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Towards understanding participatory processes: framework, application and results

Abstract

Many scholars point out that in complex and contested decision-making and planning situations, participatory processes have clear advantages over “traditional” or non-participatory processes. Improving our understanding of which participatory process elements or combination of elements contribute to specific outcomes demands a comparative diagnosis of multiple case studies based on a systematic framework. This paper describes the theoretical foundation and application of a diagnostic framework developed for the description and comparative analysis of participatory processes. The framework for the Comparison of Participatory Processes (COPP) is composed of three dimensions: context, process, and outputs outcomes and impacts. For each dimension, a list of variables is provided, with associated selectable options. The framework also requires clarification of three monitoring and evaluation elements. The COPP framework is then applied to five participatory processes across five different contexts: three located in the Mekong basin in Southeast Asia and two in eastern Africa. The goal is to test first if the framework facilitates the development of a comprehensive and clear description of participatory processes, and second, if a diagnostic step can be facilitated by applying the descriptions in a cross-comparative analysis. The paper concludes that despite a few challenges, the COPP

1 framework is sufficiently generic to derive clear and consistent descriptions. A sample of
2 only five case studies restricts the derivation of robust insights. Nevertheless, three testable
3 hypothesis were derived, which would need to be tested with a much larger sample of case
4 studies in order to substantiate the efficacy of process characteristics and attributes.
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9 Ultimately, such hypotheses and subsequent analytical efforts would contribute to the
10 advancement of this increasingly prominent research domain.
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16 **Keywords**

17 Participation, monitoring and evaluation, comparative analysis, outputs, outcomes, impacts
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24 **1 Introduction**

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31 Many scholars point out that in complex and contested decision-making and planning
32 situations participatory processes have clear advantages over “traditional” processes.
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35 Participation may be defined as the practice of consulting and involving relevant
36 stakeholders in the agenda-setting, decision-making, and policy-forming activities [or
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1 First, local contextual knowledge can be accompanied with system-focused scientific
2 knowledge and methodology to overcome the cognitive processing of complexity-based
3 challenges. Second, during the participatory process, actual decision-makers, planners, or
4 community members can directly experience a systems' understanding that is understood
5 through praxis and can therefore be readily translated into improved actions and decisions.
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7 Third, participants are more likely to apply the new systems' understanding in the long term,
8 beyond the temporal and planning targets of the initial participatory processes. Participation
9 can facilitate system learning and thereby "implant" a foundational understanding, tailored
10 to solve similar long term contested decision arenas.
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23 Improving our understanding of which participatory process elements or combination of
24 elements contribute to specific outcomes demands a comparative diagnosis of multiple case
25 studies (Chess, 2000). A systematic framework that structures a consistent and coherent
26 description of participatory processes across a diverse set of empirical situations is a
27 necessary precursor to analytical comparisons.
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38 This paper describes the theoretical foundation and application of a diagnostic framework
39 developed for the description and comparative analysis of participatory processes. The
40 framework is intended to be sufficiently generic to allow for the comparison of a diverse set
41 of case studies and ultimately a diagnostic analysis. The proposed framework is not intended
42 as a device to conduct a detailed analysis of specific cases. We assume that much can be
43 learned from the comparison across a larger number of diverse cases. Ultimately, the
44 purpose of this cross-comparison is to analyze the effectiveness of participatory processes
45 and their elements. This does not undermine the need for in-depth analysis of specific cases,
46 which is both necessary and essential when studying participatory processes. Both
47 approaches are complementary.
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2 The framework is intended to be informed by any stakeholder or group of stakeholders
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4 having sufficient insights on the participatory process of interest to be able to inform the
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6 variables. *Variables* are defined here as elements or criteria used to describe participatory
7
8 processes. For each variable, informants can choose among a list of different “*options*” or
9
10 values. Informants will preferably be stakeholders involved in the process, its design,
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12 implementation and/or evaluation. Identity of the informant is to be taken into account in
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14 any analysis or cross-comparison of results.
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21 Section 2 describes the development of the framework for the Comparison of Participatory
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23 Processes (COPP). Section 3 highlights three monitoring and evaluation (M&E) elements
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25 requiring clarification when informing the framework. Section 4 details a COPP framework
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27 analysis of five case studies across Asia and Africa. Finally, we analyze the cross-comparative
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29 results and evaluate the COPP framework performance. The synthesized COPP framework,
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31 presented as a “ready-to-use” assessment template, is detailed in Annex 1.
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38 **2 Framework for describing, diagnosing and comparing**

39 **participatory processes**

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47 The framework for the Comparison of Participatory Processes (COPP) is composed of three
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49 dimensions, synthesized from literature based insights. The proposed COPP dimensions
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51 represent four literature-derived cohorts of theorists and practitioners contributing to the
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53 corpus of scholarship. The first cohort represents scholars who identify variables related to
54
55 the management of coupled social-environmental systems and institutions (e.g. Folke et al.,
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57 2005; Herrfahrdt-Pähle & Pahl-Wostl, 2012; Ostrom, 2005; Saleth, 2006; Scott, 2001). The
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1 second cohort includes documentation of scholars from the field of policy-making,
2 governance and policy assessment (e.g. Dovers & Hussey, 2013; Dovers, 2003; Lankford,
3 2008; Sabatier, 1988) that focus on the decision-making process, its institutionalization and
4 assessment. Even readers interested in participatory processes with foci other than social,
5 environmental and policy design will find valuable insights in the literature of these two
6 cohorts. A third cohort draws from management science and is concerned with evaluation in
7 general, and more specifically the evaluation of collaborative endeavors (e.g. Bellamy et al.,
8 2001; Byrne, 2013; Conley & Moote, 2003; Couix, 1997; William, 2007). Authors in this
9 cohort are focused on evaluation methods, principles and guidelines. Finally, the most
10 abundant reviewed literature concerns public participation, in particular the evaluation of
11 public participation processes and methods (e.g. Beierle & Cayford, 2002; Innes & Booher,
12 1999; Rowe & Frewer, 2000, 2004). The added-value of these different cohorts for the COPP
13 framework is described in sections 2 and 3 of this paper.

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33 This paper considers only publications with explicit variables that can contribute to the
34 assessment of participatory processes. Most existing approaches and variables were
35 developed to describe or assess a specific participatory process, not necessarily to compare
36 a diverse set of processes. The review of existing frameworks reveals that many variables
37 are similar, flagging the potential of a generalizable assessment framework.

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47 We describe in detail the three assessment dimensions of the COPP framework: context,
48 process attributes, and outputs, outcomes and impacts. One perspective reliant on
49 framework parsimony might limit assessment to process characteristics and outputs and
50 outcomes. However, many authors suggest that contextual aspects are critical for
51 understanding outcomes (e.g. Beierle & Cayford, 2002; Cleaver & Franks, 2005; Midgley et
52 al., 2013; Ostrom, 2005; Sabatier, 1988). We also contend that a clear articulation of
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1 standardized monitoring and evaluation (M&E) objectives, team composition and methods
2 are necessary to promote independent replication and validation.
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7 A number of participatory processes evaluation frameworks exist with similar goals (e.g.
8 Abelson et al., 2003; Rosener, 1981; Rowe & Frewer, 2000). Often, these frameworks focus
9 on the process and/or its outcomes, without detailing the context dimension or the M&E.
10 For example, Krywkow (2009) suggests an approach based on six “intensity criteria” to
11 evaluate to what extent various participatory processes objectives have been reached. He
12 assumes that the M&E objective is to evaluate the effectiveness of the participatory process
13 in reaching its objectives. We argue for a broader diversity of M&E objectives, which may
14 differ from process objectives. For example, the goal of the participatory process may be to
15 develop a policy, while the M&E may aim to jointly assess whether the process also
16 contributed to building the capacity of the stakeholders in implementing this policy. In other
17 cases, proposed frameworks may be method-oriented (e.g. Midgley et al., 2013) or
18 discipline-specific (e.g. Ostrom, 2005). The COPP framework aims at being used across
19 participatory processes characterized by diverse contexts, M&E objectives, methods and
20 disciplines.
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42 **2.1 The context dimension**

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49 The implementation of a specific participatory process method can lead to different
50 outcomes due to differences in contextual circumstances (Buysse et al., 1999; Champion &
51 Wilson, 2010; Checkland & Scholes, 1990; McAllister, 1999; McGurk et al., 2006; Morgan,
52 2001; Murphy-Berman et al., 2000; Rowe & Frewer, 2000, 2004; Warburton et al., 2007;
53 White, 2006 cited in Midgley et al., 2013). This can be due to particular methods not being
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effective across all contexts or due to particular process steps triggering different dynamics.

The same method utilized by the same practitioner or researcher can succeed or fail depending on the complexities and dynamics of the situation. Most scholars recognize the importance of the context by advocating for context-specific process designs. Some aggregate contextual drivers, for instance as the “influence of the external environment” (Champion & Wilson, 2010). Few, however, list formalized contextual variables.

Indeed, there is a wide range of contextual factors with the potential to affect participatory processes and their outcomes. Identifying influencing factors *a priori* can be difficult.

Nevertheless, our aim here is not analytical but comparative. Thus, key context variables are needed to distinguish contexts into broad categories. We include five variables that come with empirical evidence to confirm their relevance. The options associated with these five variables are listed in Annex 1.

The first variable of the context dimension of the COPP Framework is the “target system elements”. Even though this variable is not explicitly listed in the literature, we argue that it allows for an important categorization and a deeper understanding of the system elements which the process aims to target. Target system elements can be natural or environmental, such as water and forests, economic, social, political, urban, health, technological and/or educational.

Many scholars identify “levels of governance influencing target system elements” as a critical variable, using different terms but with similar meanings: “shared jurisdiction” (Beierle & Konisky, 2000) or “scale of issue” (Perez et al., 2011). This variable is defined by the level of decision-making influencing the target system. For instance, individually managed wells may only be influenced by decisions taken at the village level. We apply the

terminology used for multi-level approaches to delineate the three options for this variable:

macro (national or larger), meso (subnational) and/or micro (village or group of villages).

The third variable refers to “other past/present intervention attempts” to distinguish contexts in which many initiatives have been implemented already from other situations where only a few or even no other initiatives have been implemented (Burton, Goodlad, & Croft, 2006; Champion & Wilson, 2010; Midgley et al., 2013; Ostrom, 2005).

The majority of scholars working on participatory processes identify the relevance of “pre-existing relationships among participants” as a critical variable. Allison & Hobbs (2006), Bellamy et al. (2001), Chess & Purcell (1999) and Cumming (2000) refer to the social context broadly and Foley et al. (2003) refer to social “natural resources”. Others more specifically mention variables linked to conflict and mistrust as hindering contextual effects for participatory processes (Beierle & Cayford, 2002; Beierle & Konisky, 2000; Bellamy et al., 2001; Branch & Bradbury, 2006; Brocklesby, 2009; Jackson & Keys, 1984; Kelly & Van Vlaenderen, 1995; Ong, 2000; Ostrom, 2005; Perez et al., 2011; Webler & Tuler, 2002). The COPP Frameworks adopts the options suggested by Beierle & Cayford (2002) to describe the pre-existing relationships among participants: no pre-existing relationship, high degree of mistrust and conflict, moderate trust and conflict or good pre-existing relationships and trust.

Finally, the fifth variable refers to “participants’ understanding of target system elements”.

Scholarly examination across diverse disciplines and fields of inquiry have led to the distinction between two aspects of knowledge: facts, considered as a local and scientific knowledge system, and values, or the moral and ethical values and norms that condition how facts are perceived, in the tradition of Brown (1984) and More et al. (1996).

1 Participants' understanding of the target system elements, participants' perception of their
2 own knowledge about the system, and the degree of acceptance assume a central role in
3
4 the majority of reviewed participatory process case studies. Consistent with the COPP
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6 principles of standardization and tractability, this variable has been synthesized into two
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8 detectable attributes which distinguish whether participants state they understand, or not,
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10 target system elements.
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17 **2.2 The participatory process dimension**

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23 Methodological and procedural choices constitute the core of our comparative diagnostic.
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25 Which methods were used? How were the participants selected? Who instigated the
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27 process? Many of those questions, however, often remain hidden in descriptions and
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29 assessments of participatory processes. Detailing the way the process is translated from
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31 abstract to praxis is essential in describing and comparing cases. When combined with
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33 enabling and constraining contextual factors, comparisons can reveal either principle
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35 patterns or procedural or methodological choices that lead to outcomes more aligned with
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37 target objectives.
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44 Fourteen variables were identified as relevant for the process dimension. They were drawn
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46 predominantly from the major steps to be considered when designing a participatory
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48 process and from the main elements considered in in-depth descriptions of specific
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50 processes. The options associated with these fourteen variables are listed in Annex 1.
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56 The first variable is the "participatory process objectives" which was identified by many
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58 authors including Beierle & Cayford (2002), Beierle & Konisky (2000), Bellamy et al. (2001),
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Lynam et al. (2007), Ostrom (2009) and Tippett et al. (2007). The combination of the options suggested in these frameworks as well as the experience of the authors on participatory processes allowed the identification of four main options for this variable: exploring decision-making options, improving stakeholders' systems understanding, resolving or avoiding conflicts and gathering knowledge. We acknowledge that the complexity of participatory processes often involves a multiplicity of contested and evolving process objectives. We understand here "participatory process objectives" as the "official" or "stated" objectives of the process once framing discussions and trade-offs have taken place among participants. The multiplicity of objectives is reflected in the possibility to select multiple options for this variable.

The "instigator(s) of the process" is explicitly or implicitly mentioned by several authors including Beierle & Konisky (2000), Chess & Purcell (1999) and Warner (1997). Instigators of the process include stakeholders who first triggered the process, who had the idea and mobilized other stakeholders. They can be: donor or development agency representatives, researchers, decision-makers or governmental stakeholders, civil society and/or private sector representatives. These options are based on Beierle & Cayford (2002), Michener (1998) and Okali et al. (1994).

The third variable "team" concerns the stakeholders who are designing, implementing and facilitating the participatory process. This variable is generally not explicitly listed in other work. However, description of the composition of the team leading the participatory process is typically provided in case descriptions. The same options were applied as the "instigator(s) of the process" variable.

1 Similarly, the origin of the team, in terms of place and professional background, impacts
2 their expectations towards the participatory process and is often linked to the success of the
3
4 process (e.g. Chess & Purcell, 1999; Daniell, 2012; Godschalk & Stiftel., 1981; Renn et al.,
5
6 1995). Team members can come from the area and/or affect or be affected by target system
7
8 elements, for example if they are decision-makers with a mandate in the area of concern.
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10 They can also be external to the area, for example in the case of international researchers or
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12 non-governmental organizations.
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19 The “selection of the participants” is frequently introduced in participatory processes
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21 evaluation frameworks as the “representativeness” of participants (e.g. Berry et al., 1984;
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23 Crosby et al., 1986; Petts, 1995, 2001; Rowe & Frewer, 2000; Rowe et al., 2004). However,
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25 we prefer “selection of the participants” for two reasons: first, the process under
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27 consideration may not aim at selecting participants who are representative of the broader
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29 population and two, even if it does, in order to be able to infer results to the broader
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31 population, representativeness needs to be rigorous and defensible. This variable
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33 corresponds to the stakeholders who made the ultimate choice of who would be invited to
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35 participate in the process and actively sent the invitations. It can be the team or a third
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37 party, the donor or government for instance. The selection of options for the “selection of
38
39 the participants” variable is adapted from Fung (2003, 2006).
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47 The “size of the group” is identified as a criteria by several authors working on group
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49 cohesion, group performance and small group theory (e.g. Annese & Traetta, 2012; Carron &
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51 Spink, 1995; Indik, 1965; Mullen et al., 1987; Slater, 1958; Thomas & Fink, 1963). Therefore
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53 we decided to include it in the COPP Framework. The “group” is defined here as all
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55 participants involved in the process, excluding the team.
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1 The work of Fung (2003, 2006) was used as a basis for the seventh variable “level of
2 participants’ process expectations” to which we added the notion of confidence in the
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4 process outlined by Beierle & Konisky (2000) (drawn from Gurtner-Zimmermann, 1996;
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6 Landre & Knuth, 1993). Options are defined as “high” when participants believe that the
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8 process can really change the target system or as “low” otherwise.
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14 Many scholars consider the engagement of specific governance levels: lead agency (Beierle
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16 & Konisky, 2000), local government (Conley & Mooto, 2003) and higher authority (MacNair
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18 et al., 1983). Therefore, we include “governance level(s) engaged” as a variable. As
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20 participatory processes are increasingly engaging multiple levels of governance, the options
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22 selected reflect this multiplicity.
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28 The ninth variable “length of the process” is not often explicitly raised in the literature but
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30 systematically used in description of specific cases, suggesting its relevance in successfully
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32 implementing participatory processes. Options identified for this variable are: less than a
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34 year, one to five years or more than five years.
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40 The tenth variable “number of events” is suggested by Fung (2003, 2006), MacNair et al.
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42 (1983) and Ostrom (2005). It is defined by the number of times participants are invited to
43
44 give their opinion and make collective decisions. Events include, but are not limited to,
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46 workshops, meetings and gatherings, in person or not (e.g. online). Rather than broad
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48 options as identified in previous literature (single / finite / infinite or regular / limited in time
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50 / institutional guarantees to allow repetition), we argue that greater comparison can be
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52 achieved by specifying the number of events which took place within the process.
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1 The eleventh variable “degree of participant retention” relates to the extent to which the
2 group of participants remains constant or changes over the different participatory events.
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4 Four options were delineated based on past case study examples: less than 24%, 25 to 49%,
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6 50 to 74% or more than 75% of participants attended the whole process.
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11 Concerning the “setting of exchange” variable, we used the options listed by Barreteau et al.
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13 (2010, drawn from Bots & van Daalen, 2008) and extrapolated them to participatory
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15 processes in general. “Setting of exchange” is defined here as the ways in which participants
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17 are involved within participatory processes. For example, participants may at times be asked
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19 to give their personal opinion and be therefore involved individually. At other times, they
20
21 might be involved as a homogeneous group, for example through plenary meetings. Finally,
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23 sub-groups may be formed, when the team takes into account the heterogeneity of
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25 participants, for example by grouping women together because they feel inhibited by the
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27 presence of men in the same group. The “setting of exchange” determines who will interact
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29 with whom, and how. Often, an alternation of different settings takes place within the same
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31 process, reflected by the possibility to select multiple options for this variable in the
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33 framework.
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42 The “degree of participation” is one of the most addressed categories for process
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44 description in the literature. Different typologies distinguish degrees to which stakeholders
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46 are engaged, the most cited one being Arnstein's (1969) “ladder of participation”. Numerous
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48 alternative terms have been suggested for the different rungs of this ladder (e.g. Goetz &
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50 Gaventa, 2001; Lawrence, 2006; Pretty et al., 1995; Pretty, 1995), as well as alternative
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52 concepts to describe degrees or levels of participation (Beierle & Konisky, 2000; Biggs, 1989;
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54 Davidson, 1998; Farrington, 1998; Fung, 2003, 2006) or their roles or tasks (MacNair et al.,
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56 1983; Rowe & Frewer, 2000; Rowe et al., 2004). Yet most of the options describing the
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variable are broad and we prefer a concrete listing of stages in which participants may be involved, as explored by Daniell (2012). This variable includes participants in the process only, excluding team members.

The final variable of the process dimension is the participatory “methods and tools” employed during the process. Most typologies of participation suggest methods that are appropriate to different levels of engagement (Arnstein, 1969; Biggs, 1989; Pretty et al., 1995; Pretty, 1995; Richards et al., 2004). Rowe & Frewer (2000) categorize the methods according to their goal (communicate, consult, participate). Many other scholars have reviewed a wide range of tools and methods (Burton et al., 2004; Chambers, 2002; Davies, 1997; DFID, 2002; Galpin et al., 2000; IAPP, 2004; Involve, 2005; Jayakaran, 2003; Mayoux, 2005; Mikkelsen, 2005; New Economics Foundation, 1998; OECD, 2001; Pretty et al., 1995; Rennie & Singh, 1996; Rietbergen-McCracken & Narayan, 1996; Scottish Parliament, 2004; Shah et al., 1999; Tippett et al., 2007; Wates, 2000). Based on this literature four options were identified for this variable, as listed in Annex 1: non-computerized model(s), computerized model(s), surveys and studies, and visioning, foresight, scenario-building.

2.3 The outputs, outcomes and impacts dimension

The range of potential outputs, outcomes and impacts of participatory processes can be wide including tangible and intangible, short and long term or environmental and social. We consider in this dimension the three elements usually distinguished by analysts in this field: outputs, as immediate products of the process; outcomes, as effects of the process on the behavior of key actors in the relevant systems; and impacts, as the extent to which the participatory process play influential roles in solving or at least alleviating the concerns leading to its creation (adapted from Young, 2008). Indeed, the effects of the process

1 depend on various factors, including the objective of the process and the objective of the
2 M&E. The COPP Framework does not aim to detail all potential outputs, outcomes and
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4 impacts of specific participatory processes, but identifying major changes which may be
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6 expected from such processes for diagnostic and comparative purposes.
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11 The outputs, outcomes and impacts dimension includes six variables. Various typologies
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13 exist for classifying the impacts of participatory processes. Some are based on the timing
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15 (short, middle and long term), others on the type of impact (e.g. social, environmental,
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17 political) or on the nature of impacts (tangible or intangible). The variables chosen here try
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19 to define broad types of impacts (on the actual participants and on actions implemented by
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21 participants) while taking into account their temporal, spatial and social scales. The options
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23 associated with these four variables are listed in Annex 1.
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31 The “main outputs” of the participatory process are generally quite straightforward and are
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33 strongly linked to the objectives of the process. This variable comprises the immediate
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35 tangible products of the process, which are generally easy to monitor and appear in the
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37 short term, during or right after the end of the process. Outputs may include new, revised or
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39 dismissed development plans, policies, investments, technologies, laws, agreements,
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41 memorandum of understanding, terms of reference and models. This variable is not
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43 necessarily listed in existing frameworks but identified systematically in all descriptions of
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45 empirical cases. The list of options proposed should be applicable across various fields of
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47 application.
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54 The “impact on participants” variable encompasses the intangible outcomes of the process
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56 on participating stakeholders. Many recent researchers focused on the evaluation of
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58 participatory processes provide a list of options relevant for this variable (e.g. Carr &
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1 Halvorsen, 2001; Conley & Moote, 2003; Ferrand & Daniell, 2006 summarized in Daniell,
2 2012; Guston, 1999; Innes & Booher, 1999; Perez et al., 2011; Webler & Tuler, 2002). Other
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4 authors mention “individual impacts on participants” as one possible impact category,
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6 without detailing potential options for describing these impacts (e.g. Einsiedel et al., 2001;
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8 GIS, 2011). Others identify specific individual impacts such as Chess & Purcell (1999),
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10 Midgley et al. (2013) and Petts (1995, 2001). Options were identified based on this literature
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12 review and include reduction of conflict, improved understanding of target system elements,
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14 capacity-building, influence on decision, and increased collaboration and trust.
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21 The third variable “impact on actions implemented by participants” is cited specifically by
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23 Innes & Booher (1999). In contrast, some authors mention it as one possible impact
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25 category, without detailing options to describe these impacts (e.g. Crosby et al., 1986;
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27 Ferrand & Daniell, 2006; Guston, 1999; Houghton, 1988; Midgley et al., 2013; Perez et al.,
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29 2011). Finally Webler & Tuler (2002) *inter alia*, identify specific impacts related to
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31 participants’ actions. We identified that “impact on actions implemented by participants”
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33 could be individual behavioral change such as change in daily practices and actions, or
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35 collective actions.
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42 There is limited reference in the reviewed papers to the three remaining variables in this
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44 dimension, namely “social scale”, “spatial extent” and “time scales” of the impacts, and an
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46 absence of explicit inclusion in their frameworks. However, relevance of these variables has
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48 been empirically established. Processes often target further “extension” either socially
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50 (beyond the group of stakeholders involved) or spatially (beyond the target area) by using
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52 pilot sites. Therefore, assessment of the social scales and spatial extent of the impacts of the
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54 process seemed relevant variables to be included in the COPP Framework. We note that
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56 Innes & Booher (1999) mentions the social scale in their framework. Very few of the authors
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1 reviewed evoke time explicitly as a category in their framework (e.g. Connick & Innes, 2003;
2 Midgley et al., 2013). Yet, the “time scale of the impacts” is implicitly mentioned in almost
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4 all research on participatory processes, especially those making the distinction between
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6 outputs (short term) / outcomes (mid-term) / impacts (long term) or first-order (during the
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8 process), second-order (following year or two) and third-order (longer term) effects (e.g.
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12 Connick & Innes, 2003; Young, 2008).

13 **3 Monitoring and evaluation**

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23 Attention to M&E methods enables verifiable assessment of process influence at both the
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25 individual level and on group crafted outcomes. M&E provides the analytical foundation to
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27 appraise a specific implementation of a participatory process and the reference for future
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29 methodological revisions that are aligned with process objectives. However, while
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31 participatory approaches have gained some prominence, they are still too rarely rigorously
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33 evaluated. Many researchers describe participatory processes and their outcomes without
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35 providing details about the M&E approach employed (Frewer & Rowe, 2005). M&E details
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37 are critical to compare the efficacy of methods to elicit information sufficiently robust to
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39 attribute outcomes to particular participatory interventions.
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47 Three elements are essential to detail to make the M&E transparent. These are: the M&E
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49 objective(s), the M&E team and the qualitative and quantitative M&E methods used.

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51 Literature on evaluation (e.g. Boyd et al., 2007; Byrne, 2013; Lincoln & Guba, 1989; Renger
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53 et al., 2011; Rossi et al., 1999; William, 2007) and guidebooks on social research (e.g. Babby,
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55 2004; Creswell, 1994; Crotty, 1998) were particularly useful resources for identifying these
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57 elements.
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2 First, M&E objective(s) can differ from the objective(s) of the process. Yet, both are too
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4 often confounded. Various scholars emphasize the importance of clarifying M&E objective(s)
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6 (e.g. Conley & Moote, 2003; Midgley et al., 2013; Syme & Sadler, 1994). Based on the work
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8 of Bellamy et al. (2001) as well as authors examining the assessment of the quality of the
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10 participatory process (e.g. Ashford, 1984; Fiorino, 1990; Peelle et al., 1996; Renn et al., 1995)
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12 and authors working on interest-oriented evaluations (e.g. Sewell & Phillips, 1979), we argue
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14 that M&E objective(s) can be:
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18 • Donor-oriented: making sure that the process respected the allocated time and
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20 costs,
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24 • Beneficiary-oriented: making sure that the intervention/process reached its
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26 objective(s), and/or
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29 • Research-oriented: specific M&E objective(s) (e.g. measuring a specific outcome).
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31 Involvement of various stakeholders in the M&E generates a multiplicity of perspectives and
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33 objectives in terms of what the M&E should entail, and how and when it should be carried
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35 out. Clarifying M&E objectives implies discussions and trade-offs and a strong “framing”
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37 moment when “boundary judgments” (Midgley, 1997; Ulrich, 1983; William, 2007) are made
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39 about what is “in” and what is “out” of the M&E.
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45 Second, the M&E team may be part of, or external to, the team organizing and facilitating
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47 the participatory process. Evaluators may be representatives of a development agency,
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49 researchers, professional independent consultants or participants in the process. Identity of
50
51 the evaluator(s) may influence M&E implementation, data analysis and interpretation
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53 (Conley & Moote, 2003; Midgley, 2007). It is therefore essential to clarify who M&E team
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55 members are and what their relationship with the team and the participants is.
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Third, the choice of M&E methods is particularly strategic when monitoring and evaluating a participatory process as M&E methods may impact the results of the study and its quality, validity, and credibility (Patton 1999). M&E methods are defined here as the techniques or procedures used to obtain and collate raw data on the participatory process. Listings of qualitative methods are quite extensive in social research guidebooks (e.g. Midgley et al., 2013; Syme & Sadler, 1994). They include participant observation, non-participant observation, field notes, reflexive journals or logbooks, interviews and focus-groups, literature review, questionnaires and expectations. Despite limited quantitative methods employed in participatory processes, they are increasingly listed in recent social research guidebooks. They include census or survey (face to face or self-administered), questionnaires, polls and counting of instances of occurrence in participatory events (e.g. speakers having a say, certain body language expressions, issues raised). Mixed-methods approaches are increasingly used for participatory processes (e.g. Daniell, 2012; Poteete et al., 2010; Smajgl & Ward, 2013).

Section 4 describes the application of the COPP Framework to five case studies across a diverse set of empirical situations.

4 Case study application results

The COPP framework was applied to five case studies: three located in the Mekong basin in Southeast Asia and two in eastern Africa. Some context variables are similar as all five studies focused on environmental issues with natural resources as target system elements.

Table 1 shows differences for the levels of governance influencing the target system elements, the number of previous projects addressing the same issues in the same region

and participants' understanding of target system elements. Additionally, a relationship among the stakeholders existed in some case studies, and was absent in others.

Table 1. Application of the COPP Framework to five case studies – Context dimension

CONTEXT					
	Nam Ngum catchment, Lao PDR	Xishuangbanna, Yunnan, China	Mekong Delta, Vietnam	Rwenzori region, Uganda	Fogera watershed, Ethiopia
Target system elements	Water, livelihoods, agricultural production	Forests, Rubber plantations, livelihoods	Livelihoods, rice plantations	Forests, wetlands, water, livelihoods	Soil, land, livelihoods
Levels of governance influencing the target system elements	Macro: Mekong region agencies, central government Meso: province & district governments Micro: village representatives	Macro: Mekong region agencies, central government Meso: province & district governments	Macro: Mekong region agencies, central government Meso: province & district governments	Macro: Parliamentarians & ministers Meso: Rwenzori region districts Micro: villages	Macro: Ethiopian government Meso: Fogera watershed Micro: villages

Other	None	Few	Many	Few	Many
past/present					
intervention					
attempts					
Preexisting	No pre-	No pre-	No pre-	Good pre-	Moderate
relationships	existing	existing	existing	existing	trust & conflict
among	relationship	relationship	relationship	relationships	
participants				& trust	
Participants'	The majority				
understandin	of participants				
g of target	state they do	state they do	state they do	state they do	state they
system	not	not	not	not	understand
elements	understand	understand	understand	understand	target system
	target system	target system	target system	target system	elements
	elements	elements	elements	elements	

Table 2 lists the participatory process variables for the five case studies. While all five case studies started with similar goals, included multiple events and similar group sizes, all other variables vary.

Table 2. Application of the COPP Framework to five case studies – Process dimension

PARTICIPATORY PROCESS					
	Lao PDR	China	Vietnam	Uganda	Ethiopia
Participatory	Improve	Improve	Improve	Exploring	Exploring

process objectives	participants' system understanding	participants' system understanding	participants' system understanding	decision-making options, improve participants' system understanding	decision-making options, improve participants' system understanding
Instigator(s) of the process^a	Donor , decision-makers (MoNRE Lao PDR)	Donor , researchers (ICRAF China)	Donor , decision-makers (DoNRE Vietnam), researchers (Uo Can Tho)	Donor (European Commission), researchers (community university)	Donor (European Commission), researchers (IWMI and ILRI)
Team^b	Decision-makers (MoNRE Lao PDR), researchers (IWMI, CSIRO)	Researchers (ICRAF China, CSIRO)	Decision-makers (DoNRE Vietnam), researchers (Uo Can Tho CSIRO, SIWRR)	Researchers (community university, IRSTE A)	Researchers (ILRI, IWMI, IRSTE A)

^a MoNRE = Ministry of Natural Resources and Environment

ICRAF = International Centre for Research in Agroforestry

DoNRE = Department of Natural Resources and Environment

IWMI = International Water Management Institute

ILRI = International Livestock Research Institute

^b IRSTE A = French National Research Institute of Science and Technology for Environment and Agriculture

CSIRO = Commonwealth Scientific and Industrial Research Organisation

SIWRR = Southern Institute of Water Resources Research

Origin of the team	The majority of team members do not come from the area and are not affected by the target system elements	The majority of team members do not come from the area and are not affected by the target system elements	The majority of team members do not come from the area and are not affected by the target system elements	The majority of team members come from the area and/or are affected by the target system elements	The majority of team members do not come from the area and are not affected by the target system elements
Selection of the participants	Selected by the team	Selected by the team and by a third party (decision-makers / government)			
Size of the group	Between 25 and 49 (30)	Between 25 and 49 (25)	Between 25 and 49 (45)	Macro: Below 12 (1) Meso: Between 25 and 49 (about 30) Micro: Over 50 (35 groups of about 16 participants)	Between 25 and 49 (about 46)

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				each)	
Level of participants' process expectations	Low	Low	Low	Low	High
Governance level(s) engaged	Multiple levels	Multiple levels	Multiple levels	Multiple levels	Single level
Length of process	1 to 5 years (2.5 years)	1 to 5 years (2.5 years)	1 to 5 years (3 years)	1 to 5 years (16 months)	Less than a year (10 months)
Number of events	Multiple events (5 workshops)	Multiple events (5 workshops)	Multiple events (6 workshops)	Macro: single event Meso: multiple events (4 workshops) Micro: multiple events (7 to 8 workshops per group)	Multiple events (3 workshops)
Degree of participation retention	50 to 74% of participants attended the whole process	50 to 74% of participants attended the whole process	50 to 74% of participants attended the whole process	Less than 24% of participants attended the	25 to 49% of participants attended the whole process

				whole process	
Setting of exchange	Participants are involved as a heterogeneous group	Participants are involved as a heterogeneous group	Participants are involved as a heterogeneous group	Participants are involved alternatively individually, as a whole group and as a heterogeneous group	Participants are involved alternatively individually, as a whole group and as a heterogeneous group
Degree of participation	<ul style="list-style-type: none"> • (co-) selection of participants • (co-) M&E design • (co-) selection of M&E methods • (co-) analysis of results • (co-) communication of results 	<ul style="list-style-type: none"> • (co-) selection of participants • (co-) M&E design • (co-) selection of M&E methods • (co-) analysis of results • (co-) communication of results 	<ul style="list-style-type: none"> • (co-) selection of participants • (co-) M&E design • (co-) selection of M&E methods • (co-) analysis of results • (co-) communication of results 	<ul style="list-style-type: none"> • (co-) selection of participants • (co-) facilitation of participatory events • (co-) M&E design • (co-) selection of M&E methods • (co-) communication of results 	<ul style="list-style-type: none"> • (co-) selection of participants • (Co-) facilitation of participatory events

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Participatory methods and tools	<ul style="list-style-type: none"> • Visioning • Computerized models (hydrological models, integrated agent-based modelling) • Survey (Household survey) 	<ul style="list-style-type: none"> • Visioning • Computerized models (remote sensing/geographic information systems, integrated agent-based modelling) • Survey (household survey) 	<ul style="list-style-type: none"> • Visioning • Computerized models (hydrological models, integrated agent-based modelling) • Survey and study (agricultural productivity study, household survey) 	<ul style="list-style-type: none"> • Non-computerized model (role-playing games) 	<ul style="list-style-type: none"> • Non-computerized model (role-playing games) • Visioning

All five case studies show positive effects, while the Mekong case study processes suggest even wider impacts beyond the immediate group of participants, as shown in Table 3.

Table 3. Application of the COPP Framework to five case studies – Outputs, outcomes and impacts dimension

OUTPUTS, OUTCOMES AND IMPACTS					
	Lao PDR	China	Vietnam	Uganda	Ethiopia
Main output(s)	New development plan	Revised policy (payments for ecosystem	New investment plan (for	New development plan	New development plan

	(irrigation)	services)	adapting to sea-level rise and salinity intrusion)	(integrated natural resources management)	(controlled grazing), terms of reference
Impact on participants	<ul style="list-style-type: none"> Improved understanding of target system elements (e.g. of the impacts of irrigation on poverty) Capacity-building Influence on decision 	<ul style="list-style-type: none"> Improved understanding of target system elements (e.g. of the impacts of payments for agroforestry on rubber production) Capacity-building Influence on decision 	<ul style="list-style-type: none"> Improved understanding of target system elements (effectiveness of available response options to sea-level rise) Capacity-building Influence on decision (e.g. land use planning, dikes) 	<ul style="list-style-type: none"> Improved understanding of target system elements (e.g. of the environmental impacts of agricultural activities, biocleansing) Capacity-building Increased collaboration, trust, networking, relationship building (e.g. commitments to teach 	<ul style="list-style-type: none"> Improved understanding of target system elements (e.g. of how to carry out natural resources planning, or how to tailor activities to the landscape) Capacity-building Increased collaboration, trust, networking, relationship building (e.g.

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				others)	learning about each other's constraints)
Impact on actions	<ul style="list-style-type: none"> • Collective action (submission of revised basin development plan) 	<ul style="list-style-type: none"> • Collective action (revised design of payments for agroforestry in rubber plantations) 	<ul style="list-style-type: none"> • Collective action (revised land use plans, revised climate adaptation plans) 	<ul style="list-style-type: none"> • Individual actions (e.g. picking polythene bags from rubbish pits, building energy saving stoves) • Collective action (e.g. creating a pit for the local abattoir, moving the washing bay away from the river bank) 	<ul style="list-style-type: none"> • None
Social scales of the	Within and beyond the	Only within the group(s)	Within and beyond the	Only within the groups	Only within the group

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impacts	group(s) involved in the process	involved in the process	group(s) involved in the process	involved in the process	involved in the process
Spatial extent	In and beyond the area where the process was implemented	Only in the area where the process was implemented			
Time scales of impact	Short- medium term	Short- medium term	Short- medium term	Short- medium term	Short- medium term

For all five case studies, quite extensive M&E activities were implemented. In the three Southeast Asian case studies, M&E objectives were research, beneficiary and donor-oriented. In the two African case studies, M&E objectives were research and beneficiary-oriented. In all five case studies, evaluators were members of the team organizing and facilitating the participatory process. In the three Southeast Asian case studies, they were supported by external independent consultants while in Uganda, M&E was partly transferred to process participants. Two qualitative and one quantitative M&E methods were used in all case studies: participant observation, interviews and surveys. Additional qualitative methods used in Uganda and Ethiopia included field notes, logbooks, literature review, questionnaires and expectations. An additional quantitative method used in these two cases was the counting of instances of occurrence in participatory events.

5 Discussion

We applied the COPP framework to five cases of participatory processes across five different contexts. The goal was to test first if the framework facilitated the development of a

1 comprehensive and clear description of participatory processes, and second, if the
2 descriptions facilitated a diagnostic step by applying a cross-comparative perspective.
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4 Ultimately, the purpose of this cross-comparison is to analyze the effectiveness of
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6 participatory processes and their elements. Clearly, these questions will not find a final
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8 answer in this paper as the COPP framework requires testing by the broader research and
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10 practitioner community. The effectiveness of the COPP framework depends on the
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12 willingness and capacity of other scholars to apply the framework and, thereby,
13
14 subsequently improve its theoretical structure and practical implementation. It will also
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16 prove its effectiveness by leading to insights resulting from the comparative analysis of
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18 COPP-based descriptions. Finally, effectiveness of the COPP framework will also depend on
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20 how easily participatory processes can be replicated based on COPP-based descriptions.
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28 ***Is the COPP framework providing a clear and comprehensive description and is it***
29 ***sufficiently generic?***
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33 The first element entails that descriptions of participatory processes are sufficiently clear
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35 and comprehensive so that readers get a complete and clear understanding of what the
36
37 participatory project entailed and what outcomes it produced. This implies that the COPP
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39 framework can be applied consistently across multiple settings. The application of the COPP
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41 framework to the five case studies shown in Section 4 was not without challenges.
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47 Not unexpectedly, it was a considerable challenge to describe the context of the
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49 participatory process in only five variables. From a field work perspective, such simplification
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51 neglects the contextual richness and thereby characteristics that potentially determined
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53 process outcomes. For a cross-comparative diagnostic however, contextual richness needs
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55 to be delimited to a level where the comparison of case studies is tractable. Reducing the
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57 context to key characteristics is therefore imperative to facilitate diagnosis.
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2 The application of the process related dimension and its fourteen variables was comparably
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4 easy for all five case studies. The description of outputs, outcomes and impacts, however,
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6 was challenging as the distinction between “impact on participants” and “impact on actions”
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8 and their social, spatial and temporal extent seemed rather subjective. This subjectivity can
9
10 be reduced by having a proper M&E system in place that actually reflects the outcome and
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12 impact variables adequately. The clarification of the three M&E elements in the five case
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14 studies was easy and clear as it largely required the description of methods or steps.
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21 Despite a few challenges, the five case studies suggested that the COPP framework is
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23 sufficiently generic to derive clear and consistent descriptions. The context-related
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25 limitations are likely to constrain diagnostic work as comparative studies might not be able
26
27 to utilize information across all variables; some information might still be too context
28
29 specific. In contrast, some of the contextual richness is lost as the result of the standardized
30
31 description. An important aim of the paper is to catalyze efforts to discover the attributes of
32
33 contextual information that are most effective in facilitating a comparative analysis,
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35 contributing to future COPP revisions and possibly a more generalizable COPP framework.
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42 ***What insights does the comparative perspective provide?***

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44 From a diagnostic perspective, a sample of five case studies restricts the derivation of robust
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46 insights. Nevertheless, our goal was a pragmatic examination of the COPP framework,
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48 comparing available case studies to establish a foundation for expanded hypothesis testing.
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50 Impacts beyond the groups involved in the process are only reported for two of the five case
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52 studies while all five case studies report action level impacts. A multilevel approach is a
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54 common characteristic in four of the five examples, combining focus on improved
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56 participants’ system understanding and decision-specific support. The potential derived
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1 hypothesis is that multilevel engagement is more likely to lead to outcomes. Current
2 literature supports this hypothesis, and investigates which levels are needed and how to
3
4 engage them (e.g. Daniell & Barreteau, 2014).
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9 Another example for formulating testable hypotheses from the diagnostic comparative
10 approach is that there is a high potential for method substitution. Some of the case studies
11 described above worked with visions and simulation modelling while others worked with
12 role-playing games. This emphasizes the need to improve our understanding of the
13 effectiveness of specific methods in specific situations. Applying the COPP framework to a
14 much larger set of case studies would allow for testing the hypotheses that: a) specific
15 methods are easily replaceable, for instance computational modelling with role-playing
16 games; and b) the degree of system complexity will erode or compromise the effectiveness
17 of specific methods.
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33 A third hypothesis derived from the application of the COPP framework is linked to the
34 implementation mode. All case studies document successful impacts on planning or
35 decision-making processes. While all case studies have been implemented with multiple
36 ongoing interactions, workshops and face-to-face meetings, the three Mekong cases, which
37 showed broader social and spatial impacts, have been implemented over a period of more
38 than two years. Also the implementation itself involved local on-the-ground coordination.
39
40 The potential hypothesis derived from this comparison would test whether a minimum
41 engagement period of two years, with regular events and local coordination, is more likely
42 to lead to the achievement of project objectives. Literature based insights point to Daniell
43 (2012) who describes a counter example indicating potential for revision and refutation of
44 this hypothesis. Again, this would need to be tested with a much larger number of case
45 studies.
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2 These three proposed hypotheses indicate the application of the COPP framework as a
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4 diagnostic, comparative device and a reference to develop hypotheses to test the efficacy of
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6 process characteristics and attributes. Ultimately, the purpose of this cross-comparison is to
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8 analyze the effectiveness of participatory processes and their elements. Given the
9
10 complexity of the systems and players and the variability in contexts, processes and
11
12 outcomes, there exists a risk that such a systematic comparison would fail in capturing some
13
14 of the key elements that determine effectiveness. For instance, decision-makers'
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16 commitments to embrace participatory processes outputs or stakeholders' view of their
17
18 own capacity to influence the process and its outcomes can play a critical role in process
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20 effectiveness. Yet these elements are very subjective and difficult to evaluate. But it is only
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22 after comparing a critical sample of cases that we will be able to refine the framework and
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24 to identify the potential recurrence of the derived hypothesis. Therefore, failure is a risk we
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26 are willing to take considering that conversely, success of our endeavour would substantially
27
28 contribute to the advancement of this increasingly prominent research domain. In addition,
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30 a second major added-value of the framework is to point out critical elements a
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32 participatory processes should entail. As a result, even if identification of key effectiveness
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34 elements fails, comparison of a larger number of cases and refinement of the framework
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36 would still be a substantial contribution to research on participatory processes in that
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38 respect.
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50 **6 Conclusion**

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52 This paper developed a framework that aims for a clear and comprehensive description of
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54 participatory processes and their comparison. Ultimately, the purpose of this cross-
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56 comparison was to analyze the effectiveness of participatory processes and their elements.
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1 The framework was applied to an initial small sample of five case studies in Southeast Asia
2 and East Africa. The small size of this sample precluded robust generalizable claims.
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4 However, it allowed us to conclude that the COPP framework has the potential to be
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6 sufficiently generic and comprehensive to allow for further diagnostic steps. Three
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8 hypotheses were derived from this initial application which could be used as a basis for the
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10 development of further formal testable hypotheses in subsequent analytical steps. These
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12 are: 1/ multilevel engagement is more likely to lead to outcomes, 2/ specific methods are
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14 easily replaceable and the degree of system complexity will erode or compromise the
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16 effectiveness of specific methods and 3/ a minimum engagement period of two years, with
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18 regular events and local coordination, is more likely to lead to the achievement of project
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20 objectives. We recommend further testing of the COPP framework by the community of
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22 researchers and practitioners. We argue that such testing would not only promote
23
24 exchanges of experiences and learning among the community, but would also provide a
25
26 greater understanding of participatory processes, their context and their outcomes. In turn,
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28 this would guide researchers and practitioners in designing future participatory processes.
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ANNEX 1: Framework application template

A. Context-related characteristics

A1 What are the *system elements* the participatory process targets to improve?

(Multiple options can be chosen)

- Natural / Environmental: e.g. water, forests, wetlands
- Economic: e.g. labor, import-export
- Social: e.g. livelihoods, migration
- Political: e.g. votes, policies
- Urban: e.g. infrastructures, housing
- Health: e.g. facilities, equipment
- Technological: e.g. internet
- Educational: e.g. curriculum, classes

A2 Which *levels of governance* are critical influencers of the target system elements?

(Multiple options can be chosen)

- Macro (national or larger)
- Meso (subnational)
- Micro (village or group of villages)

A3 Have there been *previous intervention attempts* aiming to influence the selected target system elements?

- Many
- Few
- None

A4 What *relationships existed between participants* before the participatory process started?

- No pre-existing relationship
- High degree of mistrust / conflict
- Moderate trust and conflict
- Good pre-existing relationships and trust

A5 How well did *participants understand the target system elements* before the participatory process started?

- The majority of participants state they understand target system elements
- The majority of participants state they do not understand target system elements

B. Process-related characteristics

B1 What are the *main objectives of the participatory process*?

(Multiple options can be chosen)

- Exploring decision-making options (e.g. planning, laws)
- Improve participants' system understanding
- Resolving or avoiding conflicts
- Gathering knowledge (e.g. mapping of the social-environmental system, geographic information systems, inventory)

B2 Who had the initial idea and *instigated the process* first?

(Multiple options can be chosen)

- Donor or development agency (e.g. call for projects)
- Researchers
- Decision-makers / government
- Civil society
- Private sector

B3 Who *lead the participatory process, organized and facilitated the events*?

(Multiple options can be chosen)

- Donor or development agency
- Researchers
- Decision-makers / government
- Civil society
- Private sector

B4 What is the *origin of the team*?

- The majority of team members come from the area and/or are affected by the target system elements
- The majority of team members do not come from the area and are not affected by the target system elements

B5 Who *selected participants*?

(Multiple options can be chosen)

- Selected by the team
- Selected by a third party, external of the organizing and facilitating team

B6 How *many participants* did the process actively involve (excl. team members)?

(In case of multiple parallel processes specify for each process separately.)

- Over 50
- Between 25 and 49
- Between 12 and 24
- Below 12

B7 What could *participants' expectations* best be described?

- High: they believe this process can change the target system,
- Low: they don't believe this process can change the target system

B8 How many *levels of governance* participated?

- Single-level
- Multiple-levels

B9 How long did the *participatory process* last? (Specify)

- More than 5 years
- 1 to 5 years
- Less than a year

B10 How many *events* took place in this timeframe?

- Multiple events (specify)
- Single event

B11 What is the approximate *retention rate of participants* during the process?

- More than 75% of participants attended the whole process
- 50 to 74% of participants attended the whole process
- 25 to 49% of participants attended the whole process
- Less than 24% of participants attended the whole process

B12 What is the main situation of *participatory activities, the setting of exchange*?

(Multiple options can be chosen)

- Participants are involved individually
- Participants are involved as a group that is considered as a whole by the organizing and facilitating team, independent of participants' diversity
- Participants are involved as a heterogeneous group

B13 What *stages of the process* were genuinely *participatory*?

- (Co-) design of the project proposal
- (Co-) design of the participatory process
- (Co-) selection of process methods
- (Co-) selection of participants
- (Co-) facilitation of participatory events
- (Co-) M&E design
- (Co-) selection of M&E methods
- (Co-) analysis of results
- (Co-) communication of results

B14 What *methods and tools* did the *participatory process* employ?

(Multiple options can be chosen)

- Non-computerized model(s) (e.g. role-playing games, system representation(s))
- Computerized model(s)

- Surveys and studies
- Visioning, foresight, scenario-building

C . Outputs, outcomes and impacts-related characteristics

C1 What were the *main outputs* of the participatory process?

(Multiple options can be chosen)

- New, revised or dismissed development plan / policy / investment / technology / law
- Agreement, memorandum of understanding, terms of reference
- Model
- Investment in new infrastructure / land use change / management processes
- No specific artefact

C2 How can the *main impact on participants* best be described?

(Multiple options can be chosen)

- Reduction of conflict
- Improved understanding of target system elements
- Capacity building
- Influence on decision
- Increased collaboration, trust, networking, relationship building
- None

C3 What was the *main impact on actions* implemented by participants?

(Multiple options can be chosen)

- Individual behavioral change, change in daily practices and actions
- Collective actions
- None

C4 At which *social scales* did the impacts realise?

- Only within the group(s) involved in the process
- Within and beyond the group(s) involved in the process

C5 What was the *spatial extent* of impacts achieved?

- Only in the area where the process was implemented
- In and beyond the area where the process was implemented

C6 What are the *time scales of impacts*?

(Multiple options can be chosen)

- Short term
- Medium term
- Long term