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Co-Creating the Predefined: Participation and Epistemic Tensions in EU Coastal Research

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Abstract

EU research and innovation frameworks increasingly promote co-creation while simultaneously requiring projects to deliver predefined policy objectives and solutions. This article examines the tensions arising between these ambitions, using nature-based solutions as an empirical lens. Drawing on six transition coastal labs in the Horizon Europe project EmpowerUs and Aristotle's distinction between *episteme*, *techne*, and *phronesis*, we examine how universal scientific knowledge, institutional requirements, and contextual forms of knowledge/experiences interact in co-creation processes. The findings show that scientific criteria, funding structures, timelines, and evaluation requirements can constrain the extent to which local priorities are addressed. The tension is therefore not inherent to nature-based solutions but reflects a broader governance dilemma: Projects promise ambitious co-creation while operating within institutionally predefined solution spaces. Through a blue justice lens, we show that these conditions have implications for recognitional, procedural, and distributional justice. We argue for greater transparency about the boundary of co-creation and better alignment between participatory ambitions and institutional conditions.

Keywords

blue justice; co-creation; episteme; nature-based solutions; participation; phronesis; sustainability; techne

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1. Introduction

Research and innovation programs increasingly inform sustainability governance and address complex societal challenges. Within the EU, Horizon Europe (HEU) plays a central role in shaping these efforts, not only by funding research but by defining priorities, expected outcomes, and acceptable solution types. In recent years, these calls have placed a growing emphasis on participatory governance, co-creation, and the inclusion of social sciences and humanities (SSH). This suggests a broader shift towards more inclusive, socially responsive innovation processes.

At the same time, HEU calls are characterized by detailed expectations regarding deliverables, impacts, and solution pathways. These calls define not only goals, but also acceptable solution types and evaluation criteria. This creates a fundamental tension at the heart of EU-funded sustainability research: Projects are expected to be both open-ended and participatory, while operating within tightly structured and politically deliberated frameworks that shape what counts as relevant problems and solutions (Antonova, Bjørkan, & Bratt, 2025; Shortall & Meredith, 2025).

This tension is not just procedural, but also epistemic and political. Participatory approaches are typically grounded in constructivist traditions—commonly used within SSH—where knowledge is seen as context-dependent, emerging through dialogue and situated practices (Bandola-Gill et al., 2023; Caniglia et al., 2023). In contrast, funding frameworks tend to rely on positivist assumptions, emphasizing standardized indicators, measurable impacts, and predefined categories of intervention. As a result, participatory processes are embedded within institutional structures that influence both the problem definition and the range of acceptable solutions (Jentoft, 2006).

We draw on our experiences with these tensions from the HEU project EmpowerUs (2022–2025) and six Transition Coastal Labs (TCLs) across Europe's coastal regions. The project sought to support locally grounded sustainability transitions through co-creation and community empowerment. At the same time, the project was required to align with a series of predefined HEU expectations, including nature-based solutions (NBS), ocean literacy, gender equality, and nature connectedness. In this article, we will focus on NBS. Rather than treating NBS as the object of critique, we use them as an empirical lens through which to examine how predefined policy concepts interact with ambitious co-creation processes. The issue is not whether NBS are desirable—they often are—but how predefined policy concepts interact with genuinely co-creative processes. The paradox explored in this article is therefore not inherent to NBS themselves; it emerges when projects simultaneously promise co-creation and are expected to deliver predefined solution categories within a limited funding period.

To further highlight the tension between pre-determined solutions and participation, throughout this article we base our analysis on blue justice approaches and Aristotle's distinction between *episteme*, *techne*, and *phronesis*. Together, the two perspectives provide an analytical vocabulary for understanding how justice dimensions emerge in coastal sustainability transitions. More specifically, these frameworks allow us to examine how recognition, representation, and distribution are shaped through different forms of knowledge and governance.

Using NBS as an empirical lens, we ask: How do policy-driven NBS interact with locally grounded processes of co-creation, and what dimensions of justice emerge from these tensions in the context of coastal sustainability transitions?

This article makes three contributions. First, by demonstrating empirically how HEU's simultaneous commitment to predefined outcomes and co-creation generates structural tensions during implementation. Second, it uses NBS as an empirical lens to show how predefined policy concepts shape local solutions without questioning the value of NBS themselves. Third, it contributes to blue justice by showing that questions of recognition, representation, and distribution emerge not only through governance outcomes but also through the institutional conditions under which participation is organized.

The article proceeds as follows. The next section situates the article in the EmpowerUs project, and hence the context for our empirical material, by outlining our approach to participation and briefly introducing NBS. The theoretical section presents Aristotle's distinction between *episteme*, *techne*, and *phronesis* and how they relate to key tensions in the HEU context; next, the blue justice perspective is presented. The empirical section examines how tensions between predefined solution frameworks and co-creation unfold in practice, drawing on EmpowerUs' TCLs and using NBS as our empirical window. The discussion interprets these findings in light of *episteme*, *techne*, and *phronesis*. The article concludes by reflecting on the limits of co-creation under predefined conditions and proposes a need for more reflexive approaches (see also Gustavsson et al., 2025).

2. Context: Co-Creating Solutions in EmpowerUs

The empirical basis for this article is the HEU project EmpowerUs. The EmpowerUs project employed a multi-actor, iterative, and participatory methodology to build local capacity for systemic change in coastal communities. The project aimed to co-create locally relevant sustainability interventions while paying particular attention to questions of (dis)empowerment, inclusion, and governance processes (see https://empowerus-project.eu). The Horizon Europe call Socio-Economic Empowerment of the Users of the Sea (Horizon-CL6-2021-Communities-01-04) specified nine expected outcomes for funded projects. Two are particularly relevant to this article:

1. "Better understanding of the nature connectedness of coastal communities and preconditions, hurdles, and success factors for social transition and nature-based social innovation inspired the policymaking community to take measures."
2. "Empowerment of coastal communities and sectors to innovate for the ecological transition and feel part of it, through a multi-actor approach (EU, 2021)" (European Commission, 2021, p. 402).

The two expected outcomes reflect the dual ambitions that frame this article: predefined policy solutions, represented by NBS, and participatory governance, represented by empowerment. Both concepts are briefly introduced below.

NBS have become one of the EU's flagship approaches for addressing climate change, biodiversity loss, and other challenges. Broadly, NBS are understood as actions that work with and enhance natural processes to address societal challenges while simultaneously providing environmental, social, and economic benefits (see, for instance, European Commission, n.d.; Seddon et al., 2021). Although the concept remains contested

and continues to evolve, both the International Union for Conservation of Nature's Global Standard and the European Commission's guidance emphasize ecological effectiveness, multiple societal benefits, and inclusive governance (Davies et al., 2021; Faivre et al., 2017; Hanson et al., 2020; Rega-Brodsky et al., 2022; Sowińska-Świerkosz & García, 2022; Welden et al., 2021). Within HEU, these frameworks define what counts as a successful NBS.

Likewise, in the context of HEU, empowerment is often closely associated with multi-actor approaches that seek to strengthen the role of citizens and stakeholders in defining challenges, developing solutions, and contributing to sustainability transitions—such as in the call text that the EmpowerUs project answered. We used Avelino's (2017) definition of empowerment: "the process through which actors gain the capacity to mobilize resources and institutions to achieve a goal" (Avelino, 2017, p. 516).

Arguably, these expected outcomes are legitimate and desirable. However, they also illustrate the central dilemma explored in this article. While the project aimed to support open-ended co-creation, it was simultaneously expected to contribute to a series of predefined outcomes. Here we focus on NBS and the governance dilemma that unfolded in practice.

2.1. EmpowerUs' Participatory Approach

Participation can take many forms, ranging from the provision of information to shared authority over problem definition and decision-making. Figure 1 presents this spectrum as a heuristic for locating the participatory ambition of EmpowerUs, inspired by Arnstein's "ladder of participation" (1969). The project aspired to empowerment by enabling local communities to define challenges, develop pilot activities, and shape potential solutions. However, empowerment was pursued within boundaries established by the HEU grant, including the project duration, available resources, Mission Ocean objectives, and predefined expected outcomes such as NBS. The figure therefore provides a reference point for examining the central tension addressed in this article: the distance that may arise between an ambition to empower participants and the actual scope of decisions left open to co-creation.

DEGREE OF CITIZEN DECISION-MAKING POWER

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Participation Goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities, and/or solutions.	To obtain public feedback on analysis, alternatives, and/or decisions.	To work directly with citizens throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with citizens in each aspect of the decision, including the development of alternatives and the identification of the preferred solutions or activities.	To place final decison-making in the hands of citizens.

Figure 1. Spectrum of participation used to situate the empowerment ambition of EmpowerUs, based on Arnstein´s "ladder of participation." Source: Adapted from Bjørkan et al. (2025).

EmpowerUs established six TCLs in Bulgaria, Cyprus, Åland (Finland), Ireland, Norway, and Spain. Inspired by the Living Lab approach, each TCL brought together public authorities, researchers, businesses, civil organizations, and citizens to co-develop and test innovations in real-world settings (Bergvall-Kåreborn &

Ståhlbröst, 2009). EmpowerUs combined an iterative co-creation approach with an explicit ambition to empower local communities to define challenges, design pilot activities, implement solutions, and reflect on their outcomes (Gustavsson et al., 2025). The practical set-up in each TCL consisted of a local team made up of an academic partner with long-term research experience in the region and a local development or innovation partner that was key to organizing the workshops and ensuring participation. Furthermore, each TCL had an "action fund" of 50,000 euros for co-creating a pilot empowerment intervention. Rather than functioning as demonstration sites for predefined interventions, the TCLs were intended to create spaces in which locally grounded priorities could shape both problem definition and potential solutions. This translates to "empower" in Figure 1. From the outset, however, this ambition operated within the institutional boundaries defined by the HEU grant, including project duration, available resources, Mission Ocean objectives, and the predefined expected outcomes such as NBS.

We draw on the rich empirical material from workshop discussions, observations from the pilot development process, and other project documentation and publications. However, for the question at hand, the most relevant data are what can be described as a form of "meta-data": the discussions taking place between the consortium members about the tensions regarding NBS and, referring to Figure 1, how to reach the participatory goal of "empower." Over the course of the project, we had numerous reflections across the consortium related to the predefined institutional expectations and how they shaped the co-creation process. These reflections are key empirical data since we are not evaluating the pilots as such.

Co-creation processes are known to face challenges related to time, resources, conflicting expectations, and power asymmetries (Antonova, Bjørkan, & Bratt, 2025; Sørensen et al., 2025). The challenges examined here are therefore not unique to EmpowerUs or NBS. Rather, EmpowerUs provides an opportunity to examine how these well-known challenges are amplified when ambitious participatory objectives are combined with predefined institutional expectations.

3. Theoretical Framework

3.1. Episteme, Techne, and Phronesis

Inspired by Jentoft (2006), we build on Aristotle's (2011) distinction between *episteme*, *techne*, and *phronesis* and examine how different forms of knowledge shape co-creation.

Episteme refers to universal scientific knowledge: abstract, generalizable, and context-independent (Jentoft, 2006; see also Mabon et al., 2022, for a discussion on epistemic justice). Within NBS governance, this is reflected in ecological modelling, biodiversity metrics, and ecosystem service assessments. These define and validate what counts as an effective intervention. These forms of knowledge play a central role in shaping policy frameworks, funding criteria, and evaluation systems. As such, we understand them as part of establishing authoritative definitions of both problems and solutions.

Techne refers to technical know-how and instrumental reasoning, expressing policy instruments, funding mechanisms, design standards, and implementation of toolkits. In the context of NBS, *techne* translates scientific knowledge into operational forms, enabling interventions to be planned, funded, and evaluated.

Phronesis refers to practical judgement, rooted in experience, values, and deliberation about what is desirable in specific contexts. Arguably, SSH, in particular constructivist and interpretative traditions, have a strong role to play in *phronesis* as SHH is well placed to value, collect, and understand such knowledges (Gustavsson, White, et al., 2021; Ounanian et al., 2021). As Jentoft (2006) argues, governance necessarily involves normative questions concerning direction, justice, and legitimacy, which cannot be resolved through positivist scientific knowledge or technical instruments alone.

Hence, while Aristotle's distinction provides a useful heuristic for distinguishing different forms of knowledge, it says relatively little about the power relations through which some forms of knowledge gain authority. Drawing on Jentoft´s work on knowledge and power in fisheries governance, we therefore treat the authority of different forms of knowledge as shaped by institutional and power relations rather than as a given (Jentoft, 2007, 2017; Jentoft & Chuenpagdee, 2022). In the next section, we bring this insight into dialogue with blue justice to consider whose knowledge is recognized and able to shape decision-making.

3.2. Adding a Blue Justice Lens

Blue justice has emerged as a critical perspective on ocean governance in the context of a push for expansion of blue economies worldwide (cf. High Level Panel for a Sustainable Ocean Economy, 2021). Blue justice focuses on how sustainability transitions affect different groups and whose interests are recognized in decision-making—particularly focusing on small-scale fisheries (e.g., Bennett et al., 2021; Jentoft & Chuenpagdee, 2022). Building on environmental justice scholarship, blue justice commonly distinguishes between recognitional, procedural, and distributional justice (e.g., Bennett et al., 2021). Recognitional justice concerns whose knowledge, values, identities, and rights are acknowledged in governance processes. Procedural justice refers to who can participate in decision-making, how participation is organized, and whether governance processes are inclusive, transparent, and meaningful. Distributional justice concerns how benefits, burdens, and opportunities are allocated across different sectors and communities (Gustavsson, White, et al., 2021).

To connect Aristotle's forms of knowledge with blue justice, we distinguish three interrelated analytical dimensions of co-creation governance: epistemic (how knowledge gains authority), institutional (how frameworks and requirements shape action), and contextual (how local knowledge and values inform decisions). Drawing on *episteme*, *techne*, and *phronesis*, respectively, these dimensions provide an analytical lens for examining co-creation tensions and their implications for recognitional, distributional and procedural justice (see Table 1).

We examine how institutional conditions within HEU shape the co-creation process itself. In particular, we show how predefined policy frameworks influence which forms of knowledge are recognized, how participation is structured, and which solution pathways are considered legitimate. Blue justice therefore provides an analytical lens for understanding not only the consequences of sustainability governance, but also the institutional conditions through which those consequences are produced.

From a blue justice perspective, *episteme*, *techne*, and *phronesis* are not neutral, but closely tied to questions of recognition, participation, and distribution (see Table 1). Blue justice links questions such as whose knowledge is included, which solutions are considered valid, and who has influence on tensions that can

Table 1. This table links Aristotle's three forms of knowledge to governance functions and blue justice dimension and the tensions.

Analytical Dimension	Knowledge Form	Governance Function	Blue Justice Dimension
Epistemic	*Episteme*	Defines valid solutions in HEU projects	Recognitional justice: Whose knowledge is recognized as valid?
Institutional	*Techne*	Structures implementation	Distributional Justice: Which solution pathways/resources are (dis)empowered?
Contextual	*Phronesis*	Informs context-sensitive deliberation	Procedural Justice: Who participates meaningfully and with what influence?

arise in co-creation processes. Aristotle helps identify different forms of knowledge and their role in governance processes. Blue justice helps evaluate the justice implications of how these forms of knowledge are recognized, prioritized, and mobilized in decision-making.

Bringing the Aristotelian and blue justice perspectives together allows us to examine not only which forms of knowledge shape sustainability interventions, but also the justice implications of how knowledge is recognized and translated into decisions. Aristotle´s distinction between *episteme*, *techne*, and *phronesis* provides a vocabulary for identifying tensions between different types of knowledge. Blue justice adds attention to the power relations surrounding these tensions: whose knowledge is recognized, who can influence decision-making, and which benefits, burdens, and opportunities result. Bringing these perspectives together allows us to examine how predefined expectations around NBS interact with ambitions for co-creation, and how these interactions have recognitional, procedural, and distributional justice implications.

4. Co-Creation Under Constraint in EmpowerUs

This section examines how tensions between predefined solution frameworks and co-creation unfolded in practice in EmpowerUs. As described, the project aimed to support bottom-up, participatory processes in coastal communities, and was simultaneously embedded within institutional structures that required alignment with predefined outcomes, including the implementation and evaluation of NBS. The purpose of this section is not to describe the pilots developed in EmpowerUs as such, but to use them as empirical examples of tensions between the predefined outcomes of NBS and co-creation.

The six TCLs represented diverse socio-ecological contexts across European coastal regions and locally defined sustainability challenges through co-created pilot initiatives.

Despite these differences, all six TCLs followed the same HEU governance framework, participated in the same co-creation methodology, and were expected to contribute to the same predefined outcomes. This common institutional setting enables comparison of how similar governance requirements played out across different local contexts.

4.1. Pilots: NBS Tensions and Blue Justice Dimensions

Across the TCLs, co-creation processes began with workshops aimed at identifying locally relevant challenges and developing possible interventions. The workshop designs are described in detail in the EmpowerUs *Handbook of Inclusive Methodologies* (Gustavsson et al., 2025). As part of this process, participants were introduced to NBS as a possible solution framework. A tailored film developed by the project introduced the concept, presented examples of NBS, and illustrated possible applications in the different TCLs. Despite these efforts, the locally articulated challenges did not necessarily correspond to NBS as a solution category. Participants instead emphasized problems rooted in their particular contexts, including transport and housing, demographic decline, fisheries and livelihoods, community development, and conflicts over coastal development and land use.

This pattern took different forms across the six TCLs. In the Bulgarian TCL, the locally developed pilot centered on ecotourism and the lake as a model combining conservation and local development. NBS subsequently became one possible tool supporting this broader pathway rather than its starting point. The pilot thus combined conservation with an existing local development opportunity centered on the lakes, tourism, and community involvement.

In Cyprus, the locally articulated concerns were broad. Participants were dealing with conflicts surrounding industrial and aquaculture development, environmental protection, and the future development of their communities. Some developments had become what locals described as "hard facts," limiting what they perceived could still be influenced through environmental opinions. This tension was captured particularly clearly in the later evaluation of the pilot, where one participant argued that "discussions on the importance of the environment feel irrelevant now…as if plastic straws were the real issue" (Spiering et al., 2025, p. 41). Rather than converging on a specific NBS, the co-creation process produced a broader strategic community development plan addressing ecological, social, cultural, and economic concerns. NBS remained relevant as one possible component, but not as the overarching locally defined solution.

In Åland, five concrete pilot options emerged, centered on fisheries management, water ownership, mapping of spawning areas, workshops and seminars on predators and water restoration, and the recognition of traditional fisheries as cultural heritage. The locally meaningful solution space was therefore organized around fisheries management, cultural identity, livelihoods, and practical conservation measures (Svels, Eriksson, & Sundström, 2026; Svels, Rønningen, et al., 2026). These could overlap with NBS objectives, but they were not primarily articulated through the NBS category. Participants appreciated that EmpowerUs "did not only produce reports but also directly supported local initiatives" (Spiering et al., 2025, p. 43).

In Norway and Ireland, similar patterns could be observed. On the Norwegian island of Træna, the challenges identified through the participatory process included housing shortages, outmigration, employment, social integration, and poor transport connections (Spiering et al., 2026). Indeed, "transportation challenges were raised by all informants as a significant issue" (Flannery et al., 2023, p. 36). The resulting pilot consequently addressed the conditions necessary to sustain island life, while also incorporating nature-based tourism and environmental activities. In Ireland, the pilot similarly responded to concerns around employment, outmigration, and maintaining viable Irish-speaking coastal communities, resulting in a Social Enterprise Support Programme aimed at strengthening social enterprises and cooperatives.

In Spain, the pilot co-created NaturCap, a digital initiative for more sustainable tourism. NaturCap aligns with several NBS principles, but primarily through digital, social, and governance mechanisms rather than direct ecological interventions (Gómez et al., 2025).

Taken together, these cases do not suggest that communities rejected NBS. Rather, locally articulated problems and preferred interventions were often broader than—and not initially organized through—the NBS category. NBS could subsequently intersect with these priorities, but this required translating the predefined concept into locally meaningful contexts.

Across all six TCLs, this created a tension between two project ambitions. On the one hand, the commitment to co-creation required that solutions emerged from locally defined priorities. On the other hand, the requirement to implement NBS introduced a predefined solution framework. The challenge was therefore not NBS themselves, but how to reconcile this predefined expectation with the outcomes emerging through co-creation.

Faced with these tensions, the consortium in general, and the Work Package leaders in particular, organized several meetings to discuss how to respond. A particular concern was how the locally developed pilots would be assessed against the project's predefined expected outcomes during HEU review processes. We discussed different responses, ranging from a pragmatic attempt to identify where existing pilots could align with NBS criteria, to the more top-down possibility of introducing an NBS intervention in one TCL. The coordinator also questioned whether existing definitions of NBS were sufficiently flexible to capture the diversity of locally developed pilots. As shown in Table 2, all pilots contained elements that aligned, at least partly, with NBS principles, making different interpretations possible.

Ultimately, the consortium prioritized maintaining the integrity of the co-creation process and supporting locally grounded empowerment processes rather than retrofitting the pilots to conform more closely to the predefined NBS category. This decision involved a trade-off: Altering locally developed pilots risked undermining community trust, while maintaining them created uncertainty about how the project would demonstrate compliance with its expected NBS outcomes during formal review.

Table 2. Overview of the TCLs and their indirect alignment with NBS and the blue justice implication. While several pilots incorporate environmental elements, their links to NBS are moderate or partial (see also Dushkova et al., 2025).

Short Pilot Description	Alignment With NBS	Blue Justice Implications
Bulgaria (Burgas): Burgas on Three Lakes and One Sea	Moderate: Ecotourism, conservation, and local development overlap with NBS objectives, although NBS was not the starting point for the pilot.	Recognitional: Locally articulated priorities combined conservation with tourism and community development rather than beginning from a predefined solution category.
Åland (Finland): Åland Fisheries Appeal	Moderate: Fisheries conservation and ecosystem management overlap with NBS, alongside governance and cultural-heritage interventions.	Recognitional: Fishers' knowledge, cultural identity, and existing governance practices shaped the locally meaningful solution space. Procedural: The pilot sought to strengthen local involvement in fisheries governance.

Table 2. (Cont.) Overview of the TCLs and their indirect alignment with NBS and the blue justice implication. While several pilots incorporate environmental elements, their links to NBS are moderate or partial (see also Dushkova et al., 2025).

Short Pilot Description	Alignment With NBS	Blue Justice Implications
Norway (Træna): Hooked on Træna	Moderate: Nature-based tourism, lack of housing, outmigration, job opportunities, and environmental activities were integrated into a broader community-development pilot.	Recognitional: Housing, transport, employment, and cultural identity emerged as locally salient sustainability concerns. Distributional: Access to basic infrastructure and opportunities shaped community viability.
Ireland (Gaeltacht): Social Enterprise Support Pilot Programme	Low: Primarily a social and economic capacity-building intervention related to language and social enterprises.	Distributional: Employment, local economic benefits, and community viability were central concerns. Recognitional: These were closely connected to sustaining Irish-speaking coastal communities.
Spain (Cap de Creus): NaturCap digital initiative	Partial/Moderate: Supports conservation and sustainable tourism primarily through digital, social, and governance mechanisms rather than direct ecological intervention.	Procedural and Recognitional: Participation and knowledge-sharing broadened engagement with conservation and sustainable tourism.
Cyprus (Cape Dolos): Cape Dolos Strategic Community Development Plan	Partial: The Strategic Community Development Plan integrates ecological, social, and cultural priorities and may enable future NBS, but is not itself an NBS intervention.	Recognitional: Locally articulated concerns encompassed industrial development, environmental protection, and community development. Procedural: Previous top-down decisions and perceived limited influence shaped trust in participatory processes.

5. Discussion: Knowledge Hierarchies, Co-Creation, and Blue Justice

Taken together, these examples from EmpowerUs show that epistemic, institutional, and contextual tensions do not operate separately, but reinforce each other. Scientific definitions shape what counts as valid solutions, institutional frameworks structure what is possible, and these conditions in turn delimit the scope of meaningful participation. While they co-exist in real life, we will point to trends that can be related to the three different knowledge and blue justice dimensions (see also Table 1).

5.1. Insights Using Aristotle's Forms of Knowledge

These experiences from EmpowerUs show that particular forms of scientific knowledge and institutionally defined criteria are privileged in determining what counts as a legitimate solution. Consequently, locally grounded, experiential, and practice-based knowledge, as well as scientific approaches that are less readily translated into standardized criteria, risk being marginalized. This is particularly significant in coastal communities, where knowledge is often embedded in livelihoods, cultural practices, and long-term relationships with the environment (Antonova, Flannery, et al., 2025; Gómez, 2022; Gustavsson, 2018; Pafi

et al., 2021; Salmi & Svels, 2022). This creates a tension between institutional forms of *episteme* and locally grounded problem framings drawing more strongly on *phronesis*.

This mismatch was not only epistemic but also related to the institutional dimension and the question of how solutions are structured and, hence, related to *techne*. A challenge related to *techne* emerged even before the project began, concerning the practical design and implementation of the Pilot Action Fund.

The 50,000 euros allocated to each TCL as part of that fund were intended as an open-ended budget pot to fund potential solutions coming through the co-creative process in each community. Establishing this fund, however, came up against EU regulations requiring that every euro in HEU programs be directly assigned and a priori traceable. While these regulations represent important fiscal responsibility and transparency, structuring the open-endedness necessary for co-creative and bottom-up problem-and-solution definitions can be a challenge. For EmpowerUs, agreeing on the pilot funds entailed multiple meetings with the project's EU financial and policy officers for a series of sensitive discussions (Antonova, Bjørkan, & Bratt, 2025).

The project was required to demonstrate measurable impact and alignment with predefined expectations from HEU, including outcomes related to NBS. By defining what counts as a legitimate intervention, policy frameworks and project structures can privilege certain approaches while excluding others (e.g., EmpowerUs: predefined in call text). This creates a form of institutional ordering, where sustainability transitions are guided not only by environmental needs, but by the logic of governance systems themselves. This created a constrained solution space, in which locally identified priorities had to be negotiated against externally defined categories and evaluation criteria. From a distributional perspective, the key issue is not only who benefits from the solutions, but which type of solutions are made possible or excluded through institutional frameworks.

Given the strong boundaries set by *episteme* and *techne*—the epistemic and institutional dimensions—what space was left for *phronesis*, the contextual dimension, in EmpowerUs? Questions such as who benefits, who bears the costs, and what futures are desirable are important to ask in order to ensure inclusive and equitable governance processes. EmpowerUs was designed to be aware of these issues through a gender, equality, and diversity coordinator, as well as a focus on "leaving no one behind." Arguably, the EmpowerUs consortium managed to balance these tensions. The gender, equality, and diversity coordinator implemented several measures to ensure meaningful participation. This included using translations, broadening our methods, as well as making blue justice stories and photo voices to capture the voices that otherwise would be left out (see Gustavsson et al., 2025). Still, when problem definitions and solution spaces are pre-structured by *episteme* and *techne*, the scope for *phronetic* judgement and SSH based on non-positivist epistemologies was constrained.

5.2. The Tensions Under a Blue Justice Lens

5.2.1. Recognitional Justice

The findings point to a challenge of recognitional justice, where scientific knowledge (*episteme*) plays a dominant role in defining what counts as a valid solution. Not all forms of *episteme* are treated equally within HEU. Quantitative, model-based natural science frequently carries greater authority than qualitative and

interpretive SSH approaches (Kagan, 2009). In the case of NBS, this is reflected in the reliance on ecosystem service metrics, biodiversity indicators, and other forms of scientific validation. While such knowledge is essential, it also establishes epistemic authority that may marginalize local, experiential, and practice-based knowledge. Importantly, this tension is not only between scientific and other forms of knowledge, but also within science itself. Different scientific epistemologies and methods are not treated equally in research and innovation contexts. Aristotle therefore helps distinguish knowledge forms, while this insight helps explain the hierarchies between them. This hierarchy was also explicitly implied in the original call text to which EmpowerUs responded, which postulated that "SSH approaches should serve through a multi-actor approach to orient and contextualize coastal STEAM (science, technology, engineering, arts and mathematics) activities" (European Commission, 2021, p. 403). As a result, not all forms of scientific knowledge (*episteme*) are treated equally in HEU processes/governance contexts.

In this sense, the dominance of *episteme* is not neutral, but reflects internal hierarchies within scientific knowledge productions that are also enacted through HEU funding mechanisms. As a result, the recognition of alternative ways of knowing becomes limited—including methodologies used to explore and bring to the fore such knowledge dimensions—even in contexts where co-creation is intended to foreground local perspectives.

Our findings also illustrate that there is a temporal mismatch between institutional expectations and participatory processes (see Table 2). Put differently, time is a dimension where *techne* and *phronesis* collide. From a *phronetic* and SSH perspective, meaningful co-creation requires time for building trust, negotiating values, and developing context-sensitive solutions. From a *techne* perspective, projects have frames such as timelines, deliverables, and reviews. Time constraints are not unique to NBS but are a well-recognized challenge in co-creation processes. They may be particularly consequential for NBS, where co-creation requires different forms of scientific and technical expertise to interact with locally grounded knowledge, while meaningful participation requires time for trust-building, deliberation, and iterative learning (Nunes et al., 2021). These tensions were also evident in EmpowerUs, where the time needed for locally grounded co-creation did not always align with fixed project timelines and the technical and institutional requirements associated with developing NBS.

5.2.2. Procedural Justice

The findings highlight a tension related to procedural justice, concerning the scope and quality of participation (see Table 2). Co-creation is often associated with higher levels of participation, approaching partnership, or empowerment on Arnstein's (1969) ladder. However, the empirical material suggests a mismatch between these ambitions and the institutional conditions under which co-creation is implemented. When embedded within predefined solution frameworks, the scope for *phronetic* judgement may be limited by epistemic and institutional conditions. While stakeholders are actively involved in processes of dialogue and engagement, their ability to shape fundamental aspects of problem framing and solution design remains constrained. In this sense, participation risks operating at the level of consultation or involvement rather than genuine co-decision.

5.2.3. Distributional Justice

The analysis also reveals implications for distributional justice, not only in terms of outcomes, but in terms of the structure of possible solutions (see Table 2). Institutional frameworks, including funding mechanisms and evaluation criteria, shape which interventions are considered viable and legitimate. This creates a form of institutional lock-in, where certain pathways are prioritized while others remain unexplored. As a result, locally grounded needs and priorities may only partially be reflected in the solutions that are ultimately developed and implemented. The question of what space remains for *phronesis* therefore also extends to the role of SSH within HEU, where qualitative and interpretative approaches may themselves become constrained by institutional expectations (Shortall & Meredith, 2025).

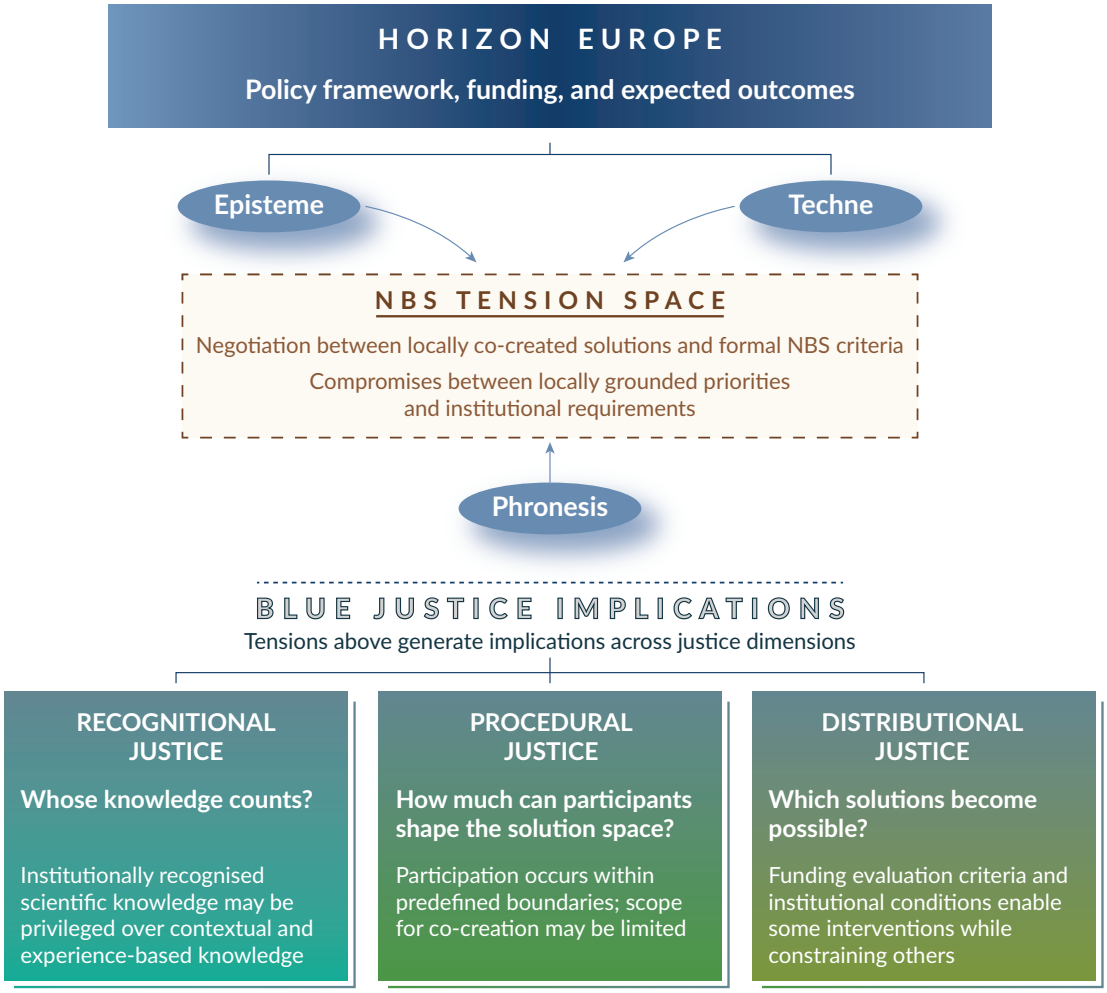


Figure 2. Co-creation under institutional constraint: the NBS tension space and its blue justice implications. Figure drawn by Julien Lebel.

6. Conclusion: Towards Reflexive and Just Co-Creation

This article has examined how co-creation unfolds when both problems and solutions are at least partially predefined by institutional frameworks. In EmpowerUs, we observed that the expectation for NBS to be part of the outcomes created a structural imbalance between *episteme*, *techne*, and *phronesis*. From a blue justice

perspective, this helps show how the institutional conditions, through which participation is organized, produce tensions with recognitional, procedural, and distributional justice in practice. Rather than treating blue justice solely as an outcome of governance, our analysis shows that blue justice is also embedded in the institutional conditions through which participation is organized. Importantly, these dynamics reflect not only tensions between scientific and experiential knowledge, but also hierarchies within science itself, where some epistemologies and forms of evidence are privileged over others.

Our analysis shows that policy-driven NBS do not inherently conflict with locally grounded co-creation. Rather, the tensions arise because participatory processes are embedded within institutional frameworks that simultaneously promote participation while predefining acceptable solution types, expected impacts, and evaluation criteria. Using NBS as an empirical lens, we found that communities consistently identified priorities grounded in local contexts and practical experience, whereas the HEU framework required these priorities to be aligned with predefined policy concepts. This generated interconnected epistemic, institutional, and democratic tensions. Simply put, scientific definitions shaped which forms of knowledge were recognized as legitimate, while funding structures and evaluation requirements constrained the range of possible interventions. Together, these conditions had the potential to limit the scope for meaningful participation.

These findings contribute to blue justice by showing that questions of recognition, participation, and distribution emerge not only through governance *outcomes*, but also through the institutional organization of participatory processes themselves. They also speak to ongoing debates about the role of SSH within HEU. As Jentoft (2006) argues, the strengths of the social sciences lie where those of the natural sciences are more limited—and vice versa. While HEU has taken important steps to strengthen the role of SSH, our findings suggest that fully realizing this ambition requires greater attention to the epistemic and institutional conditions under which different forms of knowledge are recognized, valued, and mobilized.

The implications of this argument extend beyond NBS and beyond the EmpowerUs project. Predefined policy objectives and top-down governance are often both necessary and legitimate for coordinating collective action, ensuring accountability, and addressing complex sustainability challenges. A tension arises, however, when such frameworks are combined with expectations of deep co-creation without making transparent which aspects of the process are genuinely open to deliberation and which are institutionally fixed. We therefore argue that participatory ambitions in HEU should be aligned with—and transparent about—the institutional conditions within which participation takes place. From a blue justice perspective, meaningful participation depends not only on opportunities for engagement, but also on transparency about who can influence which decisions, which decisions are predetermined, and which solution pathways remain open.

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Conflict of Interests

In this article, editorial decisions were undertaken by Elisabeth Morris-Webb (Nordland Research Institute).

LLMs Disclosure

Microsoft 365 Copilot was used for language editing and improving the clarity and readability of the manuscript and for refining Figure 1. The authors reviewed and verified all revisions and take full responsibility for the final content.

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