

Integrating Co-Creation and the Leave No One Behind (LNOB) Principle: A Framework for Inclusive Transformative Research

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Abstract

This article presents a conceptual framework that integrates the Leave No One Behind (LNOB) principle with co-creation practices in transformative sustainability research. While both LNOB and co-creation are central to international policy agendas, they are often applied separately, limiting their potential to address systemic inequities. To bridge this gap, we developed a framework based on a rapid evidence assessment of academic literature and empirical insights from a Horizon Europe project focused on the empowerment of coastal communities. The framework comprises three interlinked pillars: structural (who is left behind and why?), subjective (how is exclusion experienced?), and action (what can be done to foster inclusion?). The article provides reflective questions and strategies for designing, implementing, and evaluating more inclusive processes in transformative, transdisciplinary projects across different phases of co-creation. Using an empirical example from northern Norway, we demonstrate how LNOB-oriented co-creation can reveal and counteract longstanding coastal marginalization, particularly inequities related to recognition, resource distribution, and procedural fairness. We also show that empowerment-based co-creation can enhance community agency and contribute to broader blue justice debates, while highlighting institutional and methodological challenges that constrain the systematic integration of LNOB in marine-related participatory processes. We conclude that co-creation without an explicit LNOB lens risks overlooking structural inequities, especially in remote coastal regions. By situating the framework within current discussions on blue justice, alternative blue economies, and participatory coastal governance, we offer researchers and practitioners a simple tool to support more equitable and empowering coastal futures.

Keywords

Arctic communities; blue growth; blue justice; coastal communities; empowerment; inequality; Leaving No One Behind; sustainability; transdisciplinary research

1. Introduction

Scientific engagement with global challenges has evolved in recent years, moving from a focus on understanding sustainability issues to actively seeking solutions to climate change, biodiversity loss, and social injustice (Bentz et al., 2022; Horcea-Milcu et al., 2024). This aligns with the 2030 Agenda for Sustainable Development, which emphasizes not only achieving the Sustainable Development Goals (SDGs) but doing so inclusively through the Leave No One Behind (LNOB) principle. This shift highlights the emergence of research aimed at transformative change, driven by the imperative for all societal actors, including the scientific community, to contribute to achieving the SDGs (UN, 2015; Wittmayer and Hölscher, 2016), where co-creation is dubbed “the answer” (Ansell et al., 2022).

Transformative research embodies six key characteristics—emphasizing intervention, collaboration, systems thinking, reflexivity, empowerment, and redefined impact criteria (Horcea-Milcu et al., 2024)—with co-creation as a guiding principle. Co-creation in transformative research has various interpretations, including participatory research, co-determination, co-production, and co-design. For the purpose of this article, co-creation involves iterative collaboration across diverse knowledge and actors, in their local contexts, within their local capabilities, to generate solutions that foster inclusive and sustainable change across all stages of an initiative (Brandsen & Honingh, 2018; Knizkov & Arlinghaus, 2019; Nogueira et al., 2021; Norström et al., 2020). It’s normatively desirable but lacks a universal method (Frantzeskaki & Kabisch, 2016), and despite its potential, co-creation is often criticized for being vague and challenging to implement. Some authors have argued that its deliberate vagueness can be advantageous (Røiseland, 2022). Although some tools have been developed to aid in developing co-created projects for sustainability transformations, they often mention the importance of developing shared principles and values with participants but lack solid design principles and note the importance of context flexibility (Ansell et al., 2022; Matschoss et al., 2020).

The LNOB principle of the 2030 Agenda has also received considerable attention, urging stakeholders to prioritize the needs of those at risk of being left behind (“including children, youth, persons with disabilities, people living with HIV, older persons, indigenous peoples, refugees, internally displaced persons and migrants”; UN, 2016, p. 48). Here, we use the term “left-behind” to refer more broadly to individuals or groups facing structural barriers to participation and benefit-sharing, which may—but do not necessarily—overlap with these categories of vulnerability. Despite this, significant gaps remain in the conceptualization, understanding, and implementation of the LNOB principle. Both LNOB and co-creation are recognized as essential principles for sustainable development and are actively promoted by policymakers and research funders. The integration of LNOB and co-creation is particularly relevant to blue justice debates, which address inequalities in participation, recognition, and resource access in coastal and marine governance. In this context, combining LNOB and co-creation offers a practical approach to fostering more inclusive and equitable sustainability transformations (Bennett et al., 2021). Although central to sustainability agendas, they are often applied independently, limiting their potential to address systemic inequities. When applied

separately, co-creation processes may overlook structural inequalities, while LNOB-oriented approaches risk remaining abstract and insufficiently operationalized in practice. This article seeks to bridge this gap by presenting a framework that explicitly integrates LNOB and co-creation principles, providing guidance for communities, researchers, and policymakers to design and implement co-creation processes that align with LNOB. Therefore, we explore the following research question: How can we conceptually integrate, explore, and practically implement the relationships between LNOB and co-creation processes within transformative research project frameworks?

Building on this conceptual background, the impetus for addressing our research question came from our work in the transdisciplinary EU Horizon project EmpowerUs, involving collaboration across academic and non-academic actors. Given the numerous challenges of coastal communities, EmpowerUs aimed to enhance their socio-economic empowerment as users of the sea, thereby ensuring sustainable coastal development. The project drew upon both the LNOB principles and co-creation to promote the socio-economic strengthening of six European coastal communities, the so-called transition coastal labs (TCLs). Particularly in the context of remote coastal communities, applying LNOB-oriented co-creation can reveal longstanding inequities in recognition, resource distribution, and decision-making, which are central concerns in ongoing debates on blue justice and participatory coastal governance (Boström et al., 2025). This also aligns with broader just transitions debates, which similarly emphasize equity, inclusion, and fairness in sustainability transformations (Wang & Lo, 2021). In the empirical section of this article, we draw upon our experience within EmpowerUs to develop the conceptual framework, reflecting on the extent to which we successfully applied the combined co-creation/LNOB principles, the challenges that arose, and ways the co-creation processes could have been approached differently to achieve greater inclusivity and equality.

To address the research question, a review of the literature on co-creation and LNOB was initially conducted. Given that, to the best of our knowledge, no conceptual framework has been developed that combines these two principles, a conceptual framework was developed based on two sources: (a) a rapid assessment of academic literature and (b) our empirical experience in the EmpowerUs research project, thereby linking theoretical concepts with practical applications in transformative research. The conceptual framework presented here serves as a guide for transformative research, supporting communities, researchers, and policymakers in adapting it to context-specific needs. It conceptualizes how co-creation and LNOB principles can be combined into a simple tool—or a set of reflective questions—to foster more inclusive and just research projects in the future.

2. Methodology

To address the research question and explore different definitions of co-creation and LNOB, we used a triangulation of methods, combining three main approaches:

1. A workshop with transdisciplinary project participants to understand the challenges of inclusion in co-created projects.
2. A rapid evidence assessment (REA) of peer-reviewed literature on co-creation and LNOB.
3. Reflective analysis of the EmpowerUs project, a Horizon Europe initiative engaging six coastal communities (TCLs) to co-develop locally tailored sustainability solutions.

Our process involved identifying core principles, clustering themes, and testing the coherence of the emerging framework against real-world project experiences, with examples of how these principles were achieved in the EmpowerUs project. Core principles and guiding questions were identified through the workshop and REA and further refined through reflective insights from the EmpowerUs project, resulting in a framework that was then applied retrospectively to assess how these principles were reflected in practice, while acknowledging that this development was shaped by the researchers' involvement in the cases.

2.1. Assessing the Challenges of Inclusive Transdisciplinary Projects

On 9 April 2024, the EU Horizon Projects EmpowerUs and PREP4BLUE collaborated with global projects funded by the Belmont Forum and Deutsche Gesellschaft für Internationale Zusammenarbeit to organize a satellite event at the UN Ocean Decade Conference (hereafter, UNOC 2024) entitled Empowering Science, Policy and Society Through Co-Design for Sustainable Ocean Development (Whyte et al., 2024). As part of that event, EmpowerUs organised a focussed workshop on how to ensure the inclusion of relevant stakeholders in co-designing/co-production. Workshop participants from transdisciplinary projects were asked what challenges they had experienced when trying to implement or take part in co-design, and what ideas they had to overcome them. They were invited to submit their ideas online, on post-it notes, or during in-person discussion. Reflexive thematic analysis (Braun & Clarke, 2006) was undertaken to reveal key challenges to inclusivity in co-creation of sustainability solutions. The results were used to inform this article and the strategic inclusion of participants in PREP4BLUE pilot actions (Pelegrí et al., 2025).

2.2. REA

After a broad initial literature review, it was concluded that there was no existing cohesive framework that provided clear guidelines regarding both LNOB and co-creation. However, many papers referred to principles, which the authors admit may restrict the language to certain disciplines. The next step was to explore what guiding principles were used across different research projects in either concept. A REA is a form of literature review that describes the volume and characteristics of an evidence base, provides a synthesis of what that evidence indicates, and critically assesses such evidence. The project sought evidence of core principles for delivering co-created outputs in ways that align with LNOB, with the goal of developing a conceptual framework that brings together LNOB and co-creation.

Whilst being less resource- and time-intensive compared to a full systematic review, REAs are designed to be transparent and to minimise bias and are typically used to understand/explore the impact either of a “pressure” or a policy intervention (Collins et al., 2015; Thomas et al., 2013).

Complex strings were used to search the Clarivate Web of Science (hereafter, Clarivate 2026) for peer-reviewed, open-access articles relevant to co-creation and/or LNOB, up to and including February 2026. Initial searches of all subjects returned over 14,000 papers, so search strings were refined into the strings presented in Table 1. To be included, papers must either mention co-creation or co-production principles, or principles related to LNOB, or join concepts of co-creation and LNOB in one paper. Authors were aware that limiting searches to open access peer-reviewed literature would limit the content, but we aimed to highlight accessible research that utilises principles of co-creation, co-production, and LNOB, and identify formative texts by following citations.

Table 1. Search strings used to search the Clarivate 2026 for peer-reviewed, open-access articles relevant to co-creation, co-production and/or LNOB, up to and including February 2026.

Aim of search	Topic search string	Filters applied	Number of articles returned
Identify core principles used in co-creation and/or co-production	"Co-creation" and "principles" or "co-production" and "principles"	Document type: open access; article Research areas: social sciences other topics, science technology other topics, sociology, social issues	180
Identify core principles to LNOB	"leav* no one behind" or "leav* no one behind principles"	Document type: open access; article Research areas: social sciences other topics, science technology other topics, sociology, social issues	169
Identify core principles to LNOB (broadening topic area)	"leav*" and "no one" and "behind" or "leav*" and "no one" and "behind" and "principles"	Document type: open access; article Research areas: social sciences other topics, science technology other topics, social issues, environmental sciences ecology, development studies, arts humanities, other topics	266
Identify papers that include both LNOB and co-creation	"Leav* no-one behind" and "co-creation"	Document type: open access; article, review article Research areas: all	6
		Subtotal number of articles from Web of Science	621
		Total after duplicates removed	368

Articles were extracted with their full citations and abstracts into Excel and imported into the free systematic review software SysRev (Bozada et al., 2021). Three authors undertook a rapid sift of each abstract to select papers for further reading that met the following inclusion criteria:

- The paper identified, defined or addressed principles of co-creation?
- The paper identified, defined or addressed principles of LNOB?
- The paper joined concepts of co-creation and LNOB.

Seventy-one papers were selected, ranging across disciplines and research types (theoretical to empirical). Each was reviewed to identify the definitions of co-creation and LNOB, and associated principles (listed in Supplementary Material 1). Thirty-two of the REA articles contributed information used for the conceptualization of the "LNOB in co-creation" framework described in the results of the current article. Where relevant, additional key literature was identified from their citations and discussed in the results below.

2.3. Reflective Analysis of Principles of LNOB and Co-Creation in a Transformative Research Context

EmpowerUs was a Horizon Europe research and innovation project exploring how coastal communities can strengthen their capacity to transition towards sustainable futures. Unlike traditional research that generates

knowledge about communities, EmpowerUs aimed to co-develop knowledge with communities, using a living laboratory approach (TCLs). Across six European coastal areas, pilot solutions were co-created bottom-up to address locally identified challenges and support more inclusive and resilient development. The project adopted a transdisciplinary approach and applied co-creation methods, guided by the LNOB ambition. TCLs served as experimental spaces to co-create and implement locally relevant pilots.

EmpowerUs established an internal co-creation manual among researchers early in the project to support initial activities; however, this was not directly based on the literature review presented here and evolved prior to the framework developed in this study.

Experiences from the pilots, particularly the Norwegian TCL, provided a valuable empirical basis to develop an integrated LNOB/co-creation framework. In the Norwegian case, co-created pilot activities included community onboarding initiatives, development of cultural hubs, local food strategies, and exploration of mobility solutions, reflecting locally identified priorities. These experiences informed the development of the framework and were used to reflect on how LNOB-oriented co-creation principles are captured and operationalized in practice. This case illustrates the practical challenges and lessons learned in embedding LNOB principles in real-life co-creation processes.

2.4. Ethics

The activities reported in this article were conducted within the ethical framework of EmpowerUs, including informed consent, anonymisation or pseudonymisation of data where appropriate, and adherence to established ethical principles for research involving human participants, including transparency and data protection in line with GDPR. To distinguish between co-creation and data collection, participants were informed about the purpose of activities and how any generated data would be used.

The exception was the UNOC 2024 exploratory workshop with participants beyond the project. Participants opted in with the understanding that summaries could contribute to policy briefs and publications, and data were transcribed anonymously during the event.

3. Results

3.1. Challenges of Inclusion in Co-Created Transdisciplinary Projects

The workshop asked what challenges transdisciplinary projects experienced when trying to implement or take part in co-design, and what ideas they had to overcome them. Eighteen participants took part in the workshop, representing projects based in South America, Europe, and Australasia, most from universities and research institutes, but some from environmental NGOs, and one marine educator. Reflexive thematic analysis of discussions identified three broad challenges to inclusion in co-created projects related to (a) people, (b) processes, and (c) external driving factors. A fourth theme was related to suggested strategies to improve inclusion, containing 13 subthemes: (1) identifying who has a stake, (2) the barriers to be addressed, (3) making participation possible, (4) creating appropriate dissemination plans for target groups, (5) planning relevant communications pathways, (6) managing expectations, (7) valuing time fairly, (8) recognizing positionality, (9) independent facilitation, (10) facilitation planning, (11) accounting for wider

context, (12) finding and pushing for appropriate flexible funding, and (13) legacy planning to build and maintain trust. A summary of these themes is available in Supplementary Material 2.

3.2. REA of Co-Creation and LNOB principles

3.2.1. Co-Creation Principles

Although 45 papers from the REA mentioned co-creation and/or co-production, only five explicitly outlined guiding principles (Supplementary Material 1). Many reviewed papers detailed experiences and frameworks for approaches and methods that are often considered part of the “co-creation toolbox,” including various participatory approaches such as transdisciplinary co-design, participatory action research, community-based participatory research, or citizen science. Often, papers referred to co-creation with little theoretical underpinning or mentioned adhering to the principles of co-creation with no explanation or citation (Matschoss et al., 2020).

Ten key principles were identified, exemplified in 9 papers identified during REA, or from following their citations, and summarized in Table 2. O'Connor et al.'s (2019) eight evaluation principles for co-production of knowledge in natural resource management included (1) equitable participation, (2) transparency,

Table 2. Suggested co-creation principles for co-production, participatory research, and sustainable futures derived from REA of literature and wider literature review.

	Suggested co-creation principle	Definition/understanding	Evidenced in/by
1	Context based	“Situate the process in a particular context, place, or issue” Includes phrases: enhance existing situation; understand wider issues	KCP (Norström et al., 2020) Co-designing research for impact (Duncan & Robson-Williams, 2024)
2	Trust	Building, maintaining, and leaving trust with people and processes, including long-term relationships Includes phrases: power, influence, and ensure legacy	KCP (O'Connor et al., 2019)
3	Transparency	“Transparency in the process of selecting/determining (legitimate) knowledge inputs/inclusion” Includes phrases: (scientific) validity, positionality, and openness in researcher practice	Participatory approaches for older adults (Urbaniak, 2025)
4	Pluralistic collaboration	Explicitly recognize, collaborate with, and integrate the multiple ways of knowing and doing Includes phrases: support the understanding of the realities of “other worlds”; non-academic knowledge; explore “relevant knowledge,” mutual learning; and understand principles and values of co-participants and researchers	Co-creative enterprises (Ramaswamy & Gouillart, 2010) Digital storytelling for co-creation (Liguori et al., 2023) Co-designing research for impact (Duncan & Robson-Williams, 2024)

Table 2. (Cont.) Suggested co-creation principles for co-production, participatory research, and sustainable futures derived from REA of literature and wider literature review.

	Suggested co-creation principle	Definition/understanding	Evidenced in/by
5	Shared goals	“Articulate clearly defined, shared and meaningful goals that are related to the challenge at hand,” ideally through establishing common goals and understanding of participant motivations Includes phrases: motivation, value sensitive, values-inspired, problem-solving, and mutual benefit	KCP (Norström et al., 2020) Co-creative enterprises (Ramaswamy & Gouillart, 2010) Co-creating citizen science (Mahajan et al., 2024)
6	Capacity	Research team must be aware of capacity limitations both for people and resources (institutional) Includes phrases: pragmatism (as a limitation), inventory of capacity and building (institutional), and recognising physical and mental capabilities and agency	KCP (O’Connor et al., 2019) Participatory approaches for older adults (Urbaniak, 2025)
7	Interaction	“Allow for ongoing learning among actors, active engagement and frequent interactions” Includes phrases: constant dialogue, continuous action, facilitation, enable deliberation, and interact directly with one another (not just with the researchers)	KCP (Norström et al., 2020) Co-creative enterprises (Ramaswamy & Gouillart, 2010) Co-designing research for impact (Duncan & Robson-Williams, 2024)
8	Participatory means	“Ensure participants have capacity to engage and support for participation” Includes phrases: adapting to needs, overcoming social and cognitive barriers, providing platforms, inclusion strategy, and building resources for co-creation among less advantaged citizens	KCP (O’Connor et al., 2019) Participatory approaches for older adults (Urbaniak, 2025)
9	Adaptability	Approaches need to be tailored to “meet the specific needs and dynamics of the investigation” Includes phrases: dynamic process	Co-production in life cycle analysis (Atik et al., 2024) Co-creating citizen science (Mahajan et al., 2024)
10	Communication and feedback	“Deliver knowledge-based outputs according to the aims and needs of participants and project sponsors” Includes regular feedback and phrases: communicate boundaries, keep promises, and plan legacy and trust	KCP (O’Connor et al., 2019) Participatory approaches for older adults (Urbaniak, 2025)

Note: The review identified, adapted, and updated principles for knowledge co-production (KCP) in sustainability research, outlined by Norström et al. (2020), and natural resource management by O’Connor et al. (2019).

(3) awareness of capacity limitations, (4) effective interaction and communication, (5) pluralistic co-production, (6) enabling means to participate, (7) provision of appropriate outputs, and (8) mutual benefits from the co-production process across the participants. Norström et al.’s (2020) paper evidenced

four guiding principles for projects for meaningful co-production of sustainability research: projects should be context-based, pluralistic in collaboration, goal-oriented, and interactive. These principles overlap, but our review identified a strong emphasis on the importance of two additional principles in co-creation: trust and adaptive capacity. Furthermore, understanding the motivations behind the shared goals was a strong addition both to encourage participation and to lead to values-informed, meaningful solutions that share mutual benefits with all participants (Goodyear-Smith et al., 2015; Liguori et al., 2023; Ramaswamy & Gouillart, 2010; Reid et al., 2021). Understanding power dynamics within partnerships and projects (Goodyear-Smith et al., 2015; Mahajan et al., 2024; O'Connor et al., 2019), and the ethics of co-creation (Reid et al., 2021) are two key elements for consideration across both co-creation and LNOB and have been considered further in the framework joining these principles.

3.2.2. LNOB Principles

LNOB lies at the heart of the 2030 Agenda but goes beyond the general achievement of the SDGs, requiring systematic analysis of structural inequalities, identification of those left behind, and creation of pathways for empowerment (Taratori & Comim, 2025). One important aspect is the identification and analysis of who is left behind and why (Turunen, 2021). This includes attention to both individual and territorial dimensions of exclusion, considering social, economic, cultural, and geographic factors (Lemma & Cochrane, 2019; Puertas & Bermúdez, 2020). These principles are critical in practice, as their absence can reinforce existing inequalities and exclusion in participatory processes. Disaggregated data on gender, age, disability, social groups, and locations is critical, and participatory approaches that involve marginalized groups in data collection help ensure that their perspectives are recognized and incorporated (de Jong & Vijge, 2024; Samman et al., 2021). Inclusive participation is a second core aspect. Marginalized groups should be actively engaged in monitoring, reviewing, and decision-making processes, not merely consulted (López-Franco et al., 2017). NGOs and CSOs play a vital intermediary role, strengthening capacities, amplifying local voices, and supporting inclusion in policy processes (Stuart & Woodroffe, 2016). Empowerment is central: Those left behind must become full and equal agents of sustainable development, with access to the information and tools necessary to claim their rights (UNDP, 2018).

Policy coherence and institutionalization are also critical for LNOB. Integrated, cross-sectoral approaches are required to embed equality considerations across policies, create mechanisms for coordination and accountability, and ensure consistent resource allocation (de Jong & Vijge, 2024; Lemma & Cochrane, 2019; van Stenis, 2025). National strategies should mainstream LNOB principles, incorporate long-term perspectives, and systematically track impacts on marginalized populations. Building institutional capacities is essential to translate commitments into sustainable action (Kyrönviita et al., 2026; Sénit, 2020). Dedicated financing constitutes a further aspect. Resources must be explicitly targeted at those furthest behind, with long-term, flexible, and coordinated allocation across sectors. Funding should prioritize education, health, and social protection, while promoting transparency, fairness in fiscal systems, and institutional capacity building to support LNOB objectives (de Jong & Vijge, 2024; Samman et al., 2021). In practice, this involves addressing participation barriers and power dynamics. Finally, LNOB requires an ethical and transformative orientation. It is inseparable from multi-dimensional justice, encompassing distributive, procedural, and recognitional aspects (Menton et al., 2020; Taratori & Comim, 2025). Ethical reflection ensures participation is fair, context-sensitive, and respectful, while attention to power dynamics and structural inequalities supports LNOB's transformative potential (Klasen & Fleurbaey, 2018). Recent literature emphasizes the

ethical commitments inherent in LNOB, particularly in global health contexts, where prioritizing those furthest behind may conflict with resource constraints or conventional top-down approaches (Oehring & Gunasekera, 2024). This perspective underscores the need to balance universal principles with targeted interventions, enhance community participation, and continuously adapt strategies to evolving contexts, highlighting that operationalizing LNOB is as much an ethical endeavor as a technical one. Without explicit attention to these principles, co-creation processes risk reproducing existing power imbalances and overlooking structurally excluded groups.

3.2.3. A Conceptual Framework for LNOB and Co-Creation Integration

The REA exposed that although co-creation and LNOB share values such as inclusion, equity, and participation, LNOB is rarely explicitly addressed in co-creation literature or practice. We aim to bridge this gap by offering an integrated conceptual framework that could be used by coastal communities and researchers to support more inclusive co-creation processes and thus more just outcomes. Based on the 10 principles revealed from the literature (Table 2), our reflections from the workshop (Supplementary Material 2), and the discussions in EmpowerUs, we propose the following framework for integrating LNOB into co-creation practices (see Figure 1).

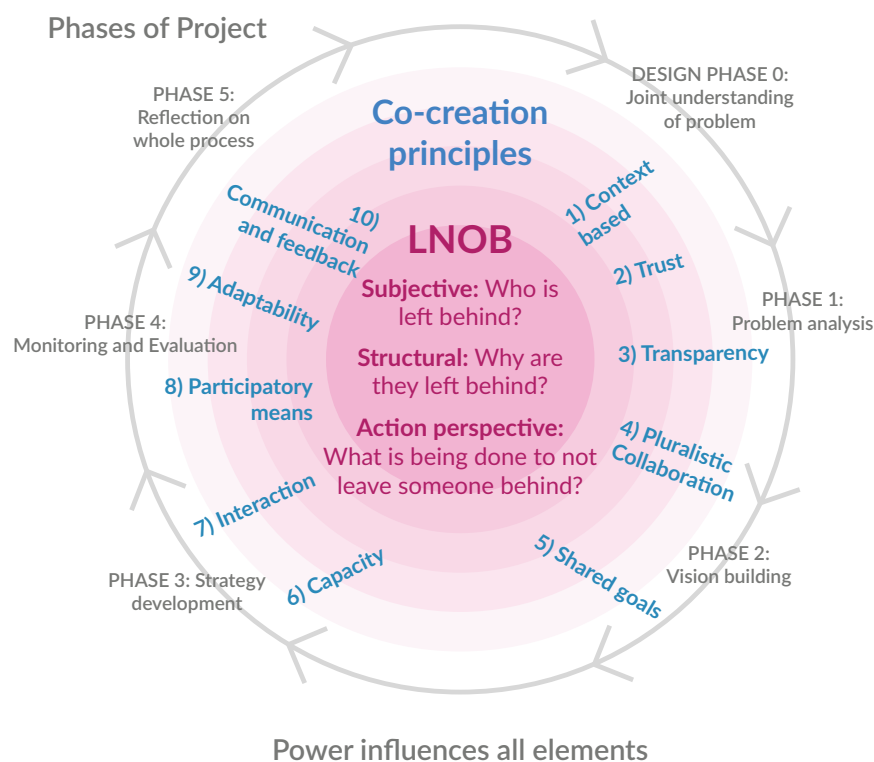


Figure 1. A project design framework integrating the LNOB pillars and co-creation principles.

Our review of the literature on the LNOB principles highlights its multi-dimensional nature, including identification of those left behind, structural inequalities, empowerment, participatory engagement, policy coherence, financing, and ethical considerations (de Jong & Vijge, 2024; Menton et al., 2020; Taratori & Comim, 2025; UN, 2015). While comprehensive, this complexity can challenge practical application, as was evident in the three main themes discussed by the workshop attendees who reflected on challenges of, and

solutions to, inclusion in their global transdisciplinary projects (Supplementary Material 2). To make LNOB operational in our framework, we combined these themes into three interlinked pillars to guide researchers and practitioners in designing and reflecting on inclusive processes within their principles of co-creation, and within different phases of co-creation:

- Subjective pillar: Who is left behind? This layer focuses on lived experience, positionality, and knowledge diversity (identified as the challenges related to *people* during the workshop).
- Structural pillar: Why are they left behind? This layer analyses societal structures, inequalities, and power relations (identified as challenges related to *process* and *external factors* during the workshop).
- Action pillar: What is done to prevent exclusion? This includes methods and processes—such as sharing power, participatory tools, and capacity building—that foster inclusion (identified as *aiding inclusion* during the workshop).

Here, the three LNOB pillars are conceptualised as analytical layers of the framework, which are operationalised through guiding questions and informed by co-creation principles.

To make the framework practically useful for researchers and practitioners, it is structured for consideration during each typical project phase, following Wittmayer and Hölscher's (2016) six-stage model for participatory research: (0) joint understanding of the problem and terminology, (1) problem analysis, (2) vision building, (3) strategy development, (4) monitoring and evaluation, and (5) reflection on the whole process. This phase-based structure allows users to apply the LNOB pillars and co-creation principles iteratively throughout the project lifecycle, from initial problem framing to post-project reflection.

We translate the integration of LNOB pillars, co-creation principles, and project phases into a set of phase-specific guiding questions (Table 3). Rather than prescribing outcomes, these questions are designed to support reflexive and intentional practice, helping researchers and practitioners to continuously attend to who is (not) included, how exclusion is experienced, and what can be done to foster more inclusive co-creation processes. These questions are intended to be used jointly by researchers and participants as part of the co-creation process. Each layer contains both reflective and practical questions to support inclusive design, implementation, and evaluation of co-creation projects. Figure 1 and Table 3 highlight the

Table 3. Examples of reflection questions for considering the LNOB ambition in co-creation processes.

Project phase	Guiding questions	Additional reflection question	LNOB Pillars & Co-creation principles
0. Joint understanding of the problem	Who is (not yet) included in defining the problem? Why might they want to join the process? Why might they be excluded? How can we create context-sensitive and trust-based processes to include diverse perspectives from the outset?	What assumptions shape our understanding of the problem? How can we ensure transparent and pluralistic dialogue to co-define shared goals?	Subjective, structural, and action Principles: (1) context-based, (2) trust, (3) transparency, (4) pluralistic/collaboration, (5) shared goals, and (10) communication and feedback

Table 3. (Cont.) Examples of reflection questions for considering the LNOB ambition in co-creation processes.

Project phase	Guiding questions	Additional reflection question	LNOB Pillars & Co-creation principles
1. Problem analysis	Who is most affected by the problem? How do they experience it differently? What structural inequalities explain these differences?	What knowledge is missing or underrepresented How can participatory and transparent methods be used to include diverse forms of knowledge?	Subjective, structural, and action Principles: (1) context-based, (2) trust, (3) transparency, (4) pluralistic/collaboration, (7) interaction, (8) participatory means, and (10) communication and feedback
2. Vision building	Whose visions of the future are represented or excluded? How can inclusive, trust-based interactions ensure that diverse aspirations are meaningfully integrated?	How do structural inequalities shape whose visions are prioritised How can conflicting goals be negotiated towards shared but flexible outcomes?	Subjective, structural, and action Principles: (2) trust, (4) pluralistic/collaboration, (5) shared goals, (7) interaction, (8) participatory means, and (9) flexibility/adaptability
3. Strategy development	Who has decision-making power in shaping strategies? What structural barriers limit participation? How can power be more equitably shared?	What actions, capacities, and resources are needed to ensure inclusive implementation? How can responsibilities be distributed transparently?	Structural and action Principles: (3) transparency, (4) pluralistic/collaboration, (6) capacity, (8) participatory means, and (9) flexibility/adaptability
4. Monitoring and evaluation	Who defines what counts as success? Whose experiences are captured or excluded? How do structural factors influence these evaluations?	How can continuous feedback and adaptive processes ensure that emerging exclusions are identified and addressed?	Subjective, structural, and action Principles: (3) transparency, (4) pluralistic/collaboration, (7) interaction, (9) flexibility/adaptability, and (10) communication and feedback
5. Reflection on the whole process	Who benefited from the process? Who remained excluded? What structural inequalities persisted or changed?	What should be done differently to strengthen inclusion, trust, and capacity in future processes?	Subjective, structural, and action Principles: (2) trust, (3) transparency, (4) pluralistic/collaboration, (6) capacity, (9) flexibility/adaptability, and (10) communication and feedback
All phases	Who holds the power in this element of the project? What is causing any knowledge asymmetry or imbalance in the process? How can balance or shared power be achieved?	Is the suggested engagement method appropriate given considerations of power and ethics?	Subjective, structural, and action Principles: All

importance of understanding power across co-created projects, as this will affect meaningful dialogues throughout a project and its ultimate results (O'Connor et al., 2019; Reid et al., 2021).

4. Empirical Application and Reflexive Assessment of an LNOB–Co-Creation Framework (EmpowerUs)

In EmpowerUs, co-creation and the LNOB principle guided our work with six coastal communities across Europe. Each of the TCLs was supported by a local host organization and an academic lead. Throughout the project, we applied co-creation and LNOB principles while iteratively developing the LNOB-co-creation framework presented here. Across TCLs, structured reflection focused on who was left behind, why, and what actions could foster inclusion (Gustavsson, Solnør, & Rønningen, 2025). In the following sections, we analyze how LNOB and co-creation principles were applied in the Norwegian TCL.

4.1. Community Context and EmpowerUs Pilot Development

Træna, a small and remote island municipality in Northern Norway, exemplifies many of the governance and development tensions seen across peripheral coastal communities. Træna faces several pressing challenges: demographic shifts, including youth outmigration, an ageing population, and an increasing reliance on seasonal and migrant labor; limited employment opportunities; insufficient infrastructure; and unpredictable transport connections. The shared understanding of these challenges and co-design of pilot solutions was underpinned by two key workshops and subsequent participatory activities. These insights directly informed refinements to the framework, particularly by emphasising structural barriers, power dynamics, and the need for flexible, context-specific engagement strategies.

4.2. Adding LNOB to the EmpowerUs Co-Creation Approach

4.2.1. Joint Understanding of the Problem and Terminology

In this phase, the focus was on building a baseline understanding of Træna's context and identifying who might be left behind, why, and how their perspectives could be included. A first baseline study highlighted that while many residents feel recognized and able to participate in local decision-making, structural inequities persist, particularly for minority and seasonal groups, including migrant workers who face language barriers, precarious employment, and limited social networks (Spiering et al., 2025). To address participation challenges, the project team conducted targeted interviews and engaged local stakeholders (including municipal representatives, local organisations, and community members). Participation was based on open invitations to all residents, combined with targeted efforts to reach potentially excluded groups, and flexible formats such as informal meetings, one-to-one conversations, and adapted timing. These approaches reflected principles of context-sensitive, trust-based, and pluralistic collaboration. Trust was strengthened through personal presence and outreach, high turnover among the host organization and academic leads sometimes disrupted continuity.

4.2.2. Problem Analysis

During Workshop 1, which focused on joint problem identification and vision building, key groups affected by local challenges were identified. Polish migrant workers, seasonal fishers, and some youth faced significant barriers to participation. Language barriers, lack of social networks, and limited access to information about rights and available services limited engagement with local initiatives and services. Access to suitable and stable housing is another critical challenge. Temporary and shared housing, along with underused housing stock, further complicated integration and access for newcomers and residents. Although dedicated interviews with immigrants were limited, we consulted relevant literature and spoke with local Norwegian stakeholders to better understand the challenges. Suggestions to improve inclusion included language support, social meeting places, improved working conditions, stable housing, and clearer information on rights and opportunities. In co-creation, invitations and materials were translated into Polish, a translator was offered during one course, and communication methods were adapted to facilitate participation. Gender dynamics also emerged, with strong female representation and leadership, but some youth and immigrant voices remained underrepresented. These adaptations helped include diverse knowledge while also revealing persistent inequalities.

4.2.3. Vision Building

The vision-building phase emphasized whose perspectives and aspirations were prioritized and how inclusivity could be operationalized. Workshop discussions revealed that dominant visions often came from long-term residents and institutional representatives, while youth, seasonal workers, and immigrant groups were underrepresented. Trust-based interactions and context-sensitive facilitation helped integrate diverse voices, yet some participants felt overwhelmed by complex issues, requiring flexible approaches to communication. Informal and small-group dialogues helped elicit less dominant perspectives. Conflicting goals—such as differing priorities between older residents, youth, and businesses—necessitated negotiation towards shared goals. Capacity building emerged as critical, with participants needing clarity on the pilot's scope, responsibilities, and expected contributions. The process highlighted that vision building requires attention to power dynamics, knowledge gaps, and inclusive dialogue.

4.2.4. Strategy Development

Workshop 2, where the pilot was co-created, highlighted opportunities and challenges in applying LNOB-oriented co-creation in Træna. Participants contributed diverse perspectives and feedback on pilot activities. The local host's limited presence on-site required deliberate efforts to build trust and contextual understanding. Managing numerous inputs posed challenges: differences in priorities and expectations sometimes made decision-making complex, raising questions about who holds decision-making power and how responsibilities are distributed transparently. Structural barriers affected participation, particularly among seasonal workers, youth, and marginalized groups. Questions around capacity, communication, and adaptability surfaced repeatedly, as participants needed clarity on the scope, effort, and roles required for pilot implementation. Iterative discussion, group moderation, and matrix-based feedback helped materialize voices, but highlighted the delicate balance between inclusivity and feasibility. These reflections underscore that LNOB-informed co-creation requires continuous attention to power dynamics, transparency, and contextual constraints.

4.2.5. Monitoring and Evaluation

The monitoring and evaluation of the pilot activities in Træna involved reflection interviews and realist evaluation surveys (Flannery et al., 2024). The pilot was launched slightly earlier than planned, requiring adjustments, but the team built a solid foundation through input from Workshop 1 and Workshop 2, stakeholder follow-ups, and engagement with local networks. Efforts were made to include migrant workers by translating materials into Polish and English, although broader participation from these groups remained limited, highlighting how structural factors—language, work schedules, and social networks—affect whose experiences are captured.

The pilot was structured around small thematic working groups—covering onboarding, culture, and a hub for social activities—which allowed participants to contribute according to interest and capacity. A steering group used elements of sociocracy to reduce power imbalances. Yet the ongoing challenge of engaging young fishers or seasonal Polish workers illustrates how definitions of success are often shaped by those who are already active and available, potentially marginalizing other perspectives. To address these gaps, continuous reflection, interactive methods, and adaptive processes were embedded: working groups could adjust activities, translations ensured accessibility, and links to local events increased visibility. In addition, ocean literacy was used as an interactive strategic tool to engage fishing and older communities, building on the community identity through a co-produced cultural trail, providing mutual benefit to participants (Morris-Webb et al., 2025). This iterative approach enabled the pilot to respond to emerging exclusions and structural barriers, even if participation remained constrained.

4.2.6. Reflection on Whole Process

In the Træna pilot project, those who benefited most were individuals with strong local networks, such as dedicated volunteers, municipal employees, and active participants who gained access to resources, knowledge, and new contacts through EmpowerUs' activities. These activities enhanced strategic planning, grant-writing capacity, and multipurpose use of community spaces, while strengthening local identity and partnerships. At the same time, seasonal workers, migrant employees, newcomers, and families with limited time or language skills were largely not present, reflecting persistent structural inequalities in access, social recognition, and resource distribution. Recognition of capacity limitations also raised the question: is it ethical to ask some people for their time?

To strengthen inclusion, trust, and local capacity, adapting to the local context—such as seasonal work patterns—is essential. Trust was built through personal presence and outreach, transparency about roles and funding, pluralistic collaboration, and regular communication and feedback. However, high turnover in both the host organization and academic leads disrupted continuity and weakened trust. Shared goals, participatory methods, continuous interaction, feedback, and visible outcomes were valued, as were competence-building measures and practical tools. The pilot resulted in *A Handbook for a Vibrant and Sustainable Community*, which is freely available (<https://empowerus.kph.no>), and in continued project development with the community. Flexibility and adaptability proved critical, particularly given limited community capacity (volunteer burnout, limited continuity, and scarce resources). While the pilot strengthened local strategic thinking, cultural pride, and networking, structural inequalities and environmental-economic tensions remain, highlighting the need for ongoing support, resource access, and continued co-creation.

4.2.7. Key Takeaways

We approached EmpowerUs with the ambition to consider LNOB principles, but it was only during the pilot that the integrated LNOB/co-creation framework fully developed. Had this framework been available from the outset, we could have addressed inclusion more systematically, anticipating structural barriers and tailoring engagement strategies earlier. The pilot showed that co-creation without explicit attention to inclusion risks reinforcing existing inequalities, as dominant voices tend to shape decisions. Building trust, allowing sufficient time, and fostering local institutional capacity proved essential, although high turnover and limited on-site presence occasionally disrupted continuity. Overall, the experience demonstrates that LNOB-informed co-creation requires conscious, sustained attention to structural inequities and power dynamics to achieve equitable outcomes.

5. Concluding Discussion: Lessons, Limits, and Future Directions

The integration of the LNOB principle into co-creation processes offers a lens to make structures and inequalities visible. It challenges researchers to move beyond treating inclusion as mere participation, toward a transformative process that alters power relations and norms. In coastal communities, this shift is particularly important, as vulnerabilities are often compounded by isolation, seasonal economies, and marginalization. Embedding LNOB encourages researchers to critically assess whose voices and knowledge are included and which barriers exclude others. This aligns with emerging blue justice perspectives, which emphasize fairness in coastal and marine governance. At the same time, applying LNOB is constrained by project realities. Limited resources, timeframes, and logistics require researchers to adopt LNOB as a reflective lens rather than a checklist, informing context-sensitive and ethically defensible decisions.

Goodyear-Smith et al. (2015) highlight the role that ethical review committees can play in supporting value-based participatory research. They suggest ethical reviews should focus more on relationships and the just distribution of power by (a) acknowledging diversity; (b) setting ground rules for co-design and ethical applications (defining what consultation is, what is engagement, what is research); and (c) acknowledging power-sharing and shared credit.

Our proposed framework offers ethics committees a tool to support reflection on participatory research design. But operationalizing LNOB involves strategies beyond inclusive co-creation frameworks, including participatory methods and stakeholder mapping to help identify vulnerable groups and support more equitable engagement. However, structural barriers—such as language, mobility, or pre-existing exclusion—may still limit participation. Acknowledging these limitations is essential to avoid reinforcing inequalities or replicating extractive practices (Knizkov & Arlinghaus, 2019). The framework can also support applications in other contexts, including marginalised coastal communities in the Global South, where issues of access, power, and resource distribution may be particularly pronounced.

Empirical insights from Norway highlight both potential and challenges. Empowerment-based co-creation strengthens community agency, enabling stakeholders to shape priorities and strategies. Together, LNOB and co-creation can operationalize key dimensions of blue justice: fairness, recognition, equitable access, and participation. Recent policy discussions (e.g., Gustavsson, Solnør, & Rønningen, 2025) further stress that LNOB in coastal transitions must extend beyond individuals to include places, livelihoods, and ecologies.

It also highlights the need to integrate recognitional, procedural, and distributional justice. Importantly, LNOB is not a technical fix, but requires ongoing ethical and reflexive negotiation.

Despite this, challenges remain. Limited resources, participation fatigue, and conflicting expectations can constrain inclusivity. These challenges highlight the need for critical reflexivity and transparent design. Methodologically, LNOB can be operationalized through a framework built on three pillars (subjective, structural, and action). This supports reflection on lived experiences, power structures, practical measures, and normative values. Aligning this framework with project phases enables iterative application of LNOB, ensuring inclusivity is revisited throughout the process. Future research should test the framework across contexts, develop diagnostic tools, and explore links to justice and intersectionality. LNOB should be understood as a normative and reflexive guide, supporting more responsible and context-sensitive co-creation.

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Conflict of Interests

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Data Availability

Due to the nature of the research, data sharing does not apply to this article.

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

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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