6. APPENDIX

Table 1: Overview Reviewed Literature Evaluation of Participation in Chronical Order

No	Reference	Purpose of the study	Methods	Evaluation/Success Criteria	Conclusions	Limitations
1	Fiorino (1990)	Defining democratic criteria for assessing participatory mechanisms	Theory/ Review	Ensure stronger democratic processes: Direct participation of lay people; citizens to share in collective decision making; face-to-face discussion over some period of time; participation on some basis of equality with administrators and technical specialists	Instrumental and substantive criteria are also important	Normative assessment
2	Webler (1995)	Deducing a procedural normative model	Theory	Fairness and competence; Habermas ideal speech situation; institutional constrains: Multiway-communication, consensual and non-hierarchical participation, autonomy of the individual and trust, reasonableness of the citizenry and critical self-reflection	Every criterion must be treated with a degree of interpretation and flexibility	Theoretical argumentation: no empirical prove
3	Coenen et al. (1998)	Considering the relationship between participation and decision quality	Summary and conclusion of edited book		More work on conceptualising and measuring decision quality, importance of the complex mix of mediating circumstances surrounding participatory efforts	
4	Duram and Brown (1999)	This research identified five key factors to consider when assessing public participation in watershed planning	Mail survey of 126 federally funded watershed planning initiatives yielded valid responses from 64 watershed contacts, USA	Approaches to management; Planning stages that could include participation; Methods to solicit participation; Level of participation; Potential positive impacts of participation on watershed	Participatory can achieve local resource goals. ‘‘Watershed planning has brought about an awareness of concerns that other people may not have thought about or recognized as a problem. Participatory w. management tends to stimulate interagency coordination and local stakeholder involvement. This can lead to the formulation of realistic plans that address complex environmental concerns.	Only USA and water
5	Beierle and Konisky (2000)	Evaluation of case studies, whether case studies support optimism	Case survey about 29 case studies	Context: Atmosphere conductive to agreement, attitude toward lead agency, confidence in process, problems to be addressed, scientific understanding, shared jurisdiction, geographic complexity Process: Scope of tasks, Deliberative process, communication with lead agency, freedom of participants, Bottom up vs. top down, commitment of lead agency, perceived impact on decision making, leadership	Four attributes related to one or more of the three goals: quality of the deliberative process; quality of communication with government, commitment of the lead agency, degree to which jurisdiction over the process was shared	Not enough information on every case, limited evidence
6	Rowe and	Discusses a potential	Theory	*Acceptance criteria*: representativeness; independence;	A variety of contextual and	Theoretical

No	Reference	Purpose of the study	Methods	Evaluation/Success Criteria	Conclusions	Limitations
	Frewer (2000)	framework for evaluating methods and uses this to assess		early involvement; influence; transparency *Process criteria*: resource accessibility; task definition; structured decision making; cost-effectiveness	environmental factors will interact with the characteristics of a method to determine effectiveness	argumentation: no empirical prove
7	Webler and Tuler (2000)	Testing the theoretical criteria of 1995	Case study, 49 open-ended interviews	Fairness and Competence From interviewees: Access to the process; Power to influence process and outcomes; Facilitate constructive interaction; Access to information; Adequate analysis; Enabling of social conditions necessary for future processes	Integrate concerns for personal behaviour into the definition of competence study further people's normative beliefs concerning participation	Forest policy
8	Leach and Pelkey (2001)	review of the empirical literature on factors affecting conflict resolution in watershed partnerships	Systematic review of 37 studies	Explorative investigation: 210 distinct conclusion about what makes watershed partnerships succeed and fail, grouped together in 28 groups or themes	Maintenance of a balance between the Partnership's resources and its scope of activities; pursuit of a flexible and informal process; various ADR framework variables; and various IAD framework variables.	Only USA, Australia and Canada
9	Beierle and Cayford (2002)	Evaluation of public participation	Case survey (239 cases in environmental decision making)USA	Five 'social goals' for public participation: Incorporating public values into decisions; Improving the substantive quality of decisions; Resolving conflict among competing interests; Building trust in institutions; Educating and informing the public, larger political landscape, historical context	More-intensive mechanisms generally are more successful than less-intensive mechanism. Processes in which agencies are responsive, participants are motived, the quality of deliberation is high, and participants have at least a moderate degree of control over the process	Only USA
10	Beierle (2002)	Describes a systematic analysis of how stakeholder processes have affected the quality of en-vironmental decisions	Case survey (239 cases of public participation in environmental de-cision making) USA	Cost-effectiveness; joint gains among parties; contribution of innovative ideas, useful analysis or new information; access to scientific information and expertise	more intensive forms of stakeholder involvement are more likely to produce higher-quality decisions.	Only USA
11	Leach et al. (2002)	Systematically measuring multiple dimensions of success for multiple stakeholder partnerships	Case study of 44 watershed partnerships in California and Washington: 157 interviews and 770 surveys	Perceived effects of the partnership on specific problems in the watershed; perceived effects of the partnership on human and social capital; the extent of agreement reached among the stakeholders; implementation of restoration projects; monitoring projects; and education and outreach projects	Positive relationship between each of the evaluation criteria and the age of the partnerships. Recommendation how to assess	Only USA and water partnerships
12	Newig (2007)	Explore which conditions and which modes of participation affect outcome effectiveness – as	Theory	Context: Problem structure, Actors, Social Structure Process: process design, process realisation Results: direct results of the participation process, substantive output and outcome	Methodological recommendations	Only theoretical

No	Reference	Purpose of the study	Methods	Evaluation/Success Criteria	Conclusions	Limitations
		measured by the achievement of a given environmental goal – in which manner				
13	Reed (2008)	Aims to examine evidence for the claims that have been made for and against stakeholder participation and, on this basis, to identify suggestions for best practice participation.	Literature Review	Aiming at empowerment, equity, trust and learning; participation should as early as possible and throughout the process, representing relevant stakeholders systematically; clear objectives from the outset, highly skilled facilitation; integration of local and scientific knowledges (providing a more comprehensive understanding of complex and dynamic natural systems and processes); institutionalised stakeholder participation (creating organisational cultures that can facilitate processes where goals are negotiated and outcomes are necessarily uncertain)	Participatory processes may seem very risky, but there is growing evidence that if well designed, these perceived risks may be well worth taking.	Review, not clear how literature were selected
14	Burgess and Clark (2009)	Systematic elicitation of evaluative criteria from a panel of practitioners	Multi-Criteria Mapping with 17 practitioners, UK	7 options of stakeholder processes 7 appraisal criteria: Learning, Productivity; Transparency, Supportiveness; Openness; Respectfulness; Efficiency	What works well in one context will not necessarily do so in another. Meanings of criteria can vary substantially	Limited number of Interviewees of one region?!
15	Peterson et al. (2010)	Investigate interaction between participation and its surrounding socio-cultural environment	Case Studies Brazil and Uganda		In identifying specific ways that participatory discussions proceed, through pre-meetings, alliances, non-linguistic cues and norms of interaction, it becomes clear that the socio-cultural context plays a large role in organizing interactions.	Highlighting the situation of poor people to participate. Only observations
16	Newig et al. (2011)	Does participation foster sustainable development	Theory	Empathy; Enabling and supporting socio-cultural environment, local common goods can be managed in a sustainable fashion	Theoretically not able to answer whether participation fosters sustainable development	Theory
17	Yandle et al. (2011)	What is the role of trust in an individual's decision to participate	Survey (144), New Zealand	Participation in Resource Management Activities Trust in Other Fishery Participants Additional Variables	Too much and too little trust is both negative correlated with participation	Only fishery in New Zealand
18	Carr et al. (2012)	To organise existing approaches for evaluating participation, to assess their usefulness, and provide information and guidance on the methods	Literature review	*Process Evaluation*: Accountable discourse; delegation; responsible leadership; cost-effectiveness; support; deadlines, milestones and rewards; dialogue; facilitation; knowledge inclusion; access to information and meetings; ground rules and task definition; legitimate decision making; representation; timing of involvement; promote	Majority of reviewed literature view participation positively: only a few studies show resource management benefits from participation, no studies have proved negative link between participation and water management.	Only water resource management, no explanation how

No	Reference	Purpose of the study	Methods	Evaluation/Success Criteria	Conclusions	Limitations
		used.		equal power *Intermediary outcomes*: Interaction and network development; trust; agreements are reached and plans are developed; end to a stalemate; innovation; institutional change; new organisations are created or developed; shared knowledge and information *Resource management outcomes*: Ecological improvement; economic improvement; implementation of an accepted plan; human health and well-being improvement; reduction in conflict	Many uncertainties remain about role of participation. Evaluation poses challenges. Proposing a greater focus on intermediate outcomes.	literature was identified
19	Palm and Thoresson (2014)	Discuss how participation approaches has influenced the range of goals implemented	Comparison of 4 case studies, (86 interviews and document analysis), Sweden	Deliberative participation approach, collective learning participation approach, policy-driven participation	Different participation approaches have different implications for the acceptance and implementation of climate and energy strategies	Focus on the role of Country Administrative Boards
20	Parés et al. (2015)	Analyses the consequences of the deliberation and explores the causes of its strengths and its weaknesses	Case Study WFD Catalonia, Spain: textual analysis, quantitative indicators, interviews	quantitative indicators: number of people and stakeholders involved in the process, the number of sessions, the number of proposals developed, accepted and rejected Specific decision, inclusiveness, transparent, open to everyone, effective, mutual respect	To summarize, we could state that the participants are satisfied with the process but unsatisfied with its results	Low diversity of interview partners
21	Schweizer et al. (2016)	Investigates the prospects of participation and offers the concept of analytic-deliberative discourse as a guiding model for implementation	Theory	Social cohesion, Resilience, Efficiency, Effectiveness	legal frameworks for infrastructure planning and decision-making should be based on Practical experience with as well as social science evaluation of participation	policy note
22	Schroeter et al. (2016)	How can one measure and evaluate the effects of a participation process determining its quality?	Review and case study survey, Germany	8 Dimensions of Measurement: Expectancy; Transparency; Acceptance; Fairness, Effectiveness, Efficiency, Own Impact; Satisfaction	Criteria have to be adapted to the structure given by the case study in order to maximize the quality of the evaluation	Only one case
23	Ernst et al. (2017)	Analysis how a science-practice dialogue can improve the understanding of transformation processes towards low-carbon societies	Dialogue process in North Rhine-Westphalia, Survey	empowerment, fairness, legitimacy, transparency, efficiency, effectiveness, network-building, facilitation	Facilitators highly impact dialogue processes.	Findings from a region of Germany,
24	Cuppen (2018)	Discussing the value of social conflict	Theory	Social conflict	Further research is necessary.	Only theoretical

Table 2: Reviewed Literature Assessment of Social learning in Chronical Order

No	Reference	Purpose of the Study	Methods	Factors Influencing Social Learning	Conclusions	Limitations
1	Webler et al. (1995)	How participation enhance social learning, application of evaluation criteria	Case study, Switzerland	Cognitive enhancement: giving detailed, but accessible information on the very first day, offering citizens chances to co-design the education process, combining "classroom" learning with field trips, giving participants chances to discuss what they learned in small groups, encouraging them to put their new knowledge to work in impact assessment activities; moral development: structure(familiar atmosphere, regular meetings), rules and facilitation, activities (connecting theory with reality), trust; Obstacles to social learning: missing confidence in one's impact	We believe that a focus on achieving the criteria for social learning combined with the criteria for fairness and competence will result in public participation experiences that are widely viewed as successful.	Single case study of a lengthy and intensive participatio n process
2	Knoepfel and Kissling-Näf (1998)	Studying the way in which interorganisational learning processes unfold in different policy fields	Meta-analysis of 28 case studies, Switzerland	Development of shared understanding about instruments and processes during the implementation phase; Number and type of actors, the most relevant representatives; Kind of interaction; exchange of resources indicate collective learning; aim of process; access to knowledge; formalised arrangements for the production and dissemination of knowledge	Identification of 5 learning patterns;	No direct measureme nt of learning
3	Schusler et al. (2003)	Investigate social learning and its role in developing collaborative management	Case study, telephone interviews, USA	Democratic structure, open communication, diverse participation, multiple sources of knowledge, extended engagement, unrestrained thinking, constructive conflict, facilitation	The need for social learning as an ongoing process in which participants can assess the quality of information shared and reconcile misunderstandings, as well as adapt management goals and collaborative initiatives as they gather new information and learn from experience.	Single case study
4	Brown et al. (2005)	Answering questions regarding social learning formulated at the beginning of the book	Concluding book section, summary of empirical studies presented in the book	Reflexive processes to critically consider actions, assumptions and values; interdependencies and interrelationships of social and ecological systems; integrating ideas and actions across social boundaries; whole community; participatory and adaptive process; takes into account power relations,	Principles of social learning for environmental management.	
5	Tippett et al. (2005)	Presentation of project concept and early findings from case studies	Case studies in 9 European countries, water	Provision of sufficient time, involving stakeholders' early and careful attention to process management. Techniques to help participants recognise and respect different viewpoints. Making implicit assumptions visible to different stakeholders can enable the use of this understanding to craft solutions acceptable to the	Identified factors fostering and hindering social learning	Preliminary findings

No	Reference	Purpose of the Study	Methods	Factors Influencing Social Learning	Conclusions	Limitations
				involved parties. Methods that develop participants' critical capacity enable adaptation to changing circumstances. Participatory processes were highly influenced by prior experience with participation and cultural and institutional contexts.		
6	van de Kerkhof and Wieczorek (2005)	Make methodological suggestions on how TMgt process, could be approached so as to improve the learning effect.	Case study, Dutch climate options for the long-term	Independent facilitation; balance between homogeny and heterogenic participants; not only factual and empirical knowledge but also normative aspects of the problem; commitment of participants; information provided in the process should be of scientific quality but communicated in an understandable and accessible way, which also makes uncertainties and controversies explicit to increase competence; fairness	Should be an open and dynamic network, but a facilitator is needed.	Focused only on the first process phases, no measuring of social learning and its causes
7	Petts (2006)	How a deliberative process can capitalize on local knowledge and lead to shared (expert and public) learning and understanding	Case study	Recruitment of representative interests; Active Facilitation; Collaborative Framing; Optimizing Interaction; Managing the Unexpected;	Importance of creating and managing the right conditions to support learning. Organizational or social learning may be a more lasting impact of any engagement effort than the actual plan or project delivered.	One case study analysed from the perspective of an facilitator
8	Jiggins et al. (2007)	The role and meaning of 'knowledge' as a driver of transformational change.	Case studies and policy analyses, Netherlands	Conflict and confrontation among stakeholders; discovery of interdependence among stakeholders; development of social spaces where stakeholders could encounter each other in shared actions; and the role of facilitators and process leaders in helping stakeholders to go forward.		Focus on knowledge and thus not measuring social learning
9	Mostert et al. (2007)	Evidence of social learning processes and outcomes and attempt to identify factors that foster or hinder social learning	10 case studies, interviews, document analysis, observation, Water Governance, Europe	The role of stakeholder involvement, politics and institutions, opportunities for interaction, motivation and skills of leaders and facilitators, openness and transparency, representativeness, framing and reframing, resources	When a truly participatory approach took place, this resulted in benefits for the stakeholders involved and for the environment.	
10	Pahl-Wostl et al. (2007)	Social learning concept as foundation for empirical research project	Theory	Networks or "communities of practice"; the governance structure in which they are embedded: institutional settings that guarantee some degree of stability; certainty without being rigid and inflexible.		Empirical findings are presented in Mostert et al. 2007
11	Wiek (2007)	Discuss the main challenges observed,	Review of transdisciplinary	Four challenges of joint knowledge generation: confounded agendas,	A new type of mediated negotiation, so-called 'epistemediation', is	Review, focus on TD

No	Reference	Purpose of the Study	Methods	Factors Influencing Social Learning	Conclusions	Limitations
		focusing on the inter-individual interactions in knowledge generation, such as information, consultation, collaboration, and negotiation	research	separate data philosophies, reluctance to face exposure co-existing values	proposed	
12	Armitage et al. (2008)	Examine five dimensions of the learning paradox in the context of adaptive co-management, where the learning and linking functions of governance are stressed	Literature review, cumulative insights from resource management cases, Water, Canada, Southeast Asia.	Capacity Building, power relation, social networks	Learning is neither value free nor politically neutral. Attention to the formal and informal connections which at once shape, and are an outcome of, power relations is necessary	Only observation, no empirical data
13	Borowski et al. (2008)	How spatial misfits between participatory and decision-making institutions impede social learning, and therefore, the success of RBMP	Case studies, Water, Germany, France	An interface that successfully facilitates SL processes requires financial and legal capacities, including the mandate to deal with certain tasks. The interface not only needs to have the mandate for communicating with stakeholders, establishing multi-party interaction, and facilitating information flow. It also needs a close link to the decision-making institutions to ensure that the gains and incentives are sufficient for stakeholders to engage in them	Even though a strong interface between participatory and decision-making institutions will strongly support SL in participatory processes, it may not be able to solve all challenges, such as language barriers to informal interactions	No direct measurement of social learning
14	Gohl and Wüst (2008)	Are participation processes new places to foster lifelong learning	2 case studies, Germany	8 theses	Participation processes are important learning places of society. Their design should not only target (political) decisions, but must also foster common learning process.	Only observation, no survey
15	Kumler and Lemos (2008)	Investigation of social learning as both enabling implementation of water reform institutions and being enabled by implementation.	Case study, mixed method approach: semi structured interviews, observation (survey), water, Brazil	The changing nature of state–society relations, the institutional structure, the role of actors and networks, and actor trust and buy-in to the system have all enhanced social learning.	Social learning has been critical in facilitating reform implementation so far, and will likely continue to be an important factor for the future sustainability of the new management system.	Only a case, no direct measurement of learning?!
16	Van Bommel et al. (2009)	Investigate the potential of the social learning approach for solving complex resource dilemmas	Case study, media analysis, archive research, open interviews, meetings, water management, Netherlands	Power relations, inclusiveness, joint problem framing vs. reducing complexity, interdependence	Our findings show that, although the platform aimed for open dialogue and at first sight appeared to meet the conditions, social learning was not achieved and the negotiations stagnated because of disagreement, frustration and distrust.	Single case study
17	Brummel et	Whether policy-mandated	3 case studies,	Policy.-mandated collaboration set the institutional	Policy-mandated collaboration can be	Participatio

No	Reference	Purpose of the Study	Methods	Factors Influencing Social Learning	Conclusions	Limitations
	al. (2010)	collaboration can encourage learning, transformation, and joint action amongst planning partners.	interviews, document analysis, wildfire protection planning, USA	context, extended engagement, diverse stakeholder representation, facilitation, dominance of agency representatives, openness	a convening element and may set the structural context for social learning at the local level. However, local context and collaborative process are crucial and policy must be realised at this level through leadership, skilled facilitation, dedication to expanding participant pools to non-traditional	n of experts
18	Cundill (2010)	explores the characteristics of processes that promote learning in adaptive co-management, and also aims to test a methodology for monitoring these in a collaborative way	3case studies, focus group workshop, semi structured discussions	Trust building, groups of common interest, economic or other incentives for collective action, security of tenure over the resources of concern, a perceived value in sharing information, willingness to engage in collaborative decision making, sufficient funding to enable practical action and experimentation, social networks that allow effective information flow, effective local leadership/ 'honest broker'	For learning to be effective, a balance needs to be sought between maintaining key individuals within the system, preventing rigidity and vulnerability when this is achieved, and encouraging active participation within communities of practice.	Experiment
19	Garmendia and Stagl (2010)	How successful are deliberative processes as part of sustainability appraisals in stimulating social learning	Framework development, tested within 3 case studies, questionnaire, Austria, UK, Spain	Wider opportunity for interaction and deliberation, i.e. more time for discussion	Social learning does happen in participatory workshops, but (1) to a lesser extent than expected and (2) the depth and breadth of learning depends on the workshop design, time given to the process and the type of participants.	No systematic analyses of level of learning and characteristics of participation
20	Huitema et al. (2010)	Assess empirically the connection between public participation and learning	3 case studies on citizens' jury, Netherlands, Water	Clarity about role of stakeholder involvement, politics and institutions, opportunities for interaction, motivation and skill of leaders and facilitators, openness and transparency, representativeness, framing and reframing (joint problem definition), resources	We find high levels of cognitive, normative, and relational levels of learning for the jurors, but relatively low levels of learning for policy makers	Experiment
21	Pohl et al. (2010)	Analysis of the challenges that the co-product-ion of know-ledge poses to the researchers, and of the roles in which these challenges are met	Observation of 4 transdisciplinary research projects, involved researchers in an iterative, self-reflexive process	Power: Addressing power relationships between different actors Integration: Ensuring that a common understanding emerges Sustainability: Ensuring that knowledge co-production serves the purpose of sustainable development	The intuitive assuming of specific roles seemed to be clearly guided by the objective of promoting and enhancing knowledge co-production, based on openness and the search for deliberative interaction of all the thought collectives involved.	Focusing on the role of the researcher
22	Edelenbos et al. (2011)	Describe and analyse the process of co-producing knowledge among experts,	Comparison of two case studies, Netherlands	Multi criteria analysis and the method of co-evaluation enable the various groups to bring in their knowledge and to integrate this knowledge. Specific techniques of	It is concluded that knowledge co-production between experts and bureaucrats is not very problematic,	Case studies

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		bureaucrats and stakeholders.		knowledge mobilization and exchange can be helpful to realize coproduction. The way in which methods of knowledge production are used and the intention of the involved actors to combine and harmonize knowledge is more decisive for realizing coproduced knowledge, then the methods themselves. The level of interaction in the method used is important for realizing coproduced knowledge.	because of discipline congruence and institutionalized relations. Knowledge co- production between stakeholders on the one hand and experts and bureaucrats on the other is more problematic and leads to problems of legitimacy in knowledge production and decision-making.	
23	Gerlak and Heikkila (2011)	Examine how the framework helps diagnose the specific types of learning processes and products that emerge in this setting, as well as the factors that influence these learning processes.	Survey and interviews, Case study, ecosystem restoration program, USA	Structure: communication, coordination, control of information Social dynamics: influence and power of leaders (participants), frequency and intensity of interaction; trust one another and accept new ideas, existing social networks Technological and functional domain: Tools for processing and storing information, task specificity Exogenous factors: Political, social, physical and economic changes	Learning process is fostered by a structure that accommodates diverse sources of knowledge → diverse members (inclusive). Trust building (shared goals).	'extreme cases'
24	Hoverman et al. (2011)	reports on an evaluation of a participatory research process that was conducted to develop a catchment risk assessment to improve natural resource and water management	Case: participatory research project, Solomon Islands	Carefully customized process and the use of bridging individuals in the form of a respected community interpreter and individuals prepared to contribute to integrative discussion.	The novelty of the participatory process has clearly contributed to its enthusiastic endorsement by community and NGOs, unfettered at this stage by a history of false starts and disillusionment.	Research project (experimental)
25	Squires and Renn (2011)	Explores the concept of analytical-deliberate decision-making and the role of social learning	Interviews and observation of Fishery project, England	Diverse participation, Democratic structure, Extended engagement, Multiple sources of knowledge, Unrestrained thinking, Open communications, Constructive conflict, facilitation support	that it is through the communication and sharing of information – and not through the technology itself – that new information and emergent learning occurs	Single case study
26	Crona and Parker (2012)	conducting cross-case comparisons aimed at understanding the social environmental conditions under which learning in such organizations does and does not occur	Case study, interview, documentary, and observational data USA	We found that different numbers and types of social interactions can have significant, independent effects on the use of scientific knowledge in natural resource governance. Importance of embeddedness of actors in social networks of peers for knowledge utilization. Boundary objects also helped to align stakeholder interests and enhance learning, but only via active facilitation by key liaisons brokering between the divergent interests of bridging organization stakeholder groups.	manage divergent stakeholder interests and navigate power differentials among them to successfully catalyse learning in support of natural resource governance	Single case study

No	Reference	Purpose of the Study	Methods	Factors Influencing Social Learning	Conclusions	Limitations
27	Cuppen (2012)	how a methodology for stakeholder dialogue can be evaluated in terms of learning	Participatory research, biomass (Q methodology), Netherlands	Stakeholder selection procedure should be able to address marginal perspectives and to cut across networks. prevent mechanisms through which some perspectives are more likely to play a role than others: small subgroups were helpful in increasing speech time and opportunities for all participants	Learning does not mean that participants drastically change their perspective. Rather, learning means that participants better understand and acknowledge the diversity of perspectives, which enables them to use the perspectives as a structure to deal with the complexity of the issue.	Participatory research (experiment)
28	Muro and Jeffrey (2012)	To what extent are participatory processes characterized by social learning? Which process characteristics encourage or hinder social learning?	Postal survey from two case studies in Germany and Ireland, Water	Facilitation, opportunity for interaction, egalitarian atmosphere, repeated meetings, process control, open communication, diverse participation, unrestrained thinking, information exchange	Gaining new insides does not mean altering ones' views. Social learning is a multi-dimensional and dynamic process and the extent to which stakeholder platforms promote social learning is shaped by organizational arrangements and time provided for the engagement process.	Case study
29	Wilner et al. (2012)	Until social learning theory leans more heavily on group processes of trans-formative learning, sustainable development will elude us.	Theory and case study, five-year research project, Canada	Critical reflection: Process reflection and premise reflection Critical reflections promotes alternative and creative restructuring of our actions	A process of systematic, critical reflection is key to transformative learning	Only observation of one research project (experiment)
30	Brewer (2013)	extent to which learning among resource users might enhance public participation, sidelining questions about the possibility of parallel learning by management and policy professionals, or by other groups with interests in resource outcomes	Case study, workshop observation, interviews, informal conversations	These achievements do not require large public expenditures. The roundtable succeeds by staging social learning events that are more intensive than those encountered in the ordinary social interactions of daily life. Neutral informal environment.	Thoughtful investment in capacity-building for public participation of resource users through double-loop learning can substantially improve their contributions to existing democratic processes. It increases public faith in existing government structures and seems likely to reduce the threat of polarization.	
31	Leach et al. (2013)	Testing hypothesis	Interviews (61), Survey (123) in 10 water partnerships in the USA	Partnership Traits: diversity of participants, procedural fairness, level of scientific certainty, trustworthiness of other participants Individual Traits of the Learner: duration of participation, competence in science or technology, preferences for consensus-based decision making, demographics	Belief change as a product of knowledge acquisition and knowledge acquisition as a product of partnership traits and traits of the individual learner. we conclude that the roles of science and expertise depend on the context of a particular partnership to a	USA and water, self-assessment

No	Reference	Purpose of the Study	Methods	Factors Influencing Social Learning	Conclusions	Limitations
					greater extent than other variables, such as trust and fairness, which have consistently salutary effects on collaboration in study after study	
32	Baird et al. (2014)	To advance and operationalize a typology of learning in an environmental governance context, and examined if a participatory decision-making process (adaptive co-management) for climate change adaptation fostered learning.	'Case study' Canada, experimental participation process, ex-ante and ex-post data collection	Involvement intensity: low activity level (participation in three or fewer meetings) and high activity level (participation in more than three meetings)		Experiment
33	Koontz (2014)	Examine how participatory processes can be designed to promote social learning	Comparison of two case studies in the USA and Germany, water	inclusiveness (variety of participants with diverse viewpoints); extended engagement (multiple opportunities to engage over time); information exchange (opportunities to exchange information); opportunities for interaction (dialogue among participants); process control (participants' ability to set the agenda and procedures); and process equity (individual efficacy and being taken seriously by others)		Intensive dialogue processes over time, only two states
34	van der Wal et al. (2014)	Present a simple and flexible method to measure social learning, whether it has occurred and to what extent, among stakeholders in natural resource management	Case studies, game sessions, questionnaires, Dutch river management project and adaptation strategies for agricultural land use	Case-related Factors: urgency, convergence of interests, mutually felt positive interdependence and trust, limited risk and balance of power among the stakeholders, supportive institutional context Process-related Factors: balanced stakeholder selection, effective leadership or facilitation, space for reflection, safe and informal environment, transparency	Reflection about the method applied to measure social learning	Experiment, no discussion about context
35	Vinke-de Kruijf et al. (2014)	What are the nature and effects of social learning? To what extent does social learning contribute to further collaboration in international collaborative settings?	Case study, international water management project, documentation, interviews, and observations	Motivations and a joint motivating goal, cognitions and negotiated knowledge, resources and pooling of resources, relations and trust	Learning differs between external and local actors and between individuals. Learning can have positive and negative effects.	Quantitative data, single case, barriers such as language and culture are not considered
36	Egunyu and Reed (2015)	To better understand how gender affects social	Case study, interviews, Canada	Gender, cultural aspects	Gender plays a role in access to and outcomes of participation and social	Focus on Gender,

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		learning and collaborative forest governance in forest-based communities	and Uganda		learning in collaborative forest governance.	only two cases
37	Elbakidze et al. (2015)	To identify to what extend comprehensive planning is characterized as a collaborative learning process	Case study, 36 semi-structured interviews, spatial planning Sweden	A high level of stakeholder participation in the planning process; participation in activities that promote new ideas and learning among stakeholders in a municipality; sufficient planning capacity of organisations and institutions responsible for development, preparation and delivery of strategic spatial plans; a confluence of views as regards desirable solutions in strategic territorial development; collaborative assessment and adaptation of strategic spatial plans; implementation of the plan; collaborative assessment of plan outcomes	to encourage collaborative learning there is a need for arenas allowing and promoting stakeholder activity, participation and inclusion that represents all societal sectors at multiple levels, as well as interaction between both bottom-up and top-down approaches	Limited to four stakeholder groups
38	Natarajan (2017)	How does learning with communities reframe spatial knowledge?	Case study, United Kingdom	Local knowledge, process knowledge, trust building, shared concerns, ongoing support, encouragement and validation	Low knowledge of planning processes was not a barrier to communication with local people, but low confidence threatened to be.	Single case study, face-to-face dialogue
39	Schauppenlehner-Kloyber and Penker (2015)	How to effectively promote social learning and capacity building for self-organised action beyond project end	Case study, documents, observation, survey, urban development, Austria	Stages of group processes, facilitation,	Shifting the focus from 'output thinking' to 'process thinking'	Focusing on TDR, single case study, experimental character
40	Beers et al. (2016)	To develop a new theoretical approach that takes on an integrative perspective on learning, and to operationalize that into a framework and explore it empirically.	Case study, Reflexive Monitoring in Action (action research)	Different patterns of communicative interaction: antithetic interaction, synthetic interaction, informing, Word-of-Power, agenda wars, conflict	Social learning can be regarded as discursive interaction with learning outcomes in terms of interwoven knowledge, relations, and action and that some interaction patterns are more closely connected to social learning than others.	Single case study, expert dialogue, intensive participation
41	Benson et al. (2016)	To what extend does stakeholder participation in environmental management actually lead to social learning?	Case studies, observation and semi-structured interviews, flood risk management, UK	Individual interest and capacity to learn from participation, knowledge about topic, institutional structures	while individual 'surface' change was widespread amongst Committee members, 'deeper' ontological changes were less evident	Only UK, focus on learning products
42	Medema et al. (2016)	Exploring social learning in transboundary water resource management	Case study, river basin management Canada, 10 semi-structured interviews	Characteristics of stakeholders and institutional setting, stakeholder interactions and the way this engagement process is organized; quality of stakeholder relationships	Social learning was the exception rather than the rule, probably due to low levels of collaboration.	Very view interviews, case study
43	Salvini et al. (2016)	Explored application of an role planning game to stimulate exchanges of	Role playing experiment with farmers in Brazil, pre-		The informal and experimental design foster different elements of learning.	Experiment

No	Reference	Purpose of the Study	Methods	Factors Influencing Social Learning	Conclusions	Limitations
		knowledge and to facilitate collective decision-making and negotiation	and post interviews (42 interviews total)			
44	Westberg and Polk (2016)	Analyse the ''transferability'' of knowledge generated in TD research settings from a practice-based approach	Case studies: describe and analyse three TD projects	Important to analyse how the members of the TD practices themselves interpret what they are meant to accomplish. Create spaces for reflection and create opportunities for learning on a meta-level	Focusing on developing joint understandings that were based on their different perspectives of the governance processes under study helped to generate relevant knowledge.	Focused on TD
45	Berman (2017)	Which participatory practices are most efficacious capturing local knowledge and incorporating it into plans?	Case studies, interviews, document analysis, spatial planning, Israel	Participatory format: unilateral, collaborative	Unidirectional participatory procedures do not capture genuine local knowledge and do not incorporate local knowledge into plans.	Case studies, focusing on a specific learning product
46	de Vries et al. (2017)	how trust influences knowledge sharing and how knowledge sharing influences trust	Worksop evaluation, water governance, Sweden	Trust	The role of trust is far from static, supporting the idea that the production, sharing, and use of knowledge is a dynamic process. It also shows that trust is not necessarily bound to long processes as often stated.	Experiment
47	Roldán (2017)	It aims at opening up the debate on the assumption that stakeholder participation in NRM produces similar outcomes independently of the political context where it is embedded by identifying similarities and differences in one outcome: multidirectional learning.	Survey, UNESCO biosphere reserves	Political regime: democratic, nondemocratic	Although learning can occur in both regimes, benefits may be more limited in non-democracies as they seem to take less advantage of the diversity of knowledge that including multiple stakeholders in participation can provide.	Self-assessment, consideration of very limited factors influencing learning
48	Heikkila and Gerlak (2018)	How the design of rules of a governance process conditions opportunities for learning	Comparison of five empirical studies	IAD framework rules: boundary, position, choice, information, aggregation, payoff, and scope rules	Diverse stakeholder participation and integration of various knowledge types foster learning. Also	No direct measurement

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