CO-SUSTAIN

Pathways for CO-creation between local authorities and collective actions for a SUSTAINable transition

Grant Agreement n° 101132467

Literature review on the triggers and management of latent and manifest forms of political participation

Deliverable D2.1

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Nature of the deliverable		
R	Document, report (excluding the periodic and final reports)	X
DEM	Demonstrator, pilot, prototype, plan designs	
DEC	Websites, patents filing, press & media actions, videos, etc.	
DATA	Data sets, microdata, etc.	
DMP	Data management plan	
ETHICS	Deliverables related to ethics issues	
SECURITY	Deliverables related to security issues	
OTHER	Software, technical diagrams, algorithms, models, etc.	

Dissemination level		
PU	Public, fully open, e.g. web (Deliverables flagged as public will be automatically published in CORDIS project's page)	X
SEN	Sensitive, limited under the conditions of the Grant Agreement	

Quality procedure			
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1. PROJECT ABSTRACT

In Western democracies, traditional institutional participation is on the decline, while non-institutional participation has been increasing. Non-institutional participation for the climate transition often relies on a prefigurative approach, thus creating spaces to incubate alternative ideas and novel forms of political participation (niches). Empowering these forms of political participation to encourage niche innovations will provoke the radical, yet necessary changes in the socio-technical system for a climate transition. The CO-SUSTAIN project seeks to address this opportunity for a democratic climate transition by defining and testing new democratic pathways, enabling local policymakers to support various and novel forms of political participation and empowering citizens to act for a sustainable transition.

To develop a better understanding of political participation linked to environmental, political and societal imperatives, CO-SUSTAIN studies 18 historic examples in six different European countries for each of the latent and manifest forms of political participation underlined by Ekman: involvement, civic engagement, formal political participation, and activism. It uses institutional ethnography and system mapping to understand the dynamics of participation and its management, thus delivering best practices to stimulate and support political participation around these imperatives. These best practices serve to define interventions for solution co-creation in four case studies, one for each form of political participation: involvement through Spanish energy communities, civic engagement through food solidarity in Turin (IT), manifest political participation through participatory processes promoted by the government in Northern Europe (EST, FI) and activism through the Lobau Bleibt social movement (AT). The outputs and outcomes of the deliberations will be assessed to draw conclusions for more democratic climate policymaking across Europe.

2. EXECUTIVE SUMMARY

This paper reviews the literature on triggers and management of latent and manifest forms in the context of climate transition. The report provides a thorough analysis of existing knowledge on political participation related to environmental, political and social priorities. The method employs a systematic literature review based on the Web of Science, Scopus and Google Scholar databases, with queries built around three main topics: triggers for change, forms of participation and strategies for demanding social change. CADIMA record management software was used for screening and selection, and consistency was maintained through double-independent evaluation based on established criteria. This thorough procedure led to the selection of a group of 77 articles (from the original database of 444 records) for in-depth qualitative and quantitative evaluation.

The review explores latent (social involvement and civic engagement) and manifest (formal political participation and activism) forms of political participation. The document outlines several factors that motivate individuals and groups (triggers) to participate politically in climate transition. These encompass the understanding of ecological stresses and the climate emergency, individual encounters with environmental shifts, the impact of current discourses and narratives, efficient communication pathways, as well as community identity and requirements. Additionally, the review examines effective strategies for managing and channelling political participation towards significant action to contrast, manage and mitigate climate change and other societal imperatives. Essential strategies consist of embracing

comprehensive and holistic and multi-level governance approaches, outlining explicit governmental objectives and rules, developing supportive environments for varied stakeholder involvement, nurturing a sense of ownership and accountability, setting up clear lines of communication, and formulating impactful narratives. In CO-SUSTAIN, political participation is considered as a component and trigger of systemic changes, and in order to analyse these dynamics, theoretical frameworks like Transition Theory, Multi-Level Perspective, Technological Innovation System, Strategic Niche Management and Transition Management are considered.

The results of this literature review suggest several directions for future research, such as the importance of delving deeper into the relationship between latent and manifest forms of participation, combining different theoretical frameworks for a broader understanding, and examining governance strategies that can effectively guide various types of political participation toward specific climate objectives in varied socio-political and cultural settings.

3. ABBREVIATIONS

Table 1. List of abbreviations.

Abbreviation	Definition
A7T	All seven Theories
AoI	Aspect of Interest
CAI	Collective Action Initiative
CAoI	Common Aspect of Interest
CC	Context of Climate
CO-SUSTAIN	Pathways for CO-creation between local authorities and collective actions for a SUSTAINable transition
EU	European Union
FP	Form of Participation
GA	Grant Agreement
MLP	Multi-Level Perspective
PPforCT	Public Participation for Climate Transition
RES	Result = number of articles where the Common Aspect of Interest appears simultaneously with a given theoretical framework
SLR	Systematic Review of the Literature
SNM	Strategic Niche Management
TF	Theoretical Framework
STS	Socio-Technical System
TA	Type of Actor
TC	Triggers of the Change
TIS	Technological Innovation System
TM	Transition Management
TT	Transition Theory

4. INTRODUCTION

The CO-SUSTAIN project seeks to improve the understanding of the interaction between collective action and transition processes. It aims to explore how groups organise in response to climate, political, and societal imperatives, serving as platforms for political engagement in the development of participatory innovative strategies. Furthermore, the project tries to assess whether these forms of engagement lead to positive changes within the socio-technical system, considering the interplay between opportunities and internal dynamics. The literature review conducts a comprehensive examination of existing knowledge on various forms and dimensions of political participation, with a specific focus on the context of the climate transition. The review aims to identify common patterns and divergences in political participation across EU countries, considering their different institutional contexts and their effects in terms of promoting radical changes in the incumbent socio-technical systems that characterise contemporary society.

The literature review is aimed at supporting the ambitions of the CO-SUSTAIN project, the first of which is to extend transformation theory to better understand the catalysts of change for sustainable transformation. Current understanding in the field in fact emphasises that, for effectively addressing climate change, radical shifts towards new socio-technical systems (STS) are essential. Introduced in the 50s (Tirst, 1981), STS concept has been widely adopted and deeply refined over the past decades as an overarching framework to address the dynamics and innovation within societal systems resulting from the interaction and mutual shaping among societal and technological components of the system under scrutiny.

The most widely used approach in innovation and sustainability research is based on Transition Theory (TT), which includes frameworks such as the Multi-Level Perspective (MLP), Strategic Niche Management (SNM), Technology Innovation System (TIS), and Transition Management (TM). In STS, innovations typically emerge within protected spaces known as niches, which require support and structural changes to facilitate their expansion. Transition Theories have faced criticism for their narrow focus on technological innovation and their limited attention to politics, power, and cultural meanings, and their evolutionary perspective (Geels, 2019). Therefore, broadening the scope of Transition Theories to include the relevant role of social innovations in sustainability transitions is necessary. It is also important to investigate the diversity of practices employed by a wide range of agents involved in collective action during transitions.

Recent initiatives aim to shift from top-down decision-making approaches to those that involve public and stakeholder participation (Edelenbos et al., 2017; Chitsa et al., 2022). The contrasting bottom-up and top-down approaches are increasingly regarded as artificial constructs. Governance structures co-evolve alongside social and ecological environments (Van Assche et al., 2020). Consequently, there is a need to examine participation from the perspective of social learning (Collins & Ison, 2006), and how it evolves with governance structures (Hargreaves et al., 2011; Mees et al., 2019; Wahlund & Palm, 2022).

Kanger, Sovacool and Noorkõiv (2020) propose six policy intervention points that contribute to sustainable transformation: 1) stimulating different niches; 2) accelerating niches; 3) destabilising the regime; 4) addressing broader repercussions of regime destabilisation; 5) providing co-management of

multiple regime interactions; 6) tilting the landscape. These intervention points enable public participation and have the potential to trigger collective action initiatives (CAI).

Political participation is crucial for enabling a shift from top-down, expert-led decision-making to public participation and stakeholder engagement in climate transition. The CO-SUSTAIN project recognises that collective action and citizen initiatives can act as platforms for political participation, prefigurative innovations, and exerting social pressure for change. At the same time, CAI has not yet gained widespread use as a framework in the study of transformative processes, although it shows great potential for understanding of change pathways. The CAI framework is emerging in the context of social movement research (Hassink et al., 2018).

The aim of the CO-SUSTAIN project is to bring together theoretical and analytical perspectives and expand knowledge on the mutual influence of collective action and transformative processes. The project also adapts Ekman & Amnå's (2012) categorisation of political participation to broaden the understanding of the potential of citizens' initiatives in relation to transition.

With these considerations in mind, the procedure for identifying and selecting articles within the Systematic Literature Review (SLR) included knowledge domains related to:

A. the following theoretical frameworks: Transition Theory (TT), Multi-Level Perspective (MLP), Strategic Niche Management (SNM), Technological Innovation System (TIS), Transition Management (TM), Collective Action Initiative (CAI), and Socio-Technical System (STS); and
B. aspects of interest relating successively to: Triggers of the Change (TC), different Forms of Participation (FP), distinct Types of social Actors (TA) and Context of the Climate (CC).

Two key research questions were also identified to guide the literature review process:

- What forms and dimensions of political participation can be observed in the context of climate transition?
- What common patterns and divergences in political participation can be found across different EU countries?

To address these research questions, the remainder of this report is as follows. Section 5 presents a detailed description of the methodology. Section 6 examines the conceptual framework studied in the CO-SUSTAIN project. Section 7 provides a comprehensive review of the triggers of political participation. Section 8 analyses latent and manifest forms of political participation. Section 9 discusses management strategies identified in global literature. Section 10 offers concluding remarks.

5. METHODOLOGY

This section outlines the methodology of the systematic literature review. It presents the criteria developed for the study, the databases examined, and the inclusion and exclusion procedures applied. It also describes the methods used for text searches in scientific repositories and provides details on the screening and selection process carried out with the CADIMA software.

As mentioned above, the review aims to understand political participation in the context of climate transition in order to identify patterns and differences across EU countries by systematically analysing existing research. The review process developed along four main phases is described in detail in the following subsections: (5.1) Identification of papers, (5.2) screening and selection, (5.3) quality assessment, and quantitative analysis. For this literature review, a commonly used analysis model was applied, which is included in the procedure algorithm of the CADIMA software (see Section 5.2 for more details). The assessment procedures are largely consistent with the PRISMA model (Kohl et al., 2018).

5.1. Identification of papers from scientific repositories (Web of Science, Scopus, Google Scholar)

The first phase consists of the identification of the corpus of articles on the various forms and dimensions of political participation, with a particular emphasis on the climate transition addressed from a socio-technical perspective. This section presents: (1) the scope of the identification; (2) the definition of the queries and (3) the results of the identification phase.

5.1.1. Scope of identification

The scope of the identification phase is defined along three main dimensions: knowledge domains, repositories and timeframes:

A) Two knowledge domains:
- Aspects of Interest,
- Theoretical Frameworks.

B) Three repositories:
- Web of Science,
- Scopus,
- Google Scholar.

C) Three timeframes:
- All years gathered in the database,
- The period 2016–2025,
- The period 2020–2025.

The first knowledge domain refers to the following Aspects of Interest (AoI) for political participation in the context of climate transition:

I. Triggers of the change (TC).
II. Different forms of participation (FP).
III. Distinct types of social actors (TA).
IV. Context of the climate (CC).

The second knowledge domain refers to the seven theoretical frameworks most commonly adopted in the literature to address the various forms and dimensions of political participation from a socio-technical perspective:

1. Transition Theory (TT).
2. Multi-Level Perspective (MLP).
3. Strategic Niche Management (SNM).
4. Technological Innovation System (TIS).
5. Transition Management (TM).
6. Collective Action Initiative (CAI).
7. Socio-Technical System (STS)[1].

These Aspect of Interest (AoI) and Theoretical Frameworks (TFs) were identified as a result of detailed discussion among the authors' team members, supported by a preliminary analysis of selected Historical Examples (HE), and taking into account the goals defined in the Ambition section and described in the Grant Agreement (GA).

5.1.2. Definition of the queries

Definition of search and query strings, for both AoIs and TFs, and appropriate keywords were first identified, and corresponding search strings were developed for each identified keyword. Table 2 reports the results for AoI, while Table 3 presents the results for TFs.

Once the keywords and the search strings were identified, relevant articles addressing the research questions were selected through a three-steps process.

In the first step, related to the AoI, the search strings were initially run separately and then they were combined in order to identify articles where the key aspects of interests co-occur. This procedure enabled the identification of texts in which common aspects of interests are mentioned, as a result of the following expression:

(CAoI) = (TC) AND (FP) AND (TA) AND (CC) (1)

Where:

AND – Boolean (logical) operators,

(CAoI), (TC), (FP), (TA), (CC) – abbreviations of the Aspects of Interest, as given in column 2 in Table 2.

[1] Since STS has a very long tradition in sociology and beyond (they were introduced after World War II) and in the collected corpus of texts very often functions as a close MLP it was decided that it would not be analyzed separately. Thus, the analysis of STS does not function as a separate subsection.

Table 2. Search terms and query strings used for the identification of Aspects of Interest.

Step no.	Aspect of interest (AoI)	Search terms	Search string	Search string for the database
I	Trigger of change (TC)	Anxiety	anxi*	(anxi* OR attitude OR aware* OR "carbon neutral*" OR change OR contaminat* OR decarbon* OR energy OR govern* OR "green economy" OR just* OR law OR policy OR pollut* OR poverty OR regulat* OR sustain* OR transform* OR transit*)
		Attitude	attitude	
		Awareness	aware*	
		Carbon lity	"carbon neutral*"	
		Change	change	
		Contamination	contaminat*	
		Decarbonisation	decarbon*	
		Energy	energy	
		Governance	govern*	
		Green economy	"green economy"	
		Justice	just*	
		Law	law	
		Policy	policy	
		Pollution	pollut*	
		Poverty	poverty	
		Regulation	regulat*	
		Sustainable	sustain*	
		Transformation	transform*	
		Transition	transit*	
II	Forms of participation (FP)	Activism	activ*	(activ* OR action OR deliberat* OR "deliberative democracy" OR discours* OR discuss* OR dispute* OR engage* OR initiat* OR interven* OR involve* OR manifest* OR move* OR participat* OR petition* OR prefigurativ* OR strike*)
		Action	action	
		Deliberation	deliberat*	
		Deliberative democracy	"deliberative democracy"	
		Discourse	discours*	
		Discussion	discuss*	
		Dispute	dispute*	
		Engagement	engage*	
		Initiative	initiat*	
		Intervention	interven*	
		Involvement	involve*	
		Manifestation	manifest*	

Step no.	Aspect of interest (AoI)	Search terms	Search string	Search string for the database
		Movement	move*	
		Participation	participat*	
		Petition	petition*	
		Prefigurative	prefigurativ*	
		Strike	strike*	
III	Types of social actor (TA)	Alliance	alliance*	(alliance* OR associat* OR citizen* OR civil* OR communit* OR cooperat* OR council* OR "energy communit*" OR environment* OR expert* OR govern* OR group* OR initiat* OR influenc* OR institut* OR lobby* OR local* OR municipal* OR politic* OR prosumer* OR social OR societ* OR stakeholder* OR vote* OR vulnerable)
		Association	associat*	
		Citizen	citizen*	
		Civil	civil*	
		Community	communit*	
		Cooperative	cooperat*	
		Council	council*	
		Energy unity	"energy communit*"	
		Environmentalist	environment*	
		Expert	expert*	
		Governmental	govern*	
		Group	group*	
		Initiator	initiat*	
		Influencer	influenc*	
		Institution	institut*	
		Lobbyist	lobby*	
		Local	local*	
		Municipal	municipal*	
		Political	politic*	
		Prosumer	prosumer*	
		Social	social	
		Society	societ*	
		Stakeholder	stakeholder*	
		Voter	vote*	
		Vulnerable	vulnerable	
IV	Context of the climate (CC)	Climate	climate	(climate)

Step no.	Aspect of interest (AoI)	Search terms	Search string	Search string for the database
V	Common Aspect of Interest (CAoI) = (TC) AND (FP) AND (TA) AND (CC)	(anxi* OR attitude OR aware* OR "carbon neutral*" OR change OR contaminat* OR decarbon* OR energy OR govern* OR "green economy" OR just* OR law OR policy OR pollut* OR poverty OR regulat*OR sustain* OR transform* OR transit) AND (activ* OR action OR deliberat* OR "deliberative democracy" OR discours* OR discuss* OR dispute* OR engage* OR initiat* OR interven* OR involve* OR manifest* OR move* OR participat* OR petition* OR prefigurativ* OR strike*) AND (alliance* OR associat* OR citizen* OR civil* OR communit* OR cooperat* OR council* OR "energy communit*" OR environment* OR expert* OR govern* OR group* OR initiat* OR influenc* OR institut* OR lobby* OR local* OR municipal* OR politic* OR prosumer* OR social OR societ* OR stakeholder* OR vote* OR vulnerable) AND (climate)		

In the second step, a similar search was applied for the Theoretical Frameworks. The search strings were first run separately for each TF to identify articles in the databases in which the chosen TFs was used and then they were combined to find those articles where any of the TFs was mentioned. Similarly, the individual TFs were found in 1–7 searches in Part II. Since all of the theories were of interest, the final query was represented by the following equation:

(A7T) = (TT) OR (MLP) OR (SNM) OR (TIS) OR (TM) OR (CAI) OR (STS) (2)

Where:

OR – Boolean (logical) operators,

(A7T), (TT), (MLP), (SNM), (TIS), (TM), (CAI), (STS) – abbreviations of the theoretical frameworks' aspects of interest, as given in column 2 in Table 3.

Table 3. Search strings for Theoretical Frameworks.

No.	Theoretical Framework (TF)	Search string
1	Transition Theory (TT)	"Transition Theory"
2	Multi-Level Perspective (MLP)	"Multi*Level Perspective"
3	Strategic Niche Management (SNM)	"Strategic Niche Management"
4	Technological Innovation System (TIS)	"Technological Innovation System"
5	Transition Management (TM)	"Transition Management"
6	Collective Action Initiative (CAI)	"Collective Action Initiative"
7	Socio-Technical System (STS)	"Socio*Technical System"
8	All seven Theories (A7T)	("Transition Theory" OR "Multi*Level Perspective" OR "Strategic Niche Management" OR "Technological Innovation System" OR

No.	Theoretical Framework (TF)	Search string
		"Transition Management" OR "Collective Action Initiative" OR "Socio*Technical System")

Finally, in the third step, the combinations of CAoI and TFs were identified, with the aim to find AIs developed based on a specified TF. The results fulfil the following rule that the Common Aspect of Interest must appear simultaneously with the given TF.

(RES) = (CAoI) AND (ST)

Where:

AND – Boolean (logical) operators,

(CAoI) – Common Aspect of Interest,

(RES) – Result, i.e., the number of articles where the Common Aspect of Interest appears simultaneously with a given theoretical framework,

(TF) – represents a given theoretical framework (in steps V-1–V-7) or all seven analysed theories (in step V-8).

5.1.3. Results of identification of articles for the literature review

The search was done on 09.12.2024 for two databases: Web of Sciences Core Collection (the final results are shown in table 4) and in Scopus (the final results are shown in table 5).

Table 4. The result of the search in the WoS Database.

No of search		Number of records found		
		Publication years range		
		All available in the database	2016 – 2025[1)]	2020-2025[1)]
PART I. Aspect of Interest (AoI)				
I	Triggers of the change (TC)	23 534 527	7965243	6 586 681
II	Forms of participation (FP)	22 494 648	7213711	5 910 504
III	Types of social actor (TA)	29 806 705	10016365	8 234 431
IV	Context of climate (CC)	915 129	425 551	379 339
V	Common Aspect of Interest (CAoI)	216 577	109585	102 878
PART II. Theoretical Framework (TF)				
1	Transition Theory (TT)	1 934	812	564
2	Multi–Level Perspective (MLP)	1 622	1078	756

No of search		Number of records found		
		Publication years range		
		All available in the database	2016 – 2025[1)]	2020-2025[1)]
3	Strategic Niche Management (SNM)	382	221	134
4	Technological Innovation System (TIS)	334	180	120
5	Transition Management (TM)	813	414	250
6	Collective Action Initiative (CAI)	3	1	2
7	Socio-Technical System (STS)	659	405	289
8	All 7 theories (A7T)	5 469	2941	2 005
PART III. Common aspect of interest in a specified theoretical framework (RES)				
V-1	(CAoI) AND (TT)	36	21	16
V-2	(CAoI) AND (MLP)	135	100	70
V-3	(CAoI) AND (SNM)	49	30	19
V-4	(CAoI) AND (TIS)	13	6	6
V-5	(CAoI) AND (TM)	94	53	41
V-6	(CAoI) AND (CAI)	2	1	2
V-7	(CAoI) AND (STS)	12	9	8
V-8	(CAoI) AND (A7T)	316	**209**	115

[1)]Repository status as of December 9th, 2024.

It should be noted that the total number of articles in steps V-1 to V-7 is greater than the number of articles found in step V-8. This indicates that some articles mentioned more than one theoretical framework. Moreover, it should be stated that some papers already placed in the repository on December 9, 2024, will be published with a publication date in 2025.

The final result of WoS database search gives 316 articles from the full WoS database, 209 articles published between 2016 and 2025, of which 115 articles from the years 2020–2025.

Table 5. Results of search in Scopus Database.

No of search		Number of records found		
		Publication years range		
		All available in the database	2016 – 2025[1)]	2020-2025[1)]
PART I. Aspect of Interest (AoI)				
I	Triggers of the change (TC)	30 169 840	13 143 545	8 252 815

No of search		Number of records found		
		Publication years range		
		All available in the database	2016 – 2025[1)]	2020-2025[1)]
II	Forms of participation (FP)	29 404 914	11 943 132	7 434,452
III	Types of social actor (TA)	41 235 085	16 423 763	10 275 371
IV	Context of climate (CC)	1 055 930	629 712	426 775
V	Common Aspect of Interest (CAoI)	255 682	170 171	120 513
PART II. Theoretical Framework (TF)				
1	Transition Theory (TT)	3 076	1 353	827
2	Multi–Level Perspective (MLP)	916	652	441
3	Strategic Niche Management (SNM)	273	154	79
4	Technological Innovation System (TIS)	599	415	269
5	Transition Management (TM)	972	499	282
6	Collective Action Initiative (CAI)	29	23	19
7	Socio-technical system (STS)	5 135	3 233	1 905
8	All 7 theories (A7T)	10 813	6 208	3 752
PART III. Common aspect of interest in a specified theoretical framework (RES)				
V-1	(CAoI) AND (TT)	47	31	15
V-2	(CAoI) AND (MLP)	32	26	19
V-3	(CAoI) AND (SNM)	24	12	6
V-4	(CAoI) AND (TIS)	32	16	12
V-5	(CAoI) AND (TM)	69	46	30
V-6	(CAoI) AND (CAI)	1	1	1
V-7	(CAoI) AND (STS)	88	61	40
V-8	(CAoI) AND (A7T)	276	185	118

[1)]Repository status as of December 9th, 2024.

The final result of the Scopus database search gives 276 articles from the full Scopus database, 185 articles that were published in the years 2016–2025, of which 118 articles were published in the years 2020–2025.

It was decided that, out of the three time frames of the published articles considered for analysis, the detailed analysis would cover articles published in the years 2016–2025. There were two arguments to justify this decision. The first one was the rational use of the research team's capabilities to read, analyse, and describe in detail a certain number of publications. Moreover, it was observed that the development of theoretical frameworks has been particularly evident in recent years. For example, in the WoS database, in the entire period from 1945 to 2015 (almost 70 years), 107 articles concerning the thematic scope of interest were published, while in the last 10 years, as many as 209. Similar proportions were observed in the Scopus database, i.e. 91 articles from the years 1945–2015 and 185 from the years 2016–2025.

After a preliminary analysis of the selected articles, the literature review team concluded that the highly specialised WoS and Scopus databases do not index the journals in which the first papers related to specific theoretical frameworks are often published. The premise for such thinking was the fact that the list of citations of articles selected from the WoS and Scopus databases contained many items that were not indexed in these databases. Therefore, in order to fill the gap, it was decided to also search the Google Scholar platform for articles on the analysed theoretical frameworks in relation to issues related to the social aspects of climate change. The search was limited to publications from the years 2016–2025.

The query was:

(“Transition Theory” OR “Multi*Level Perspective” OR “Strategic Niche Management” OR “Technological Innovation System” OR “Transition Management” OR “Collective Action Initiative” OR “Socio*Technical System”) AND (climat* OR change OR crisis OR soci*).

Initially, 398 results were obtained in Google Scholar.

From the listed publications, those written in a language other than English were eliminated. As a result, 171 publications remained. In the next step, the following types of publications were eliminated:

1) Books that were not freely available because they had to be purchased,
2) Publications that had less than five citations,
3) Publications that, at first glance, were not thematically related to the analysed problem.

Finally, 50 publications were added to the collection of texts chosen for the final analysis.

The final set of publications gathered at this stage of the selection procedure consisted of 444 items distributed as follows:

- 209 articles selected from the Web of Science database,
- 185 articles selected from the Scopus database,
- 50 articles selected from the Google Scholar database.

From each database, a selected set of records describing each article in detail was exported in RIS format, suitable for use by specialistic analytical software.

A check for duplication was necessary, given that the items originated from separate searches, and the relevance of the articles to the research questions required assessment. The process of cleaning and further selection of the identified items was subsequently carried out during the screening and selection phase described in Section 5.2.

5.2. Screening and selection and quality assessment

The following two phases of the methodology, namely the (2) screening and selection and the (3) quality assessment, were performed with the use of the CADIMA software.

CADIMA is a free web tool that supports the conduction and documentation of systematic literature reviews and systematic maps without topic restrictions (CADIMA, 2025). It enables efficient collaboration among research teams worldwide, with no limits on the number of reviewers at different review stages. The platform offers features such as automatic duplicate removal, record allocation for screening, bulk PDF upload, and detailed review process documentation. It is important to note that literature reviews do not include steps specific to meta-analyses, such as data extraction, critical appraisal, or data synthesis. The CADIMA software was used because it facilitates systematic literature reviews by providing a structured workflow, enabling transparent documentation of the selection process, and allowing for efficient collaboration between reviewers.

The review team uploaded three sets of records of chosen articles (found as described in section 5.1) into CADIMA software and the programme has identified and removed duplicated articles. Figure 1 illustrates the study selection process. The flow diagram shows the stages of the work in CADIMA, divided into individual selection steps. These steps are described in detail in the following subsection. The flow diagram shows that, initially, 444 records retrieved in the form of RIS files obtained from queries in scientific databases (Web of Science, Scopus, Google Scholar) were entered into CADIMA. After removing duplicates, 410 records remained, which were screened at the title/abstract level, resulting in 158 exclusions based on the adopted criteria. Subsequently, the eligibility of 252 full-text articles was assessed, of which 175 were excluded on the basis of not meeting the criteria, which ultimately led to the inclusion of 77 full-text articles.

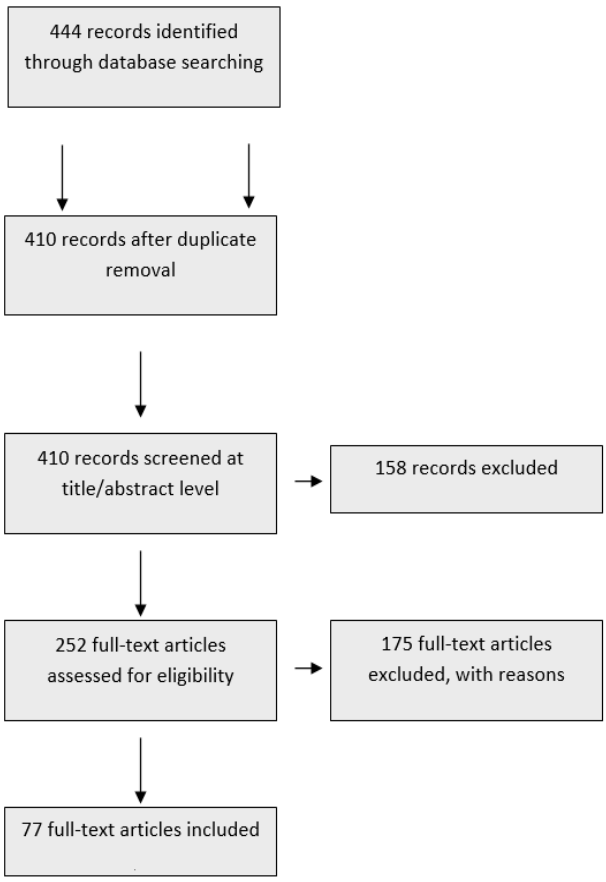


Figure 1. Flow diagram depicting the study selection process.

5.2.1. Management and conduct of the study selection process

A preliminary set of criteria was established following thorough analysis and expert consultations within the team, ensuring that the selection process was well-founded and aligned with the study's objectives. Following internal discussions within the review team, the criteria were refined and tested for consistency. This consistency check involved two reviewers independently applying the criteria to the title and abstract of a randomly selected sample of records. CADIMA facilitated the assessment of inter-reviewer agreement by calculating a kappa value.

The selection process in CADIMA was carried out independently by two reviewers, who were different from the person responsible for the repository analysis (Sections 4–5.2). Initially, the Kappa test[2] results were unsatisfactory (Kappa = 0.54), which necessitated refining the selection criteria and repeating the

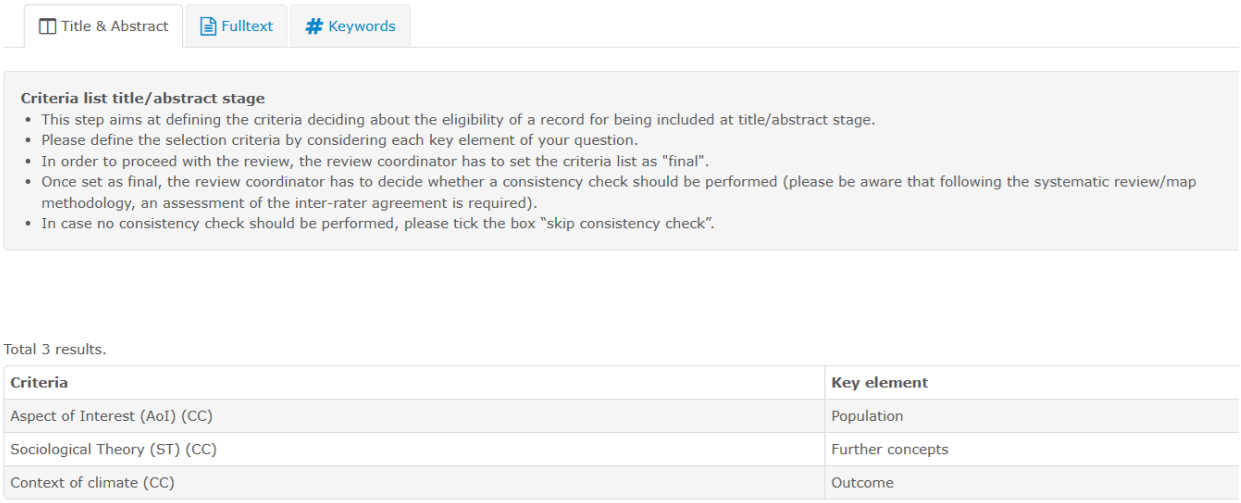
[2] In CADIMA, the Kappa test is used to assess the consistency between reviewers in applying selection criteria for including studies in a systematic review. In particular, it measures the level of consistency or credibility between reviewers in deciding whether a study should be included based on certain criteria. A high kappa value indicates that reviewers are in agreement, suggesting that the selection criteria are being applied consistently.

test. The Kappa test was performed solely on titles and abstracts based on a sample of 10 texts randomly selected by CADIMA. Ultimately, after these adjustments, the final Kappa test result reached an optimal level of Kappa = 1. The Kappa test is a statistical measure that assesses the agreement between two or more raters, accounting for the possibility of random chance. A Kappa value of 1 indicates perfect agreement, while a value of 0 means no better agreement than random chance. A negative value suggests worse than random agreement.

At this point, specific inclusion criteria were established to assess whether a record was eligible for inclusion in the review process. A set of three criteria was defined to be applied in two stages: first, to the title and abstract, and second, to the full text. At each stage, two reviewers independently and concurrently assessed the records. Any discrepancies were subsequently discussed and resolved jointly.

Criteria definition for study selection “Title & abstract” are presented in Figure 2 and for “Full text” in Figure 3. For the evaluation of the literature (study selection “Title & Abstract”), three inclusion criteria were established: Aspect of Interest (AoI), Theoretical Framework (TF), and Context of Climate (CC). Each of these criteria had to be met for a record to be included in the review process. This stage qualitatively verified that selection based on string searches of scientific databases was effective.

At each stage of assessment, two reviewers independently evaluated the texts, selecting one of three possible responses for each criterion: yes, no, or unclear. Only records that received a "yes" from both reviewers on all three criteria proceeded to the next stage. In cases of discrepancies, the reviewers discussed their evaluations to reach a consensus.


Title & Abstract | Fulltext | Keywords

Criteria list title/abstract stage

- This step aims at defining the criteria deciding about the eligibility of a record for being included at title/abstract stage.
- Please define the selection criteria by considering each key element of your question.
- In order to proceed with the review, the review coordinator has to set the criteria list as "final".
- Once set as final, the review coordinator has to decide whether a consistency check should be performed (please be aware that following the systematic review/map methodology, an assessment of the inter-rater agreement is required).
- In case no consistency check should be performed, please tick the box “skip consistency check”.

Total 3 results.

Criteria	Key element
Aspect of Interest (AoI) (CC)	Population
Sociological Theory (ST) (CC)	Further concepts
Context of climate (CC)	Outcome

Figure 2. Criteria definition for study selection (Title & Abstract).

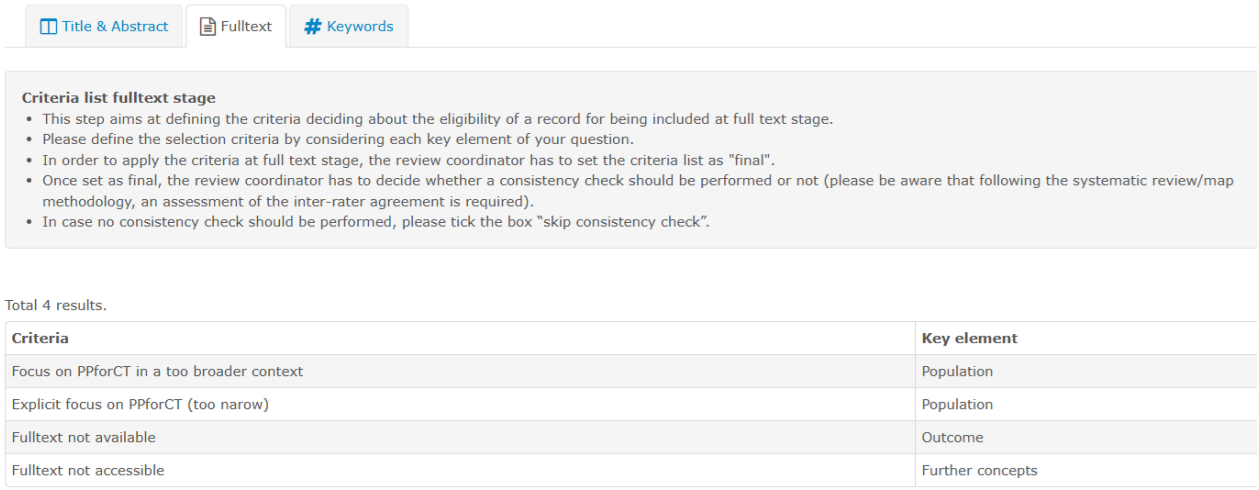


Figure 3. Criteria definition for study selection (Full text).

At the full-text review stage, additional exclusion criteria were applied to determine whether a record should be retained in the review process. These criteria included:

1. Focus on PPforCT (Public Participation for Climate Transition) in a too broader context – The study addressed PPforCT, but in a context too broad to be relevant for the review.
2. Explicit focus on PPforCT (too narrow) – The study focused on PPforCT, but in a way that was too narrow or specific, limiting its applicability to the broader review objectives.
3. Full text not available – The study was identified as relevant, but the full text was not obtainable.
4. Full text not accessible – The full text existed but was inaccessible due to paywalls or other restrictions.

At this stage, each record was independently assessed by two reviewers, who could select one of two responses for each criterion: "yes" or "no". A single "yes" from either reviewer led to the exclusion of the record. In cases where assessments differed, the reviewers discussed their decisions to reach a consensus.

As part of the preparatory work in CADIMA, the two reviewers jointly proposed the introduction of keywords (Figure 4). These keywords were not used as formal inclusion or exclusion criteria but served as a supplementary tool to support the reading process. They remained marked in each text, helping reviewers navigate the content more efficiently. Additionally, they influenced the order in which texts were presented to reviewers, prioritising the most relevant ones first.

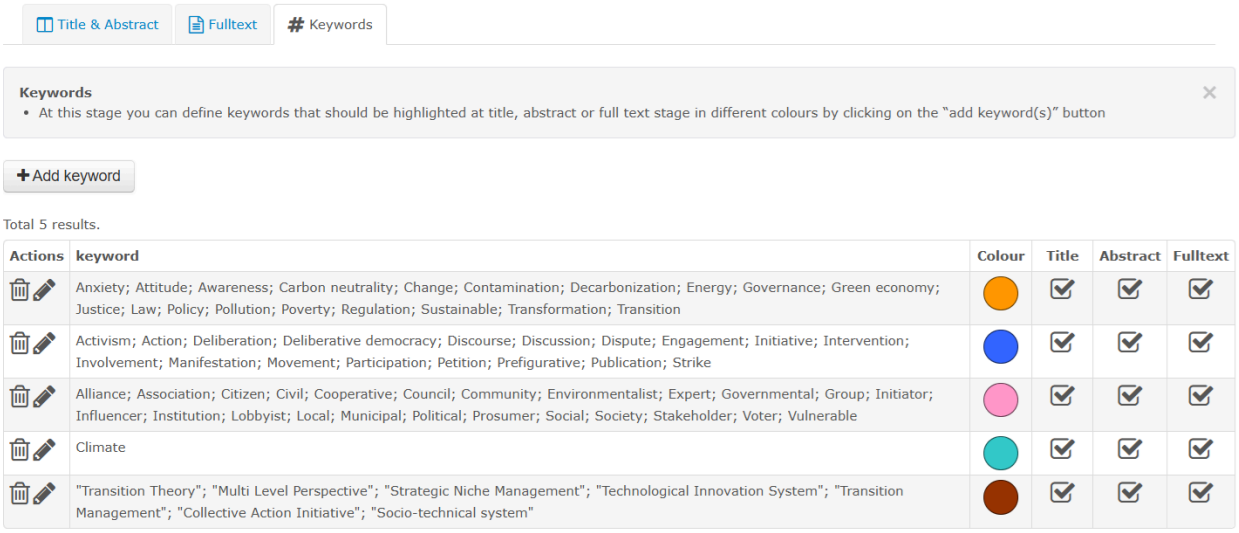


Figure 4. Keywords for study selection.

All the steps outlined above constitute the preparatory work, while the following section focuses on the analytical work carried out by the reviewers.

In the first step of the analytical work, following the preparatory phase, the two reviewers examined 410 titles and abstracts. The analysis of a sample text from this stage is presented in Figure 5.

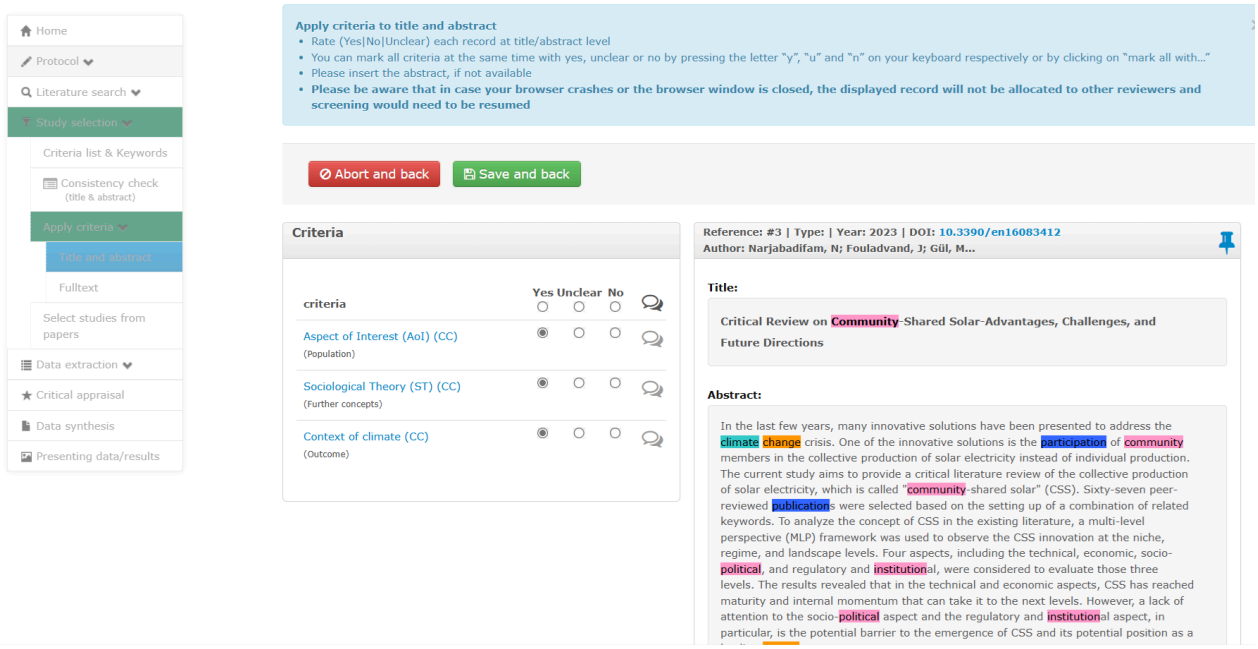


Figure 5. First step of the analytical work: Title & Abstract analysis.

In the second step of the analytical work, the two reviewers examined 252 titles and abstracts. Many of the texts were unavailable or inaccessible. The analysis of a sample text from the second step is presented in Figure 6.

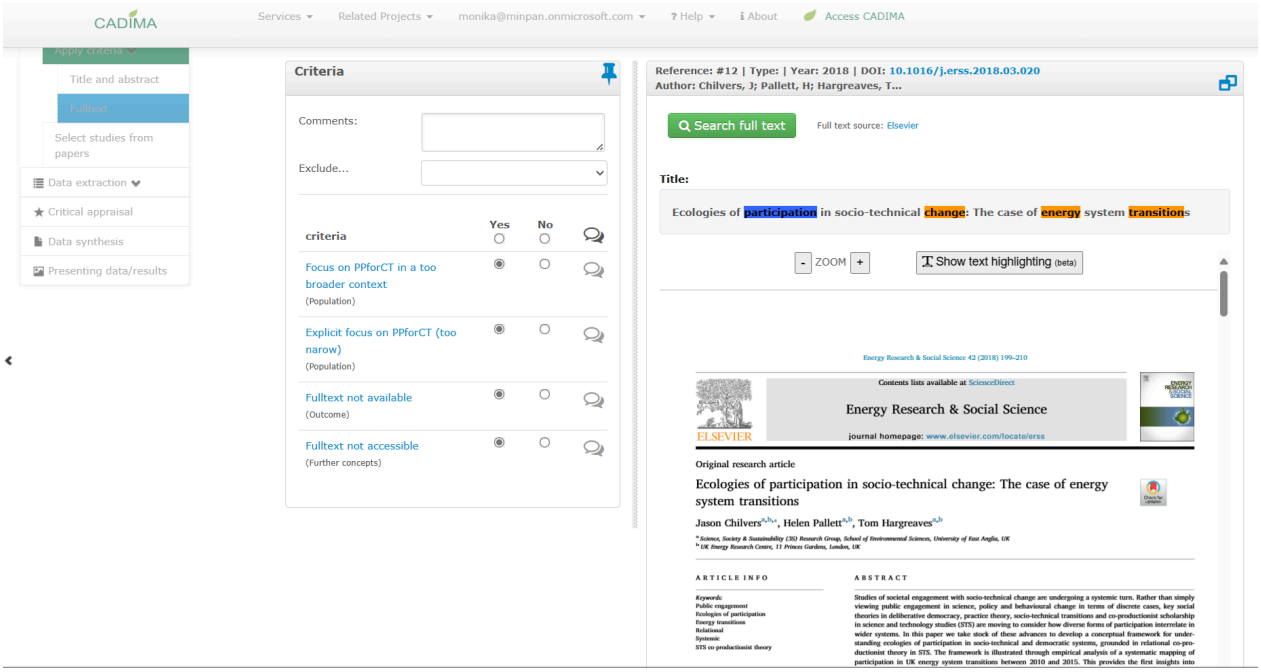


Figure 6. The second step of the analytical work: Full text analysis.

As a result of the reviewers' work, who read and analysed a total of 410 scientific articles within CADIMA, 77 articles were ultimately selected, forming the basis for further detailed work and quantitative analysis.

At the stage of quantitative and qualitative analysis of the final corpus of academic articles, we used the following tools (applications and software): VOSviewer (keyword network map), SciSpace (creation of tabular queries for occurrences of theories under review), MaxQDA (advanced key phrase search), Zotero (reference management), and DeepL (translation and language accuracy).

5.3. Quantitative analysis

The final step of the methodology was aimed at providing a quantitative analysis of the final selection of papers. Figure 7 presents the number of publications over the years from 2016 to 2025. The highest number of publications was recorded in 2018, reaching 20. In the following years (2019–2021), the number of publications was significantly lower, but it increased again in 2022, exceeding 12. The publication count remained relatively high in 2023 and 2024, whereas 2025 shows a noticeable decline (because the search was done at the end of 2024 year, so only some articles were already indexed in the databases, while the majority of them will be published and indexed in 2025 year). This quantitative corpus description, based on CADIMA results, highlights the fluctuations in the number of publications over time, which may indicate periods of greater research activity in a particular field. The peaks in publication numbers might correspond to increased funding, research interest, or significant developments in the domain. On the other hand, the lower numbers in certain years could be attributed

to changes in research priorities, funding availability, or external factors such as global stress events. For 2025, the observed publication count does not fully reflect the total number of expected publications but rather represents the state as of December 9th, 2024.

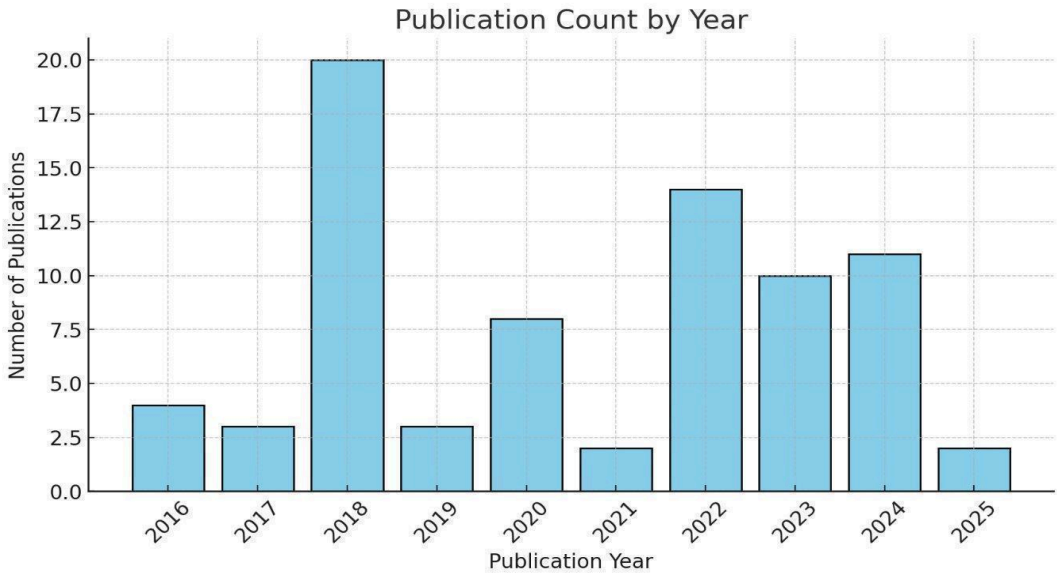


Figure 7. Number of publications in each year.

Figure 8 presents the distribution of publications across different publishers. The highest number of publications was from Elsevier.

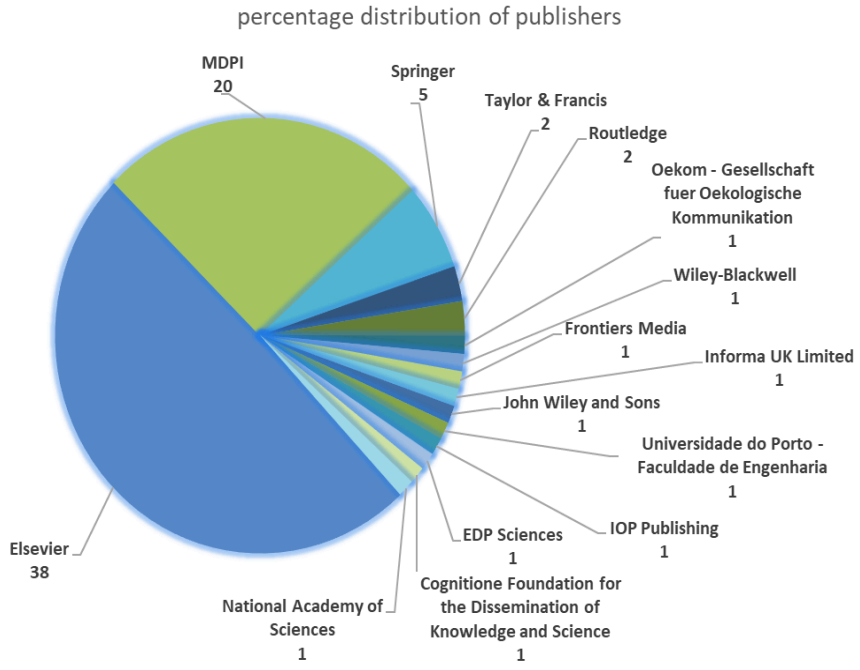


Figure 8. The structure of publishers.

6. CONCEPTUAL FRAMEWORK

In this section, the results of the analysis of six out of seven theoretical frameworks considered in the SLR are reported to illustrate their use in the course of analysing political participation processes, their forms, types, triggers, and management strategies. The socio-technical system is considered in the project as an overarching TF and one of the most widely accepted and discussed concepts in the tradition of science and technology studies. As a theoretical construct, STS was used at the stage of initial identification and selection of papers for SLR. However, it is such a general and broad framework that its detailed description and analysis would therefore be beyond the scope of this report. Thus, the description of STS is limited to defining the most important aspects of the framework. STS theory provides a framework for examining the relationship between the social and technical components of a system, aiming for joint optimisation to ensure overall system success, especially during transformational processes (Stranks, 2007). Socio-technical systems can comprise diverse interacting elements, including technology, regulations, markets, consumer behaviours, infrastructure, cultural significance, and scientific understanding (Geels, 2012). STS is recognised across the three analytical tiers of the Multi-Level Perspective: niche, socio-technical regime, and socio-technical landscape (Geels, 2002). However, transitions occur at the regime level when external environmental factors affect both the regime and the niche (Rotmans et al., 2001).

Taking this definition as the broadest theoretical framework within which various approaches seek to study, explain or support the processes of innovation emergence and the creation of conditions for transformation, we proceed as follows.

The following sections report the SLR results for Transition Theory, followed by complementary, broadening or specifying TFs: the Multi-Level Perspective, Strategic Niche Management, Transition Management and Technical Innovation System. Finally, a focus on Collective Action is presented.

In this section, we draw on literature not included in the SLR, including works published earlier than 2016, to introduce key aspects of the subsequent TFs before analysing their use and the context in which they appear in the corpus of papers analysed.

6.1 Transition Theory (TT)

Transition theory (TT) is a collection of various attempts to understand and explain past transitions, extrapolate conclusions and predict the hypothetical paths for future transformational processes. TT offers a number of useful analytical frameworks that show how socio-technological systems change. They differ in the epistemological and ontological assumptions of the processes studied, as well as the methodological foundations adopted (Geels, 2010). Among the most frequently cited authors and frameworks in the analysed corpus of texts are:

- Multi-Level Perspective (Geels, 2002; Geels & Schot, 2007; Rip & Kemp, 1998; Smith et al., 2010).
- Strategic Niche Management (Kemp et al., 1998; Raven & Geels, 2010; Rip & Kemp, 1998; Smith, 2007).
- Technological Innovation Systems (Bergek et al., 2008; Hekkert et al., 2007; Markard et al., 2015).
- Transition Management (Kern, 2012; Loorbach, 2010; Rotmans et al., 2001).

The use of individual frameworks and specific areas of their application can be seen by analysing the frequency of their occurrence in keywords and their connections. The map below (Figure 9) visualises the network created by analysing the abundance of individual keywords and their co-occurrence within each of the analysed papers. The frequency of occurrence of a given keyword is reflected in the size of the label, while the colours indicate clusters created based on the frequency of co-occurrence of individual keywords within each paper.

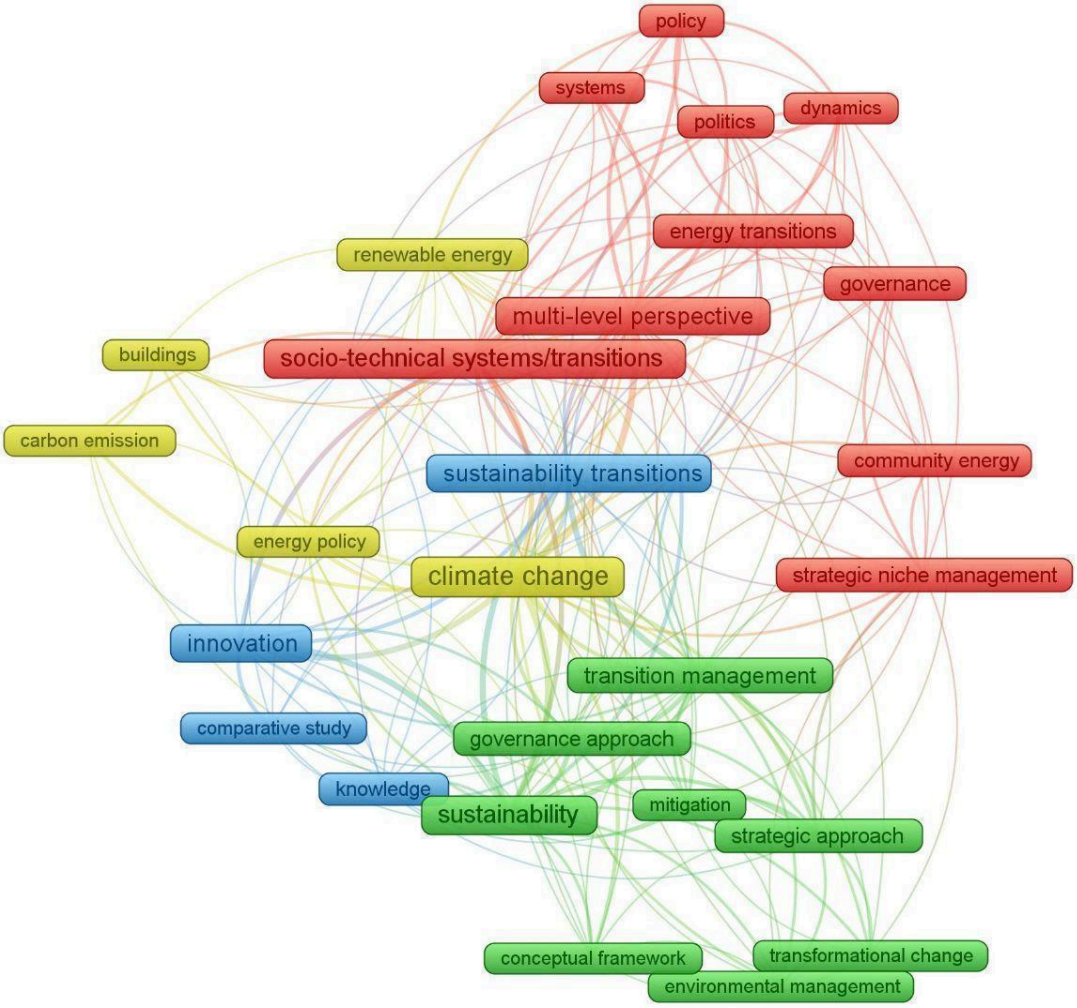


Figure 9. Visualisation of keywords network within analysed papers.

Transition theory is used in the analysed corpus of texts to study phenomena of a diverse nature. In the context of energy transition, the Transition Theory examines the transition from fossil fuels to renewable energy sources by exploring the interactions between energy systems, socioeconomic factors and policy changes, with the goal of understanding and facilitating a sustainable energy future (Lee et al., 2020; Poelsma et al., 2025).

Transformational experiments, which are innovative initiatives to bring about social changes, are considered key within the TT framework in fostering systemic innovation through social learning and are essential for scaling successful practices (Hirt et al., 2020). In addition, transformational governance is recognised in the TT framework as a management approach that integrates complex systems theory with practical experiments to manage long-term change by embedding sustainability goals and learning from previous experiments (Hirt et al., 2020; Moradi & Vagnoni, 2018). The framework also highlights the significant role of actors, their interactions, and governance arrangements in driving long-term energy and low-carbon transitions (Bosman & Rotmans, 2016; Topaloglou & Ioannidis, 2022) and has been applied to both historical and contemporary transitions to analyse the dynamics of "green" innovation and regime shifts (Poelsma et al., 2025).

6.2. Multi-Level Perspective (MLP)

The Multi-Level Perspective (MLP) is one of the most frequently cited frameworks in the corpus of texts analysed. Its concept originates from the works of Frank W. Geels. Geels defined MLP as an important tool for better understanding how different elements of socio-technical systems interact and influence each other, ultimately shaping pathways toward innovation and change (Geels, 2002; 2006; 2010; 2011).

With reference to the source studies of the MLP concept in the corpus of papers analysed, MLP is perceived as a framework for comprehending socio-technical transitions that emphasise how systems evolve as a result of interactions between regimes (old systems), niches (new ideas), and landscapes (broader social tendencies). It is an abstract structure employed to comprehend socio-technical transitions, specifically focusing on the mechanisms through which innovations arise, mature, and become integrated into society via interactions across various system levels (Geels et al., 2018; Ko et al., 2019; Kuhmonen et al., 2024). MLP emphasises the necessity of systemic change that encompasses political, technological, economic, social, and cultural factors to effectively address challenges such as climate change and promote sustainability (Geels et al., 2018b; Hoicka et al., 2022).

Socio-technical systems are structured as a nested hierarchy that comprises three distinct levels: the micro-level of niches, the meso-level of regimes, and the macro-level of the landscape. Consequently, the MLP serves as both an analytical and heuristic tool for systematically mapping and navigating diverse elements and dynamic forces at play within socio-technical systems (Jenkins et al., 2018; Kuhmonen et al., 2024).

References to the MLP were found in 56 of the 77 papers analysed. The framework was most often used in research and analysis related to energy and energy transition (23 papers) and issues related to food and agriculture (10 papers). Eight studies implemented the MLP framework in an urban context, six focused on transportation and mobility, and five on governance and policy implementation. Other topics included bioeconomics, circular economy, and overview studies.

As an interdisciplinary approach, the framework draws on the contributions of a range of academic disciplines to provide a comprehensive understanding of technological change and system innovation as it evolves over time, emphasising the importance of considering both the elements of stability and drivers of change in socio-technical systems.

Although MLP provides a robust toolkit for analysing transitions, it has limitations. Petrovics et al. (2022) pointed out the limitations of the MLP in identifying the specific conditions that enable transitions while suggesting that more consideration should be given to the coupling between local and global scales. The framework is also limited in its ability to explain the social and geographic (place-based) context of processes (Torrens et al., 2018; Yildiztekin & Erol, 2022) or, more broadly, to study the specific details of niche building (Byrne et al., 2018). Criticism of MLPs has been associated with a strong focus on technological rather than social innovation and issues of social structures (El Bilali, 2020; Irshaid et al., 2021; Yildiztekin & Erol, 2022).

6.3. Strategic Niche Management (SNM)

Strategic Niche Management is a concept that, as a research approach, provides a framework for conducting analyses related to the development of innovations in niches; thus, it is directly related to the Multi-Level Perspective. SNM is also a policy tool for creating protected spaces or niches where technologies and practices can be developed and tested without the risk and the direct pressure from the dominant socio-technical regime, intending to foster wider transitions by synchronising technical and social dimensions (Kemp et al., 1998). In other words, these niches act as essential settings in which innovations can be created and evaluated without the direct pressures of the prevailing socio-technical system (Geels et al., 2018). This enables new technologies to stabilise and ultimately be integrated into the existing regime (El Bilali, 2020; Yiğit Barut & Arslan Selçuk, 2024).

In the studies analysed under SLR, researchers applying SNM focused on aspects concerning the early implementation of innovations, including the processes that determine the successful development of a niche (Petrovics et al., 2022; Warbroek et al., 2018) and the experiments conducted to learn and create the impetus for breakthrough and adaptation of innovations at the level of the socio-technical system (Yiğit Barut & Arslan Selçuk, 2024). The fundamental processes and mechanisms of SNM encompass the expression of expectations and visions, the development of social networks, and the learning process (El Bilali, 2020). Niches serve as strategic locations for acquiring knowledge, developing new social connections, and enhancing innovation (El Bilali, 2020). Learning is a central component of SNM, encompassing experiential, social, and technical learning. This learning process is essential for the development of both technological and market niches as it aids in refining innovations and preparing them for wider adoption (Geels et al., 2018; Lee et al., 2022). Intermediaries play a critical role in SNM by distilling the lessons learned from current initiatives and offering transferable knowledge to new ones. This process supports the consolidation of learning and replication of successful practices, thereby increasing the niche's influence on regime actors (Ashford & Hall, 2018). The formation of niches is a phased process, starting with isolated initiatives and progressing to the aggregation of knowledge across various initiatives, ultimately leading to the consolidation of a robust niche capable of strongly influencing the regime (Ashford & Hall, 2018).

Some authors have also pointed out the limitations and shortcomings of the SNM framework. Ashford and Hall (2018) extensively discuss the possibilities of using SNM to create technological innovations while showing the limitations of this framework and the important role of the government as a crucial actor in building the transformative potential of innovations emerging from the niche. Thus, the cited

authors treat SNM as a useful complement to the existing policy instruments (Ashford & Hall, 2018). Some authors also point out some limitations of SNM in identifying and analysing the contexts, mechanisms, and conditions of niches in which particular initiatives, experiments, and innovations translate into transformative potential (Petrovics et al., 2022; Torrens et al., 2018) and especially address the complexities of niche-regime interactions (El Bilali, 2020).

6.4. Technological Innovation System (TIS)

The Technological Innovation System is a concept from innovation research that describes technological transformation via dynamic networks of actors engaging within particular economic sectors, concentrating on the creation, distribution, and application of technology (Carlsson et al., 2010). This method is utilised at various levels, including knowledge areas, products, and associated technologies, and has proven particularly successful in elucidating the advancement and spread of sustainable technologies (Jacobsson & Johnson, 2000). Since its inception in the early 1990s, TIS was introduced to build a "better foundation for technology policy" and the later development of the so-called functions approach to identify various system approaches (Bergek, 2019). The TIS framework is most commonly used to analyse the transition of sectors such as energy, transport, and food systems (Andersson et al., 2023).

Based on the papers examined in the SLR, Technological Innovation System may have various beneficial analytical uses. TIS framework can be applied to identify system weaknesses that should be addressed by public policies to support the development of new technologies. This approach may help in understanding the dynamics of specific technological innovation systems by understanding the main regime destabilisation functions (Kivimaa & Kern, 2016). TIS studies often aim to identify the system weaknesses that public policy should address to support new technologies, including both supporting innovations and destabilising existing regimes (Kivimaa & Kern, 2016). The TIS framework may help identify drivers and barriers (blocking mechanisms) for new technology and innovation adoption (El Bilali, 2020). The approach emphasises both strengths, such as a systemic perspective on innovation, the ability to explain success and failure, and the provision of policy advice, as well as weaknesses, including a bias towards technical innovations and the challenges faced by emerging innovations in competing with established systems (El Bilali, 2020).

6.5. Transition Management (TM)

Transition Management is a governance concept that relies on complex systems theory and an applied experimental method (Loorbach, 2010). The TM framework was designed to support and direct societal transformations, especially concerning sustainability, through participatory, experimental, and learning-focused methods. TM is a concept aimed at addressing the intricate and evolving characteristics of sustainable development, encompassing various stakeholders and levels (Kemp et al., 2007; Meadowcroft, 2009). The method functions on three levels—landscape (macro), regime (meso), and niche (micro) (Geels, 2002)—to promote radical innovations, question current practices, and ultimately enable a total transition of societal systems towards sustainability (Kemp et al., 2007).

TM focuses mainly on the management and governance of sectoral transition processes (El Bilali, 2020). Based on a review of the corpus of articles, TM is a governance concept that integrates complex systems theory with practical experimental approaches to manage long-term societal, economic, and environmental changes, aiming for sustainability that brings it close to the fairness and spatial justice perspectives (Topaloglou & Ioannidis, 2022).

A just transition management approach has the potential to neutralise threats by creating long-term visions, building strong networks, and securing public support, which promotes policy stability (Goddard & Farrelly, 2018). It also offers a well-defined structure to evenly allocate transition costs and advantages, while involving marginalised groups and avoiding incomplete transitions that may result in energy inequity (Goddard & Farrelly, 2018).

TM also emphasises the importance of democratic, deliberative, and representative management of transitions, which can be augmented with 'just transition' concepts. This can be achieved by conducting transition experiments of the steps needed to get closer to the identified vision (Poelsma et al., 2025). TM has the potential to create the long-term vision needed to defy blockages and build strong networks of niche actors at different scales, such as trade unions and local communities (Goddard & Farrelly, 2018).

The TM framework is highly effective in steering intricate societal changes by offering a systematic method for addressing issues, imagining future directions, and fostering niche innovation opportunities. Nonetheless, it faces criticism for its insufficient focus on the learning processes in transition experiments and its failure to properly address the relationship between agency and structures (El Bilali, 2020).

Finally, SLR data indicate that TM provides a framework for understanding long-term changes. This means that it can be used alongside the Strategic Niche Management approach to analyse technological and social change to initiate sustainable innovations at the niche level towards achieving climate goals (Yiğit Barut & Arslan Selçuk, 2024).

6.6. Collective Action Initiative (CAI)

Collective action has long been at the core of sociological and philosophical sciences. Based on this long tradition, it is challenging to find a comprehensive and shared definition of Collective Action. To the scope of the CO-SUSTAIN project and this SLR, CA is defined as any situation where there is cooperation between at least two individuals while CAI is the approach that people adopt to address issues that they cannot resolve on their own (Gregg et al., 2023).

CAIs can adopt various types of management and organisational structures: from working groups, grassroots organizations, and foundations to neighbourhood associations and cooperatives (Gregg et al., 2020). Such a broad definition does not allow the identification of the theoretical framework of CAI. CAI is mostly adopted in research in the energy domain to refer to citizen-led energy initiatives while it is not widely used in the collected literature. The concept of collective action in the context of community-based initiatives has been discussed in several sources selected in the SLR. Therefore, based on the example of grassroots energy communities, a ‘re-consolidated’ framework for the definition of CAI is considered.

In the view proposed in the SLR, Collective Action Initiatives are organised efforts that bring together a wide range of stakeholders, especially from the private sector, to address complex issues such as corruption or energy transition, with the primary goal of improving the business climate or achieving common goals through joint efforts.

In the framework of the energy transition, CAIs are crucial, as they promote the decentralisation and democratisation of energy systems via inclusive processes that involve a range of stakeholders, such as citizens, municipalities, and businesses (Petrovics et al., 2022; 2024). These efforts aim to align economic, social, and environmental demands, thus aiding low-carbon energy shifts and enhancing community empowerment (Petrovics et al., 2022). CAIs are characterised by value dynamics – which explore value sets brought together by different socio-technical components (Melnyk et al., 2023). They often benefit from supportive policy frameworks and serve as a form of social innovation dedicated to achieving more democratic decision-making, empowering communities, and promoting values such as sustainability, equity, and social justice (Petrovics et al., 2024).

7. FORMS OF POLITICAL PARTICIPATION

Forms of political participation can be broadly defined as citizens' legal activities aimed at influencing government decisions, political outcomes, or the broader political sphere (Verba et al., 1980). These activities also include those designed to influence civil society or social behaviour patterns (Norris, 2002), which brings political participation closer to the term civic engagement (Zukin, 2006). An important element closely related to political participation is political trust. Since the researchers allow two opposing hypotheses about the negative and positive relationship between these two dimensions, in a small sense, it can be considered as a type (form) of political participation: based on the lack of political trust (Gamson, 1968) or can be a consequence of high political trust (Almond & Verba, 2016). There is also a third hypothesis (form), according to which the effect of political trust on political participation depends on the interaction with the sense of political awareness (Hooghe & Marien, 2013).

An important addition to the definition of political/citizen participation is its voluntary dimension (Huntington & Nelson, 1997) and (community) involvement (Dahl, 1976), which is one of the essences of democratic systems. These activities can be categorised into latent and manifest with two levels of political behaviour (individual or collective) (Ekman & Amnå, 2012), which is crucial for understanding the full spectrum of citizen engagement and is the main axis of the theoretical framework of the CO-SUSTAIN project[3].

[3] Further details about this taxonomy are provided in the Deliverable 1.2 of the CO-SUSTAIN project.

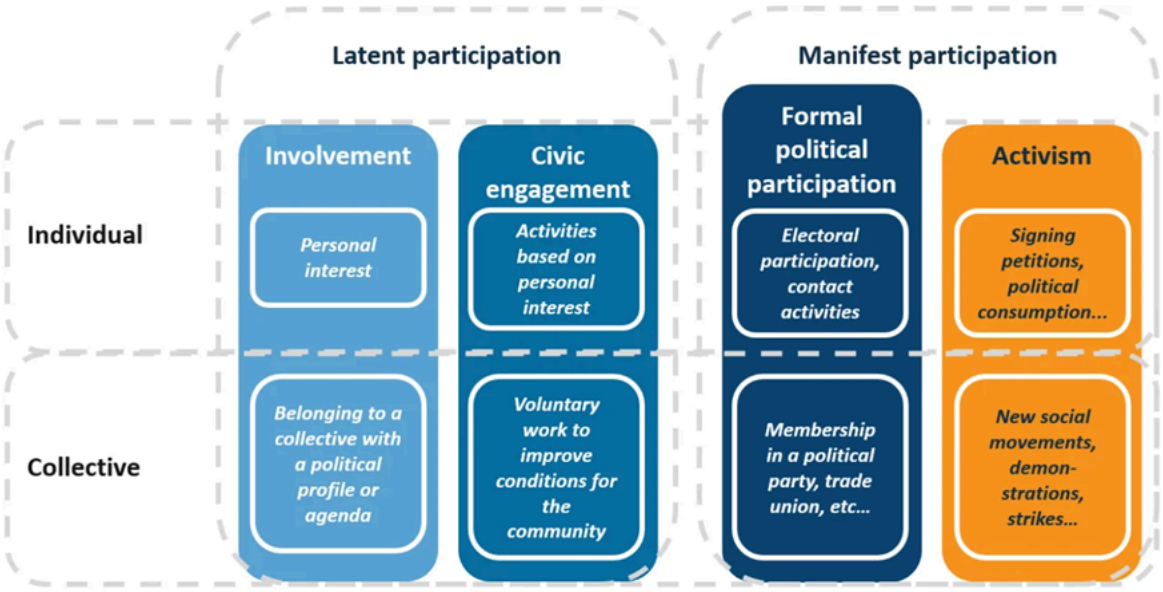


Figure 10. Latent and manifest political participation
(source: https://co-sustain.eu/historic-examples; based on: Ekman & Amnå, 2012)

Latent political participation refers to less direct or 'pre-political' (Talò & Mannarini, 2015) forms of engagement, encompassing an individual's readiness and willingness to take political action (Ekman & Amnå, 2012). In other words, latent participation involves indirect engagement that shapes political awareness. Ekman and Amnå (2012) conceptualise latent participation as having two main forms:

- Social Involvement (Attention).
- Civic Engagement (Action).

Manifest political participation refers to direct, observable actions aimed at influencing government decisions and political outcomes (Ekman & Amnå, 2012; Talò & Mannarini, 2015), and directly targets political institutions or decision-making processes.

Ekman and Amnå (2012) categorise manifest political participation into two main forms:

- Formal political participation.
- Activism (extra-parliamentary participation): legal or illegal[4].

Another important dimension of political participation is whether it is conventional (voting, lobbying, campaigning) or unconventional (protests, boycotts, civil disobedience) (Barnes and Kaase, 1981; Stockemer, 2014) and whether it is legal or illegal (legal extra-parliamentary activities, illegal extra-parliamentary activities) (Ekman & Amnå, 2012). This nomenclature often implies a negative view of less traditional activities. Therefore, it is worth mentioning the typology based on the results of multidimensional scaling, which identifies two main axes. The first dimension refers to actions 'within the

[4] For a detailed description of the concept by Joakim Ekman & Erik Amnå, see Deliverable 1.2 of the CO-SUSTAIN project.

system' versus 'outside the system,' and the second refers to actions 'progressive' versus 'conservative' (Sabucedo & Arce, 1991). The intersection of these two axes finally leads to the identification of four forms of political participation defined by 'electoral persuasion', 'conventional participation', 'violent participation', and 'direct non-violent participation' (Sabucedo & Arce, 1991, p. 100).

Based on the literature collected in SLR, several analyses that are saturated with examples of latent forms of political participation can be identified. An illustration of civic engagement (action) is the work of Julie MacArthur (MacArthur, 2016), who studies energy transition activities in Canada and Denmark, to illustrate both the promise and the challenge of public engagement and the role of political culture in shaping participation, which may indirectly involve political party dynamics. Hidden forms of political participation are reflected in civic engagement, such as participatory budgeting, where residents co-decide on the distribution of resources. Another example is civic control through direct management of resources, e.g. community energy projects, which enable citizen partial control through direct ownership of assets and thus control of part of the energy sector. Such mechanisms democratise decision-making processes, reducing the dominance of political and economic elites.

Social involvement (attention), as a latent form of political participation, manifests through heterogeneous collective practices that engage individuals in addressing public issues, such as energy-related challenges, by shaping meanings, knowledge, and social organisation. Such conclusions can be drawn from the results of a systematic mapping of 30 cases of the UK energy system transitions between 2010 and 2015 carried out by Chilversa, Palletta and Hargreaves (Chilvers et al., 2018). These participatory practices, including citizen science, protests, and digital democracy, highlight the interconnectedness between individuals, material infrastructures, and political processes, influencing socio-technical change through both resistance and collaboration. Energy participation practices are significantly influenced by the motivating factors of the energy system as a constitution. 'This includes prevailing constitutional relations between citizens, science and the state and hegemonic imaginaries of scientific and economic progress' (Chilvers et al., 2018, p. 208).

As illustrations for the manifested forms of political participation, some case studies are presented, based on SLR. It should be emphasised that there are far fewer examples of manifested forms of participation, and when they appear, they are based on evaluations of existing transformation policies. An example of this is a study of transition modes in the region of Western Macedonia (Greece) (Topaloglou & Ioannidis, 2022). Here, the researchers, focusing on a critical evaluation of the transition policy model at the central, regional and local levels of government, noted that the imbalance between regime and niche actors leads to inadequacies in terms of legitimacy, inclusiveness, public involvement and, ultimately, the overall effectiveness of policies. That is, the shift toward networked social structures, driven by economic, technological, demographic and climate change, creates complex formal and informal linkages that produce system imbalances (Topaloglou & Ioannidis, 2022). Also appearing in the collected base are examples of how the formation of grassroots niches often depends on the capacity of established organisations. A paper analysing governance innovations for sustainable development in Seoul cites Wolfram (2017), who provides examples of networking and management of grassroots initiatives (legal activism) in the context of urban development.

An interesting example of network-based political participation (a collective form of activism) is the study of local governance initiatives in greenspace in urban areas (Aalbers et al., 2019). Here, the researchers, based on 14 case studies from the Netherlands, noted that integrating green space with social and economic development can be successful when the agreement of niche initiatives with the municipality is in line with the current social climate and the chosen political direction (Aalbers et al., 2019).

An important aspect of the debate is the issue of formal paths to political participation, such as membership in trade unions or parties. The authors of a study on gendered power asymmetries in the United Kingdom and the United States (Braunger & Walk, 2022) in the context of coal transitions note that these institutions of formal participation are often exclusive, and a dimension such as gender can be exclusionary to mass participation.

Forms of political participation encompass diverse strategies, from grassroots activism to policy engagement, as seen in groups like Brazil's Landless Workers Movement, the New York food movement, and the Sustainable Ecovillage Movement, which leverage advocacy, coalition-building, and institutional mobilisation to drive systemic change. These efforts highlight the interplay between grassroots initiatives and mainstream institutions, demonstrating how relational, dispositional, and structural powers shape socio-technical transitions through sustained, multifaceted participation (Ilieva & Hernandez, 2018).

An important dimension that determines the form of political participation is the direction of the flow of mobilisation factors. This reflects the presence of innovations (mobilisation of resources to effect change) that may follow either a 'bottom-up' or 'top-down' trajectory. In studying three differently scaled German bottom-up renewable energy initiatives to address this gap, David and Schönborn (2018) found that during the adoption phase, the analysed narratives travel easily. They sometimes shift away from their original participatory ideals toward promoting socio-technical systems. This observation provides evidence that transformational directions can change during the process (David & Schönborn, 2018).

Finally, it is worth noting the relationship between different forms of participation and the role of actors interacting with each other and the implications this has for the motivation system of active citizens. As seen in the results of research based on qualitative interviews with citizens active in sustainable development in seven European countries (Fischer et al., 2018), individual actions influenced by education and awareness of sustainability also contribute to political engagement. In addition, formal governance processes such as regulation and decentralisation facilitate broader collective action. These diverse forms of participation highlight the dynamic interactions between citizens, governments and other actors in developing sustainability initiatives (Fischer et al., 2018).

8. TRIGGERS OF POLITICAL PARTICIPATION

The reasons why individuals and groups undertake different forms of civic engagement or politics have a variety of backgrounds and have been the subject of many studies in the social sciences, political sciences and psychology. One broader definition is offered by Putnam, indicating that civic engagement is 'people's connections with the life of their communities, not merely politics' (Putnam, 1995, p. 665). Looking for a stricter definition of political participation, one cannot ignore the work of Verba, Scholzman and Brady (1995), in which they indicate that political participation gives society members in democratic

systems ‘an opportunity to communicate information to government officials about their concerns and preferences and put pressure on them to respond. [...] It is the activity that has the intent or effect of influencing government action – either directly by affecting the making’ (Verba et al., 1995, pp. 37–38). The authors point to three key groups of triggers as predictors of political participation.

The first factor relates to access to resources that enable individuals to participate in political processes. These include appropriate knowledge, skills and competencies, time, as well as financial resources. The second factor is related to an individual's motivation to become active. This is also referred to as psychological commitment and is related to issues such as the level of interest in an issue or a sense of agency and effectiveness. The third and final aspect is linked to the so-called ‘recruitment networks’ through which an individual is introduced to politics or encouraged to participate. These can be leaders, interest groups, and parties or social movements, non-governmental and civil society organisations (Verba et al., 1995). With regard to recruitment networks, Florence Passy adds an important perspective by pointing out the important role of broadly defined social networks in building engagement in collective action initiatives, but also by pointing out that different forms of participation are associated with different motivational characteristics (Passy, 2006).

An interesting view on factors that increase the motivation to engage in civic and political activities was provided by Bert Klandermans (1997). These factors affect the individual directly and are the main source of demand for participation.

The first reason why participation in a movement may be attractive to people is related to their desire to change their position, situation or conditions in which they find themselves. This type Klandermans refers to as instrumentality and relates it to those forms of participation that are associated with attempts to influence the political or social environment. Instrumentality is linked to resource mobilisation and can be analysed based on theories such as political process and social movement theory, expectancy-value, or rational choice theories. Willingness to engage is also linked to identity and refers to treating engagement as a manifestation of identification with a group. This is because individuals are also inclined to engage because of their desire to act as members of their group. Understanding this aspect is made possible, among other things, by social-psychological theories of social identity or those of sociological concepts that discuss collective identity as one of the elements of social involvement. The reasons why an individual engages in civic and political activities are linked to ideology, which, in this case, is used to express one's feelings, and views or make sense of one's world. Thus, it is a form of seeking meaning and manifesting one's beliefs. Explaining this sphere of factors is explored by psychological theories of social cognition and emotion, as well as approaches that analyse social movements from a meaningful, emotional, moral reasoning, cultural or narrative perspective (Klandermans 1997).

Klandermans treats each of these three sources of involvement (instrumentality, identity, ideology) equally, indicating that the analysis of the triggers of political activity should not ignore any of these outlined perspectives (Klandermans, 1997). In his research, Klandermans also uses the metaphor of demand and supply in the context of political participation and especially political protest. As he points out, ‘The demand-side of participation requires studies of such phenomena as socialisation, grievance formation, causal attribution, and the formation of collective identity. The study of the supply side of

participation concerns such matters as action repertoires, the effectiveness of social movements, the frames and ideologies movements stand for, and the constituents of identification they offer. Mobilisation is the process that links demand and supply. Mobilisation is the marketing mechanism of the social movement domain, and thus the study of mobilisation concerns such matters as the effectiveness of (persuasive) communication, the influence of social networks, and the perceived costs and benefits of participation' (Klandermans, 2007, p. 361).

Thus, viewed from the perspective of collective action initiatives without the likelihood of engagement in public affairs materialising is a combination of these three factors. Sometimes, social discontent or disagreement is unlikely to become institutionalised in the form of collective action unless there is a leader or organisation capable of staging any action. However, no organisation can succeed if its goals and demands are not supported by citizens. Finally, a proper, effective mobilisation campaign is necessary for the two sides to come together (Klandermans, 2007).

An important dimension of analysing the papers included in the literature review in terms of triggers for collective initiatives is also the identification of hotspots, i.e., specific issues, concerns or, most generally, reasons why the need for interest, engagement and formal participation or activism in the context of the climate imperative may be growing in individuals.

The flashpoints triggering engagement are linked to environmental pressures, including the wide range of climate and environmental consequences that human activities lead to. Many researchers point to the fact that creating awareness as an initiating factor is a key element (Chilvers et al., 2018; David & Schönborn, 2018; Kuhmonen et al., 2024; Preston, 2024). Awareness of the worsening climate crisis forms the basis for building the belief that significant social change is needed (Fischer et al., 2018). This awareness emerges as a result of various factors, which will be discussed below.

Rositsa T. Ilieva and Andreas Hernandez (2018) point out that issues of climate change-induced disruption of existing food production, distribution and consumption processes are also an important trigger for engagement. The authors analyse three case studies, highlighting initiatives from the US, Brazil and Senegal. While each case presents a different story of collective initiatives, their common denominator is environmental pressures and their consequences for feelings of deprivation, deepening exclusion and social, economic or health inequalities, as well as the lack of representation that is a source of motivation to act for change (Goddard & Farrelly, 2018; Ilieva & Hernandez, 2018). Often, the trigger is the desire to pursue one's own needs or protect one's interests (Braunger & Walk, 2022; Wolfram, 2017). Consciousness is thus born out of a concrete, individual experience shaping or reinforcing values such as caring, solidarity and social commitment (Melnyk et al., 2023). This, in turn, triggers a belief in the need for meaningful social change, which can catalyse political participation and activism, especially when the government is perceived to be ineffective in implementing key changes (Fischer et al., 2018; Melnyk et al., 2023). An example is the social movement triggered by the lack of consideration of the climate imperative in modernisation plans (Torrens et al., 2018). Experience can also be shaped as a result of a significant historical event affecting the consciousness of society as a whole. An example is the Chernobyl disaster, cited in David and Schönborn (2018), which has served as a significant trigger for activism against nuclear energy, motivating individuals to engage in local energy solutions.

Some of the papers indicate the important role of existing discourses and narratives in creating awareness of an issue and motivation to act (Birat, 2020). Kuchmonen et al. (2024) show, using the example of social discourses related to ethics, the environment, health, food security and global markets in the context of food systems, that discourses can trigger changes in preferences and consumption habits, motivating individuals to engage in activism against commercial animal production (Kuhmonen et al., 2024). Interesting insights into the role of narratives and discourses are introduced by David & Schönborn (2018), showing how a proper framing of energy transitions pointing to the importance of civil society's participation as a key factor for the success of transitions can trigger formal political participation. Discourses and narratives can thus contribute to raising awareness and motivation for individual and collective climate and environmental action (Preston, 2024), creating niches and fostering knowledge development: the creation, sharing and application of information and experiences (Schiller et al., 2023). At the same time, the negative framing of actions in support of sustainable transformation within prevailing discourses and narratives can lead to social mobilisation and different forms of engagement to stop change and defend the different elements that make up the regime (Braunger & Walk, 2022; Petrović, 2023) or deter action, as happened in the Gladstone region, where the portrayal of renewable energy as a threat to jobs led to a reluctance of community members to engage with environmental issues (Goddard & Farrelly, 2018).

The various communication channels through which knowledge and information are shared, for example, through the presence of a topic in the media or through ongoing educational activities, play a key role in shaping and disseminating community narratives and discourses. An example is the creation of awareness among farmers about sustainable practices in the agricultural sector through media messages, public extension services and education programmes, which stimulated engagement and reduced prejudices, serving as a trigger for political participation (Yildiztekin & Erol, 2022).

A final important source of motivation and trigger for engagement that emerges from the analysis of the research described in the corpus of articles is the issue of identity and community. Wolfram's text indicates that the emergence of grassroots initiatives in urban contexts is often triggered by the need to address self-defined community needs, which fosters interest and engagement among residents (Wolfram, 2017). The role of social networks and grassroots initiatives is also recognised by David & Schönborn (2018), concluding that the establishment of local initiatives often relies on social capital, such as community networks and voluntary actions, which can enhance civic engagement and participation.

9. STRATEGIES TO FOSTER POLITICAL PARTICIPATION IN SOCIETAL TRANSITION

The holistic strategies for managing and directing political participation towards meaningful transition processes to address climate imperatives present in the texts analysed refer most closely to existing frameworks, which are described in Section 6. Much attention is thus given to creating conditions that foster innovation and collaboration through the creation of protected spaces for experimentation, through mechanisms for networking actors and appropriately designed public support, present in Transition Management, Strategic Niche Management or Technological Innovation Systems.

However, conclusions and recommendations based on the results of the research, case study analysis and desk research provide more nuanced insights. They show, above all, how the individual assumptions of

these frameworks are implemented and how specific actions and practices affect political participation, especially those related to sustainable transformation. These insights, derived from the analysis of 77 papers included in the literature review, are presented below in several thematic categories.

The first of the relevant aspects discussed in the texts is related to the strategy of policy enactment and governance. In their analytical paper, Topaloglou & Ioannidis (2022) argue for a holistic view of the transition process because of its long-term impact and the profound environmental, social and economic transformations it entails. According to the quoted authors, the transition process is so complex and multifaceted that it cannot be properly carried out by delegating tasks to specific bodies and creating structures for top-down management of the transition and implementation of policies. Instead, they propose the introduction of differentiated policies within multi-level and multi-scale governance, introducing a hybrid or bottom-up approach instead of the ineffective and limiting legitimacy, inclusiveness, and public engagement top-down approach. This, according to the authors, enables the integration of activities across levels of government and increases local control over the process by taking into account multiple perspectives and goals, while bottom-up governance increases community engagement (Hoicka et al. 2022; Topaloglou & Ioannidis, 2022). Arguments about the need for a holistic view of transition processes are shared by a team of researchers analysing the carbon-neutral transition in Kyoto. They point out that ensuring coherence between climate policies and other public policies at different levels of governance is essential to driving change in energy systems (Kobashi et al., 2025).

Topaloglou & Ioannidis (2022), already cited, as well as Fridahl & Johansson (2017), also point to the important role played by the government as a coordinator in setting clear goals and introducing regulations that guide stakeholder action and stimulating innovation. Ashford & Hall (2018) also look at the role of government in a similar way, stating that governments should play an active role in setting clear and binding climate targets and in creating regulations that guide action and mobilise public support for the transition. The paper also argues that regulation-induced innovation is likely to result in many significant changes, suggesting that stringent regulation can stimulate fundamental product and process innovations (Ashford & Hall, 2018). The role of regulation in sustainable transition is also mentioned by Preston (2024), indicating that legal developments, such as court decisions that recognise the duty of care regarding climate change, can inspire individuals and organisations to take action, thereby increasing formal political participation. The study by Schiller et al. (2023) is another example of the role of government and formal regulation in managing the transition. In analysing the process of agricultural evolution in Nicaragua towards agroecology, they concluded that the institutionalisation of agroecology into national law and the creation of dedicated multi-stakeholder networks provided a formal framework that encouraged political participation and activism among farmers and organisations.

The second aspect that very often resonates in the papers analysed in the literature review relates to the creation of an enabling environment for stakeholder engagement and participation. The key issue here is to organise deliberative processes with the inclusion of as wide and diverse a group of stakeholders as possible and keeping in mind vulnerable groups and those in opposition to change (Arlati, 2024; Braunger & Walk, 2022; Hirt et al., 2020; Kivimaa & Kern, 2016; Ko et al., 2019; Kobashi et al., 2025; Kuss & Nicholas, 2022; MacArthur, 2016; Poelsma et al., 2025). Ensuring broad access for diverse social actors in transformational decision-making increases the legitimacy and acceptance of actions and involvement in

policy-making that takes into account different perspectives (Jørgensen et al., 2022; Van Der Voorn et al., 2023). This is particularly important in the context of ensuring transitional justice, the provision of which is a strong mobilising factor (Jenkins et al., 2018). In the case of transformation processes involving, for example, a shift away from the use of existing technology or raw materials, and thus a significant violation of the economic interests of specific occupational groups and sectors historically dominated by large industry, it is very important to involve trade unions in supporting a just transition and ensuring adequate support for workers (Braunger & Walk, 2022; Goddard & Farrelly, 2018). Furthermore, an understanding of the local socio-political and cultural context is crucial for political participation in climate transition efforts and transition governance (Frantzeskaki, 2022).

In the literature reviewed, the aspect of ownership and responsibility towards climate transition initiatives is also highlighted several times. Reviewing the findings of the studies, it can be seen that there is a feedback loop between participation and ownership. Empowering communities and local stakeholders increases the sense of ownership (Braunger & Walk, 2022; David & Schönborn, 2018; Melnyk et al., 2023; Topaloglou & Ioannidis, 2022). At the same time, when communities have a greater sense of ownership, e.g., in terms of transformational pathways developed together, responsibility for emerging infrastructure or implemented policies, their involvement and active participation in transformational processes increases (Ko et al., 2019; Narjabadifam et al., 2023).

It is also important to create appropriate information and communication procedures. This includes establishing clear communication channels, and broad and free access to information, thus empowering stakeholders and citizens. Co-creative consultation and decentralised policy-making structures can make governance mechanisms more effective and participation in the climate transition more informed (Topaloglou & Ioannidis, 2022). Similarly, awareness-raising campaigns (Irshaid et al., 2021) and educational programmes (Yildiztekin & Erol, 2022) have a similarly pro-participatory and engagement-enhancing impact. Petrovincs et al. (2024) complement the above indications with a further element of democratised knowledge distribution and transfer of best practices between initiatives and social actors.

Finally, it is also worth mentioning the element of strategy employed to direct and channel political participation towards meaningful climate transition, already mentioned when describing the triggers of political participation. It is about creating the right narrative and managing the discourse. The sources analysed emphasise the importance of creating legitimacy through discourse to foster the development of innovation and demonstrate its importance in effective governance to effectively channel political participation. This involves articulating a favourable vision or expectation that emphasises the relationship of innovation to the wider system or landscape environment (Arlati, 2024; Hoicka et al., 2022). Mintrom & Rogers (2022) further point out that developing narratives that support ongoing action can keep actor networks focused on their goals and the necessary steps to achieve them, thereby channelling political participation effectively.

While the authors cited above highlight the importance of discourse created from the position of actors managing transformative processes, David & Schönborn (2018) also point to the important role of bottom-up energy transition narratives. According to the cited researchers, this can effectively channel

political participation by emphasising civil society's role in local energy futures, thereby mobilising citizens to engage in decision-making processes.

Byrne et al. (2018) look at narratives from a different perspective, showing through the example of a study of solar PV development in Kenya that discourses and linguistic framing can also serve to advance vested interests that do not necessarily support a sustainable and just transition. This perspective is also supported by the findings of Antal (2019).

10. CONCLUSION

The Systematic Literature Review delves into the key role of political participation in defining and implementing strategies to address climate imperatives by analysing its forms, triggers and governance strategies. Behind the review conducted was a strong normative conviction that understanding these interrelated elements is essential to empowering citizens and enabling local decision-makers to support effective climate action. The document also has a practical value for the CO-SUSTAIN project and is intended as a theoretical knowledge bridge between the two empirical phases: the historical examples and the case studies[5].

The methodology adopted for the SLR included searching through scientific repositories, such as Web of Science, Scopus and Google Scholar, using specific search terms (search strings) related to change triggers, forms of participation, types of social actors and climate context. CADIMA software was used to screen, remove duplicates and manage the study selection process, which included two reviewers independently applying inclusion and exclusion criteria at the title/abstract and full-text levels. In addition, software such as VOSviewer (keyword association map), SciSpace (creation of tabular queries for occurrences of theories under review), MaxQDA (advanced key phrase search), Zotero (reference management), and DeepL (translation and language correctness) were used in the analysis process. The collected experience suggests the conclusion that despite the high development of tools based on artificial intelligence (AI) solutions, for the time being, it is not possible (using the above tools) to automate the process of providing a systematic literature review.

10.1. Summary of findings from the literature on triggers, forms, and management strategies of political participation for climate transition

The study distinguishes between latent and manifest forms of political participation. Latent participation includes less direct engagement, such as social involvement (attention) and civic engagement (action), which shape political awareness and can indirectly influence political processes, which is essentially a reiteration of the project's core taxonomy by Ekman and Amnå (2012). Examples include citizen science, participatory budgeting, and community energy projects. Manifest participation involves direct, observable actions aimed at influencing government decisions, categorised as formal political participation and activism (extra-parliamentary participation). The review also acknowledges the spectrum of participation from conventional to unconventional, and legal to illegal actions (Barnes & Kaase, 1981; Stockemer, 2014). Understanding these diverse forms is significant as it reveals the

[5] https://co-sustain.eu/about/

multifaceted ways citizens can engage in the climate transition, extending beyond traditional voting to encompass various initiatives and movements.

The literature cited in SLR identifies a number of factors (triggers) that motivate individuals and groups to engage in political participation for climate transition. These triggers, in the vast majority of referenced studies, emerge as a result of environmental pressures in the aftermath of the climate crisis and its impact on food systems, the energy system, urban planning and transportation. Understanding the climate crisis is the primary trigger for awareness and the will to act (Chilvers et al., 2018; Kuhmonen et al., 2024; Preston, 2024). These are often constructed by various factors, such as personal experiences with environmental change and significant historical events, such as the Chernobyl disaster (David & Schönborn, 2018). Existing discourses and narratives play a key role in shaping issues and motivating action, either for or against sustainable transformation (Kuhmonen et al.,2024, Braunger & Walk, 2022; Petrović, 2023). Effective communication channels, including media and educational programs, are essential in shaping these narratives and disseminating information (Yildiztekin & Erol, 2022). Finally, community identity and needs (Wolfram, 2017, David & Schönborn, 2018) serve as important triggers, with grassroots initiatives often emerging to solve self-defined community problems and leverage social capital to increase civic engagement. Recognising these various factors is important for understanding the underlying motivations for climate action and adjusting engagement strategies accordingly.

The review examines effective strategies for managing and channelling political participation towards meaningful climate transition. A key strategy involves policy enactment and governance that adopts a holistic, multi-level, and multi-scale approach, moving away from top-down management to integrate activities across levels of government and increase local control (Topaloglou & Ioannidis, 2022). Governments also play a vital role in setting clear goals and introducing regulations that guide stakeholder action and stimulate innovation (Fridahl & Johansson, 2017; Ashford & Hall, 2018; Preston, 2024). Creating an enabling environment for stakeholder engagement and participation through deliberative processes that include diverse perspectives, particularly those of vulnerable groups and those in opposition, is crucial for legitimacy and acceptance (Arlati, 2024; Braunger & Walk, 2022; Hirt et al., 2020; Kivimaa & Kern, 2016; Ko et al., 2019; Kobashi et al., 2025; Kuss & Nicholas, 2022; MacArthur, 2016; Poelsma et al., 2025). Fostering a sense of ownership and responsibility towards climate initiatives among communities and local stakeholders enhances their involvement (Braunger & Walk, 2022; David & Schönborn, 2018; Melnyk et al., 2023; Topaloglou & Ioannidis, 2022). Furthermore, establishing clear communication channels and providing broad access to information empowers stakeholders and citizens (Ko et al., 2019; Narjabadifam et al., 2023). Finally, creating the right narrative and managing the discourse to emphasize the benefits of sustainable transformation and the role of civil society can effectively channel political participation (Arlati, 2024; Hoicka et al., 2022). Understanding and implementing these management strategies is significant for harnessing the potential of political participation to drive effective and just climate transitions.

Integrating these findings reveals that environmental and social factors create awareness and motivation for various forms of political participation, from individual lifestyle changes to collective activism and engagement in formal political processes (Chilvers et al., 2018; Fischer et al., 2018; Ilieva & Hernandez, 2018). Effective governance strategies aim to nurture these factors and channel the resulting

participation toward concrete climate actions by providing supportive governance structures, fostering inclusive dialogue and promoting a sense of ownership (Braunger & Walk, 2022; David & Schönborn, 2018; Melnyk et al., 2023; Topaloglou & Ioannidis, 2022). The significance is in understanding that an effective climate transition demands not just technological advancements, but also engaged and substantial political involvement at every level. By grasping the factors that drive citizen involvement and applying methods that encourage and direct that involvement, policymakers can promote the essential social transformation for a sustainable future.

10.2. Discussion of implications of the review findings for future research in the field

The forms and dimensions of political participation in the context of the climate transition remain a key focus of ongoing academic inquiry (RQ1). The results of the review have several implications for future research in the field. Future research can further explore the complex interaction between implicit and explicit forms of political participation in driving climate action, beyond the current understanding. This is where the difficulty arises in embedding climate activism such as participation in energy co-ops. These are often simply consumer activism, and the CO-SUSTAIN key taxonomy, introduced by Joakim Ekman and Erik Amnå (2012) needs to be reinterpreted (supplemented). Also crucial to this overview, the multi-level perspective is sometimes criticised for its ontological distinction of three levels (niche, regime, landscape), which can lead to an artificial division into separate phenomena, while social practice theory assumes their flat structure as sets of practices that differ in sustainability and prevalence (Strzałkowski, 2018).

Common patterns and divergences in political participation across different EU countries can only be partially inferred from the reviewed literature (RQ2). Although the CO-SUSTAIN project itself examines 18 historical case studies in six different European countries, the SLR did not treat countries or regions as an explicit analytical rhyme. Case studies from EU countries or regions did not dominate the corpus of 77 collected documents. Moreover, if there were already examples from the EU, it was dominated by the countries of Western Europe (Belgium, Germany, France) and Southern Europe (Spain, Portugal, Greece). A few cases from the United Kingdom were also present.

Despite this, certain tendencies can be observed. Studies based on EU case studies more frequently describe bottom-up models of political participation and governance. While this should not be interpreted as evidence of a general trend towards decentralised and inclusive governance across EU countries, it does reflect a stronger research interest in such configurations. Other patterns not represented in the European cases are transparency and inclusion – factors considered essential for inclusive transition processes and increased participation. In contrast to the bottom-up approach, top-down governance models are associated with lower levels of participation and trust. In this regard, it seems noteworthy that studies from countries outside the EU appeared more frequently. Also, the problem of the existence of systemic inequalities in participation and inclusion and strategies to combat them were dominated by examples from these non-EU countries. However, it should be emphasised that the geographical analysis of triggers and management of latent and manifest forms of political participation was not carried out in a systematic way. Addressing such differences should be the subject of dedicated future studies.

The review underscores the importance of integrating different theoretical frameworks to gain a more comprehensive understanding of the dynamics and theoretical dependence of political participation in sustainability transitions, which is partly what Section 6 of this study attempted to do. It seems that these theoretical ambitions should take place within the framework of Socio-technical Systems (STS) or Transition Theory (TT), which seem to have the greatest capacity for meaning. Finally, there is an emerging need for further research on governance strategies that effectively channel different forms of political participation towards specific climate transition goals, taking into account the nuances of different socio-political and cultural contexts and addressing different sectors of social activism which is currently being addressed by the CO-SUSTAIN project.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used DeepL to improve readability and language. After using this tool/service, the authors reviewed and edited the content as needed and now are taking full responsibility for the content of the publication.

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