of their agreements in negotiations on common resource dilemmas. Consequently, they will deliberatively make a joint decision based on the feasibility and (un-)desirability of the future states (e.g., [166]), will commit themselves to these agreements (e.g., [167]), and will engage in agreement-consistent action to implement their joint decision (e.g., [78]).

### 8. The Holistic Mindset as a Psychological Driver towards Sustainable Agreements

Reflecting on social ties and shared similarities [26,43,138,148], raising awareness of common fate and positive interdependence [153], and promoting the comparison of current versus future states [47,164] are predicted to turn agents' myopic orientation into a holistic mindset. With a holistic mindset, agents are expected to apply problem-solving strategies that aim to integrate the interests of decision-makers at and the interests of external parties beyond the negotiation table. Notably, negotiation research has already found initial evidence that negotiators with a holistic mindset who use multi-issue offers manage to gain more accurate insights across different interests during the negotiation process enabling them to reach higher joint gains [125]. With regards to negotiations on common resource dilemmas, negotiators with a holistic mindset are predicted to explore sustainable agreements across different groups (i.e., holistic social identity) and to aim for a cooperative and fair distribution of resources within and between these groups (i.e., holistic prosocial motivation). Finally, they will systematically deliberate on the desirability and feasibility of future outcomes, commit themselves to their joint decisions, and plan future-oriented actions aimed at the transition towards sustainability (i.e., holistic time perspective).

### 9. Creating Value in Negotiations on Common Resource Dilemmas

To discover and realize the integrative potential in negotiations, research suggests different types of value-creating strategies as a promising approach (e.g., [32,41,81,168]). In bilateral negotiations, creating value refers to all types of problem-solving approaches that support agents to discover mutually beneficial outcomes for the parties at the table [168,169]. In common resource dilemmas revolving around sustainability issues, problem-solving must go beyond the search for integrative solutions at the table and consider various types of externalities. Thus, from a psychological perspective, the process of creating value in negotiations on common resource dilemmas is highly challenging as intersectional, interlocal, and intertemporal externalities must be taken into consideration, and absent stakeholders (e.g., socially or locally distant groups and future generations) cannot speak up for their interests. Furthermore, the limited availability, the restricted accessibility, and the dynamic alterability of resources require the negotiating agents to develop innovative and integrative strategies that may go beyond those strategies commonly recommended in the traditional negotiation literature. In our framework, we propose three guiding principles for applying problem-solving strategies in negotiations on common resource dilemmas based on the conflict structure in these negotiations: managing the limited availability, the restricted accessibility, and the dynamic alterability of resources. (The provided examples of different problem-solving approaches are intended to illustrate the basic principles of integrative and innovative strategies in negotiations on common resource dilemmas. As the focus is on the applicability of these strategies, the used examples are oversimplified and do not reflect the complexity of the ones in real-world contexts. Specifically, real-world

negotiations on common resource dilemmas involve complex interdependencies on various levels of outcomes and, thus, force agents to make trade-offs (i.e., balance costs and benefits) across different outcome dimensions (e.g., ecological vs. economic outcomes), social groups, locations, and generations).

### 9.1. Managing the Limited Availability of Resources

Problem-solving strategies regarding the limited availability of resources (e.g., limited fresh water in arid areas and limited farming land in urban regions) must address the scarcity of resources. (Sometimes agents may perceive resource scarcity even though resources are available in sufficient numbers (e.g., the perceived scarcity of sanitizers or masks in the COVID-19 pandemic despite instantly increased availability). Thus, agents should first analyze the actual resource availability when trying to solve their conflict of interests. The erroneous perception of resource scarcity in negotiations may result in an illusory conflict, which may hinder negotiators to explore integrative conflict solutions ([170]; see also [171–173]).). To address the scarcity of resources, agents can solve their conflicts of interests by either (a) trying to increase the number of resources or (b) systematically managing the scarcity of resources.

Agents who try to increase the number of resources may apply a negotiation strategy that we call ‘resource scaling’. Resource scaling refers to agents’ efforts to create conditions that allow parties at and beyond the table to distribute more resources and thereby to (partially) solve the present scarcity of resources. Before parties can distribute the increased number of resources, they must first negotiate on each parties’ contribution to create conditions that allow parties to use more resources in the future. For instance, two parties negotiating on the scarcity of resources for them and others (e.g., two neighboring countries negotiating on the limited availability of fresh water) may solve their conflicts of interest by building up infrastructures that allow them and others to increase the availability of resources (e.g., building a water reservoir that provides up- and downstream countries with sufficient water throughout the year in the long run). ‘Resource scaling’, thus, requires agents to negotiate on their different contributions to build up infrastructures as well as on the distribution of the scaled resources.

Another approach to deal with the limited availability is the strategy to explore other alternative resources that serve parties’ needs. Specifically, if resources that serve parties’ needs are scarce (e.g., fossil resources to serve the need for energy), agents may expand the pie by making joint decisions on the ‘innovation’ or ‘replacement’ of resources (e.g., hydrogen energy and biogas). Innovation and replacement aim at creating value through inventing new resources and substituting scarce with alternative resources that serve parties’ needs in equal or similar ways. In negotiation research, the strategies of resource innovation and resource replacement have also been described as “bridging” [65]. Bridging always involves some novel and innovative element that has previously not been considered in negotiations (e.g., innovating a new resource or substituting resources with others to fulfill parties’ interests and needs).

Whenever agents seek to create value through managing the limited availability of resources, negotiation strategies such as ‘scaling’, ‘inventing’, or ‘replacing resources’ involve preventive investments and, thus, require agents to make joint decisions as to who is going to contribute in what ways to these investments. In other words, joint investments always imply conflicts of interests that must be solved within the negotiation process. In addition, joint investments in terms of scaling, replacing, or inventing resources aim at creating value in the long run (i.e., return of investment, e.g., [174]). The distribution of this created value may cause future conflicts that also must be solved through negotiations [24]. Thus, the management of the limited availability of resources through negotiations requires the consideration of time [175] by anticipating short-term conflicts on the investment as well as long-term conflicts on the ‘return of investment’.

### 9.2. Managing the Restricted Accessibility of Resources

In many social conflicts, the scarcity of resources cannot be solved through increasing the availability of resources (scaling resources), inventing new resources (resource innovation), or substituting scarce with alternative resources (resource replacement). In these cases, the consumption and use of resources must be managed by restricting accessibility. An extensive body of research from economics and sustainability science indicates that restricted access to resources plays a pivotal role in social conflicts on commons [50,176–178]. As described in the so-called ‘tragedy of commons’, the open access to resources without any restrictions may cause depletion through the uncoordinated use or consumption of these resources [50]. Specifically, the unrestricted access to resources motivates individuals to follow their self-interests by exploiting the resources even when this exploitation counteracts the long-term interests of the collective. In her seminal work on commons, Ostrom [51,176,177] specified these assumptions by suggesting that this resource exploitation is not inevitable. Instead, Ostrom revised the idea of the ‘tragedy of commons’ by conducting field studies with small, local communities, where their members had unlimited access to shared natural resources (farmland, fisheries, and pastures), while the access to these resources was restricted to other stakeholders that did not belong to these communities. Ostrom’s work revealed that members of these communities develop social norms and rules on how to use and maintain resources, even if access to these resources was not restricted within their communities.

Transferring these findings to negotiations may provide important insights into novel negotiation strategies that have not been introduced into the literature thus far. Specifically, in large-scale common resource dilemmas, providing unrestricted access to resources may cause resource overuse or depletion [50,179,180]. In small-scale dilemmas, by contrast, restricting access to resources may cause intragroup or intergroup conflicts [34,35,42,95]. To solve the dilemma of restricting versus unrestricted the accessibility of resources, agents need to negotiate mutually acceptable decisions on how to use or consume resources without causing detrimental externalities through exploitation, depletion, or destruction.

Two different strategies could be used by agents to find mutually acceptable agreements on managing the accessibility of resources. First, agents may negotiate the mutual use of resources through ‘resource sharing’. When negotiating agreements on resource sharing, agents make joint decisions on binding rules or even legal regulations on how certain stakeholders would be allowed to use these resources at certain times and/or at certain locations (e.g., stakeholders in certain countries in a certain period of time would be allowed to use pharmaceutical patents and production licenses to manufacture vaccines; [181]). In other words, agents negotiate mutually acceptable decisions on how to ‘share the pie’. Second, agents may negotiate the accessibility of resources through ‘resource rationing’. While resource sharing refers to the restricted usage of resources, resource rationing refers to the restricted consumption of resources by certain groups (e.g., fishing quota for different countries), at certain times (e.g., seasonal fishing quotas), or at certain locations (e.g., fishing quota in the Northwest Atlantic, e.g., [182]). Importantly, managing the use and consumption through resource sharing or resource rationing must be targeted at protecting the collective interests (e.g., fishing quotas in international waters) to overcome selfish interests (e.g., restricting the access to national fishing grounds). In terms of negotiation research, strategies aimed at managing the accessibility of resources in favor of the collective interest (e.g., resource sharing or rationing) on a superordinate level could be described as ‘protecting the pie’.

### 9.3. Managing the Dynamic Alterability of Resources

Resources that are available in sufficient numbers and are accessible without restrictions may still cause severe social conflicts due to their dynamic alterability. For instance, resources may alter in quality, quantity, or value due to environmental change (e.g., climate change), economic transformation (e.g., digital transformation), or social transition (e.g., immigration). In this process, resources may transform without active consumption (e.g.,



thawing of water-covered permafrost and the corresponding methane emissions) or may change through active exploitation (e.g., consumption of fossil resources and the corresponding CO<sub>2</sub> emissions). When negotiating sustainable agreements, agents must consider these resource developments.

One strategy to deal with the undesired effects of transforming resources is ‘resource compensation’. Resource compensation refers to the implementation of countermeasures to outbalance the undesired effects of resource transformation or consumption (e.g., joint investment into resources that counteracts the negative effects of resource consumption such as re- and afforestation against CO<sub>2</sub> emissions of fossil fuel consumption, e.g., [183]). In the negotiation literature, a distinction has been determined between specific and non-specific compensation [65]. Specific compensation aims to offset costs and benefits on the same outcome dimension (e.g., a prospective increase in methane emissions due to permafrost thawing would be compensated by an increased effort to reduce current methane emissions in agriculture; see side-agreement at the COP26 in Glasgow). Non-specific compensation aims to compensate the costs through actions in one dimension with benefits of counteractions in another dimension (e.g., compensating fossil fuel emission with afforestation). Negotiating joint agreements on resource compensations is particularly challenging, as the negative effects of resource consumption are commonly delayed (e.g., future temperature rise) and often occur at distant locations (e.g., sea-level rise at distant locations). Thus, specific and non-specific resource compensation often requires prospective agreements over joint investments. Importantly, resource compensation commonly does not create a profitable ‘return of investment’, but instead aims to offset negative future consequences (e.g., joint investments in afforestation to avoid temperature and sea-level rise). These joint investments to avoid long-term damages will become even more challenging if the required countermeasures must take place at other locations than those of original resource consumption (e.g., afforestation of farmland as countermeasures against industrial CO<sub>2</sub> emissions in rainforest regions). Agents negotiating on resource compensation are, thus, challenged to negotiate their contributions to joint investments without receiving a profitable return of investment in the future that could be distributed between parties.

Another approach to managing the dynamic alterability of resources is the strategy of ‘resource re-, up-, or downcycling’ (resource-recycling). Resource recycling refers to the renewal or reprocessing of used resources so that the resources reacquire their original functions (e.g., used car batteries are renewed and can be used again as batteries in cars). Resource up- and downcycling refers to the conversion of used resources into other resources that serve alternative functions (e.g., used car batteries are upcycled as energy carriers in non-electrified global regions). Negotiating on the re-, up-, or downcycling of resources requires agents to find mutually acceptable decisions on their investments to build up re-, up-or downcycling facilities as well as agreements on how to distribute the benefits from resources.

## 10. Integrative-Transformative Outcomes

Creating value at and beyond the table ultimately aims at integrative-transformative agreements in negotiations on common resource dilemmas. These agreements can be seen as important steps in the transition towards sustainability and may foster intersectional, interlocal, and intergenerational justice. Agents with a holistic mindset are predicted to strive for these sustainable agreements that integrate their short-term self-interests with the collective’s long-term interests. As common resources and the associated social conflicts are subject to constant change, negotiations on common resource dilemmas and reaching integrative-transformative outcomes must be understood as an iterative, enduring process of sustainable development. In addition, this process is reflected in a chronic rather than a temporary goal-striving process that aims at desired end-states that can hardly ever be met (e.g., [121,162]).

## 11. Discussion

Within our framework, we explored, analyzed, and established the key role of joint interactive decision making over common resource dilemmas in the transition toward sustainability. First, we highlighted the crucial role of psychological processes at the micro-level and outlined how detrimental psychological processes become barriers to sustainable agreements (i.e., the myopic mindset) as they facilitate the deconstructive claiming of resources. We proposed how agents who are aware of the need for a mindset shift may use three distinct psychological intervention approaches (i.e., promoting the awareness of social ties, common fate, and future consequences) to perform a shift towards a task-oriented holistic mindset. By introducing this framework, we seek to contribute to a richer understanding of how psychological processes at the micro-level impact sustainability-related processes at the meso- and macro-level. In addition, we provided a novel psychological perspective on decision-making in common resource dilemmas as a joint interactive process shaped by agents' continuous interaction. Moreover, we extended existing research on negotiations by providing novel insights into the underinvestigated domain of negotiation processes on common resource dilemmas (for exceptions, see [9,14,184]) and into innovative strategies of value-creating and problem-solving unique to such negotiations. Ultimately, we offered practical advice for agents who face the challenging task to negotiate sustainable agreements on common resource dilemmas. In the following, we discuss boundary conditions that may play a pivotal role in negotiations on common resource dilemmas but exceed the scope of the present framework. Particularly, we will discuss the role of uncertainty, cognitive limitations, group processes, power differences, and how future research may incorporate these challenges into common resource dilemma negotiations.

### 11.1. Uncertainty in Negotiations on Common Resource Dilemmas

Agents' experiences of uncertainty are inherent to negotiations on common resource dilemmas and should, therefore, be addressed in-depth in future research. Knowingly, negotiations are "fuzzy situations that are full of uncertainties and ambiguities" ([108], p. 608). While the impact of uncertainty on individual decision-making has been largely investigated (for a review see [185]), only a little is known about the systematic effects of uncertainty on negotiation behaviors and outcomes (for exceptions, see [186,187]). Only a few studies have investigated the use of integrative tactics relative to distributive tactics when payoffs were uncertain [188], uncertainty as a potential cause of negotiation failure [189,190], and emphasized the importance of "a careful assessment of the sources of uncertainty in a negotiation" ([191], p. 109). Managing uncertainty in negotiations appears to be a great challenge (see [192]). Potentially, a high perceived degree of uncertainty alone triggers destructive (myopic) behaviors and serves as a barrier to shifting from a myopic to a holistic mindset. However, based on the concept of agreement fluidity [190], it can be assumed that negotiators react differently to uncertainty. Agreement fluidity is highly related to an acceptance of uncertainty, because it represents "an expectation of change beyond that which can be readily formulated in a contingent contract" ([190], p.129). Based on this expectation, agents with a high degree of agreement fluidity would regard an agreement as just one step in a more elaborate, flexible, ongoing process. Consequently, those with more fluid agreement expectations would anticipate the necessity of later adjustments and would prepare to cover uncertain outcomes, but with fewer concerns to prepare for all possible future contingencies.

Irrespective of agents' level of agreement fluidity, the complex structural features of negotiations on common resource dilemmas require dealing with multiple types of uncertainty. First, the (future) development of common resources and their characteristics (i.e., availability, accessibility, and alterability) can be uncertain. Due to the dynamic development of (natural) resources, as well as rapid technological progress and innovations, it can be difficult to make straightforward predictions about the future availability, accessibility, and dynamic alterability of a resource, as well as about the need for the resource in the future (e.g., it is uncertain for how long fossil fuels can still be accessed, while at the same

time, it is uncertain if future generations will require fossil fuels or could benefit from new energy sources). The uncertainty about the characteristics of common resources may then impact negotiators' psychological orientation (i.e., mindset). For instance, when resource availability is uncertain, agents may consider resource conservation (vs. usage) as more justifiable [193]. Despite agents' consideration, depending on their social value orientation, this perceived uncertainty of resource availability might either promote a more myopic mindset and egoistic behaviors (i.e., when agents are proselves) or motivate a more holistic mindset and sustainable behaviors (i.e., when agents are prosocials; [194]).

Second, agents at the negotiation table are usually uncertain about the present and future interests and priorities of the external parties that are affected by the agreements reached in negotiations on common resource dilemmas. However, it can be assumed that in many sustainability-related negotiations, the interests of external parties are not completely unknown, as they can be concluded based on the fundamental needs and desires of these external parties (e.g., rapid reduction in carbon emissions to mitigate global warming). To integrate the external parties' assumed needs and desires in agents' joint decision-making, the innovative negotiation strategies proposed in our framework such as resource innovations (e.g., development of commercial e-fuels) or resource compensations (e.g., afforestation) may serve as guiding principles for creating value and finding integrative-transformative negotiation agreements.

A third—in negotiations ever-present—source of uncertainty consists of agents' incomplete information about the other party. In negotiations on common resource dilemmas, agents may perceive a strong uncertainty about their counterpart's activated mindset (i.e., myopic vs. holistic). Thus, agents must deal with the risk of a mindset-mismatch, where attempts of value creation from a holistically oriented agent may be obstructed or exploited by a myopically oriented agent. We argue that negotiators should, nevertheless, seek to create value through innovative negotiation strategies, as any created value could help to pursue social justice and promote the transition towards sustainability without necessarily hurting the collective. Ultimately, negotiators with a strong myopic mindset may, however, hinder all other parties to realize sustainable agreements. Therefore, the integrative negotiation strategies proposed in our framework should not be considered as the *ultima ratio* in negotiations on common resource dilemmas. Rather, negotiators must always adapt their envisaged strategies of value creation to the strategies of their counterparts in order to effectively create value.

### 11.2. *The Complexity of Negotiations on Common Resource Dilemmas and Cognitive Limitations*

Even if agents with a holistic mindset manage to cope with the various sources of uncertainty and strive for social justice, they may still be challenged by a high degree of cognitive complexity as another potential barrier. This complexity is rooted in the necessity to consider various interests when aiming to jointly achieve sustainable and mutually acceptable agreements [192,195–197] and combine a multitude of potential value creation strategies (e.g., resource compensation, resource sharing, and resource re- or upcycling). These interests include the agents' personal interests, their counterparts' interests at the negotiation table, and the interests of other affected external parties. Conclusively, for each of these diverse interests, suitable strategies of value creation need to be identified and implemented. As a second factor, adding another layer of complexity, agents must deal with the multidimensionality of their negotiated outcomes. For instance, agents must not only pay attention to the quality of their agreements at the economic level, but also consider the outcomes on the environmental or social dimension to find sustainable solutions (e.g., [184,198,199]). Presumably, referring to the findings from negotiation research, complexity can represent a major structural obstacle toward integrative-transformative outcomes. Against this backdrop, it has been found that complexity that exceeds agents' cognitive limitations decreases their abilities to make rational choices and to create value [200]. However, to remain capable of acting under these cognitive limitations, agents have been found to rely on different types of heuristics (e.g., [201–204]) that create a focus on frag-

ments of the available information (e.g., agents' economic short-term interests). Thereby, the integration of the collective's multi-dimensional interests may be impeded. Consequently, future conceptual advances, case reports, and experimental research are needed to shed light on how and why agents' minds and behaviors are affected by the inherent complexity in negotiations on common resource dilemmas.

### *11.3. Power Differences in Negotiations on Common Resource Dilemmas*

For different reasons (e.g., valuable alternatives to a negotiation agreement; the amount of prior and/or potential future contribution to the common good) agents who negotiate a common resource dilemma may hold different positions of power (e.g., [13,205]). It is likely that, this divergence can severely impact agents' joint agreements. Negotiation research on power differences has revealed that joint agreements are usually settled in line with the interests of the high power-negotiator (e.g., [11–13,205–207]). Depending on the distribution norm [208] promoted by the high-power negotiator, this orientation may either impede or promote agents' striving for social justice. For instance, a high-power agent with a myopic mindset may claim the majority of resources [206]. Meanwhile, the low-power counterpart's claims for more resources may be subordinated to the high-power agent's preferences and may not be realized. Conversely, a high-power negotiator with a holistic mindset may also promote the striving for social justice by implementing different strategies of value creation aimed at incorporating collective interests. Independent of the high-power party's mindset, specific dominant cues or norms (e.g., the determined goal to not exceed a certain threshold of temperature or sea-level rise) may force agents towards joint agreements aimed at social justice. Thus, the striving for social justice may turn into a normative power that orients agents towards a particular allocation of resources in their joint agreements [209–211]. This dominant normative power stemming from agents' strong belief about a socially fair or just allocation could then balance or even outweigh the impact of individual power positions and thus influence the negotiation outcomes toward social justice.

### *11.4. Group Processes in Negotiations on Common Resource Dilemmas*

Importantly, in negotiations on common resource dilemmas, not only power differences between agents require further consideration, but also different types of group processes (e.g., group representation, mandates, ingroup vs. outgroup processes, social identification, constituency, prototypicality, multi-level group dimension, accountability, etc.). In general, we expect that a deviation of such group processes from our assumptions may lead to different extents to a change of effects in our framework. To illustrate the potential impact of specific group processes, we briefly introduced two examples (i.e., the social ties between agents and their constituents; in-group vs. out-group processes). In our framework, we defined "agents" (i.e., group representatives who psychologically perceive social ties with their group constituency, are provided with a mandate to negotiate the interests of their group constituency and perceive a feeling of accountability) in a way that highlights the important role of perceptions of social ties between agents and their constituent group. However, agents' perceptions of social ties towards their constituent group may deviate from this assumption. For instance, in the context of sustainability-related negotiations, a constituent group with a holistic mindset may confide in agents with their role for different reasons (e.g., hired representatives and politicians juggling the different interests of multiple stakeholders/lobbies). In some cases, agents may not perceive strong social ties with their constituent group. As a consequence of this potential social distance, agents may pursue their interests in addition to the interests of the group they represent [40,212]. The conflict of egoistic motives of an agent and the collective interests of the constituent group might impede agents from developing a holistic mindset despite their constituent group's intentions [213,214]. In summary, we assume that the perceived social ties of an agent with their constituent group likely moderate the effects of our proposed framework, i.e., the stronger the social ties that an agent perceives with a

constituent group, the higher the probability to find the expected effects. However, this illustrates the importance of the psychological processes proposed in our framework that aim to develop and promote a holistic mindset for individuals with conflicting interests.

Additionally, we assume that not only agents' perceived relationship to their constituents (i.e., strong vs. weak social ties) may impact the outcome of negotiations on common resource dilemmas, but also the relation of the agents at the table to each other as perceived in-group vs. out-group members. In our framework, we suggested that agents at the table with a myopic mindset perceive each other as in-group members (i.e., those who are present at the table) and perceive others who are members of other social groups, live in other locations, or belong to future generations as out-group members (i.e., those who are absent from the table). Based on the intergroup bias [34–36,95], we argued that agents would neglect the interests of others absent from the table while promoting their respective self-interests through cooperation (i.e., in-group favoritism, e.g., [215–217]). When agents shift their mindset towards a holistic mindset, we expect agents to widen their in-group perception to absent others affected by agents' joint decisions and to behave more cooperatively (e.g., [215]). Deviating from our framework's assumption, agents who are present at the table may perceive each other as members of different out-groups. Reasons may be that the salience of a common in-group identity (i.e., those who participate in the joint-decision process) is not strong enough, or that agents perceive each other as out-group members for historic reasons (e.g., politicians from antagonized countries). If agents with a myopic mindset perceive each other as out-group members as well, we would expect heightened competition and even less integrative negotiation outcomes [18,218]. This would represent an additional challenge for a mindset shift towards a more holistic mindset and, consequently, towards the finding of sustainable agreements. Future research should, therefore, reflect and investigate how to support the creation of a common-ingroup identity for agents at the negotiation table that will be extended to external parties by shifted holistic mindsets.

#### 11.5. Future Research

The boundary conditions (i.e., uncertainty, cognitive limitations, power differences, and group processes) discussed above could potentially limit the applicability of our framework. Future research should, therefore, investigate the extent to which these processes need to be considered in our framework's assumptions. In particular, we expect the investigation of uncertainty and the integration of externalities' interests into agents' joint decision making to be especially challenging and to require novel research approaches. Similar to research on transaction bargaining, for which a variety of instruments, tools, and paradigms have been established (for reviews, see [7,9,10,219,220]), we hope to stimulate the development of new instruments, tools, and paradigms for negotiations on common resource dilemmas (for a starting point, see [14]). These much-needed novel scientific approaches may then be applied to examine agents' disadvantageous strategies of value claiming more closely and to investigate under which circumstances the beneficial and innovative strategies of value creation (e.g., resource compensating, resource sharing, and resource re- or upcycling) occur and how to support them. We hope that we were able to initiate the discussion about the need for novel strategies of value creation tailored to negotiations on common resource dilemmas and that empirical investigations and extensions of the proposed strategies will soon follow.

## 12. Conclusions

We developed and introduced a framework of negotiators' structural challenges and psychological processes in common resource dilemmas in the transition towards sustainability. We identified structural barriers (i.e., limited availability, restricted accessibility, and dynamic alterability of common resources) and psychological processes (i.e., the myopic mindset) that lead to unsustainable negotiation agreements. To support negotiators in finding sustainable outcomes that aim at intersectional, interlocal, and intergenerational justice, we proposed a two-fold approach. First, we introduced how to promote a holistic mindset



shift of agents' myopic mindsets toward the exploration of integrative conflict solutions in favor of the collective. Second, we elaborated on a resource-oriented negotiation approach that builds upon innovative strategies of value creation necessary in negotiations on common resource dilemmas (e.g., resource compensating, resource sharing, resource scaling, resource re- or upcycling, or resource-inventing). We believe that our framework can help advance research from individual moves to joint decisions and from selfish maximizing to collective value creation.

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