



**HAL**  
open science

## Four challenges in selecting and implementing methods to monitor and evaluate participatory processes: example from the Rwenzori region, Uganda

Emeline Hassenforder, Raphaëlle Ducrot, Nils Ferrand, Olivier Barreteau,  
Katherine Anne Daniell, Jamie Pittock

### ► To cite this version:

Emeline Hassenforder, Raphaëlle Ducrot, Nils Ferrand, Olivier Barreteau, Katherine Anne Daniell, et al.. Four challenges in selecting and implementing methods to monitor and evaluate participatory processes: example from the Rwenzori region, Uganda. *Journal of Environmental Management*, 2016, 180, pp.504-516. 10.1016/j.jenvman.2016.05.019 . hal-01882584

**HAL Id: hal-01882584**

**<https://hal.science/hal-01882584>**

Submitted on 27 Sep 2018

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Four challenges in selecting and implementing methods to monitor and evaluate participatory processes: example from the Rwenzori region, Uganda

**Emeline HASSENFORDER<sup>a</sup>** (corresponding author)

<sup>a</sup> French National Research Institute of Science and Technology for Environment and Agriculture (IRSTEA), Research Unit on Water Management, Actors & Uses (UMR G-eau); AgroParisTech; The Australian National University (ANU), Fenner School of Environment and Society, 48 Linnaeus Way, Acton ACT 2601, Australia; [emeline.hassenforder@anu.edu.au](mailto:emeline.hassenforder@anu.edu.au); Tel.: +61(0) 412 585 110

**Raphaëlle DUCROT<sup>b</sup>**

<sup>b</sup> French Agricultural Research Centre for International Development (CIRAD), Research Unit on Water Management, Actors & Uses (UMR G-eau); IWEGA associate researcher, IWEGA, Universidade Eduardo Mondlane, Caixa Postal n. 3647, Maputo, Mozambique; [raphaele.ducrot@cirad.fr](mailto:raphaele.ducrot@cirad.fr); Tel.: +258 84 71 87 884

**Nils FERRAND<sup>c</sup>**

<sup>c</sup> French National Research Institute of Science and Technology for Environment and Agriculture (IRSTEA); Research Unit on Water Management, Actors & Uses (UMR G-eau); 361 rue J.F. Breton BP 5095 Cedex 5 Montpellier, France; [nils.ferrand@irstea.fr](mailto:nils.ferrand@irstea.fr); Tel.: +33(0) 467 046 320

**Olivier BARRETEAU<sup>d</sup>**

<sup>d</sup> French National Research Institute of Science and Technology for Environment and Agriculture (IRSTEA); Research Unit on Water Management, Actors & Uses (UMR G-eau); 361 rue J.F. Breton BP 5095 Cedex 5 Montpellier, France; [olivier.barreteau@irstea.fr](mailto:olivier.barreteau@irstea.fr); Tel.: +33 (0) 467 166 439

**Katherine Anne DANIELL<sup>e</sup>**

<sup>e</sup> The Australian National University (ANU), Centre for European Studies, #67C, 1 Liversidge St, Acton ACT 2601, Australia; [katherine.daniell@anu.edu.au](mailto:katherine.daniell@anu.edu.au); Tel. : +61(0) 261 258 100

**Jamie PITTOCK<sup>f</sup>**

<sup>f</sup> The Australian National University (ANU), Fenner School of Environment and Society, 48 Linnaeus Way, Acton ACT 2601, Australia; [jamie.pittock@anu.edu.au](mailto:jamie.pittock@anu.edu.au); Tel.: +61(0) 261 255 563

## Abstract

Participatory approaches are now increasingly recognized and used as an essential element of policies and programs, especially in regards to natural resource management (NRM). Most practitioners, decision-makers and researchers having adopted participatory approaches also acknowledge the need to monitor and evaluate such approaches in order to audit their effectiveness, support decision-making or improve learning. Many manuals and frameworks exist on how to carry out monitoring and evaluation (M&E) for participatory processes. However, few provide guidelines on the selection and implementation of M&E methods, an aspect which is also often obscure in published studies, at the expense of the transparency, reliability and validity of the study. In this paper, we argue that the selection and implementation of M&E methods are particularly strategic when monitoring and evaluating a participatory process. We demonstrate that evaluators of participatory processes have to tackle a quadruple challenge when selecting and implementing methods: using mixed-methods, both qualitative and quantitative; assessing the participatory process, its outcomes, and its context; taking into account both the theory and participants' views; and being both rigorous and adaptive. The M&E of a participatory planning process in the Rwenzori Region, Uganda, is used as an example to show how these challenges unfold on the ground and how they can be tackled. Based on this example, we conclude by providing tools and strategies that can be used by evaluators to ensure that they make utile, feasible, coherent, transparent and adaptive methodological choices when monitoring and evaluating participatory processes for NRM.

## Keywords

Mixed-methods, triangulation, theory-based evaluation, participant-based evaluation, coding, outcome-oriented evaluation

## 1. Introduction

Participatory approaches are now increasingly recognized and used as an essential element of policies and programs, especially related to environmental or natural resource management (NRM) (Dyer et al. 2014; Vacik et al. 2014). Participatory processes for NRM can be defined as the involvement of members of the public in agenda-setting, decision-making, and policy-forming activities of organizations or institutions responsible for NRM (based on Rowe and Frewer 2004). In the remainder of this paper, the term “participatory processes” refers to participatory processes in the field of NRM. Most practitioners, decision-makers and researchers having adopted participatory processes also acknowledge the need to monitor and evaluate such processes (e.g. Conrad et al. 2011). Monitoring and evaluation (M&E) is usually undertaken to audit the efficiency and effectiveness of the participatory process, support decisions about the process and learning and documenting experiences (Forss 2005). Evaluators may be independent judges, participants in a process, evaluation experts or researchers.

M&E of NRM participatory processes pose specific challenges compared to both M&E of “non-participatory” processes and M&E of participatory processes in other fields. For example, participation of a wide range of stakeholders generates a multiplicity of perspectives and objectives in terms of what the M&E should entail, and how and when it should be carried out. In parallel, the complexity of social–ecological systems, which involve diverse actors and sectors, variable stressors, ambiguous cause-effect relationships, and continuous and non-linear changes, preclude the use of traditional approaches to evaluation (Faber and Alkemade 2011).

Many of the challenges faced by evaluators when M&E participatory processes relate to the selection and implementation of M&E methods. M&E methods are defined here as the techniques or procedures used to obtain and collate raw data on the participatory process. These include, among others, document reviews, interviews, participant observation, questionnaires or modelling. The choice and implementation of methods are particularly strategic when monitoring and evaluating a participatory process. This is for various reasons:

- Methods chosen may impact the results of the study and its quality, validity, and credibility (Patton 1999),
- There are no agreed-upon evaluation methods (Rosener 1981) as evaluation of a participatory process is very context specific and therefore methods have to be context-sensitive (Blackstock et al. 2007),

- M&E methods reflect the values and norms within the evaluation practice, they are the direct mirror of whether the evaluation is ethical (Laitinen 2005).

It is therefore essential for evaluators to make informed choice when selecting and implementing M&E methods.

Many manuals exist on how to carry out M&E (Fitz-Gibbon and Lyons Morris 1987; IDRC 1997; The World Bank 2004; UNDP 2009). Many frameworks also exist to guide the M&E of participatory processes in general (Abelson et al. 2003; Rosener 1981; Rowe and Frewer 2000) and related to NRM specifically (Beierle and Konisky 2000; Bellamy et al. 2001; Dyer et al. 2014; Webler 1995). This literature is useful in terms of providing lists of variables to assess the effectiveness of participatory processes and guidelines on the various steps to follow. However, these manuals and frameworks are not helpful when it comes to choosing between M&E methods and implementing them (Forss, 2005 Annex 4.A1). As a result, many studies on participatory processes do not make the M&E methods used transparent (Frewer and Rowe 2005) at the expense of the transparency, reliability and validity of the study.

The aim of our paper is to identify challenges that evaluators have to tackle when selecting and implementing methods to monitor and evaluate participatory processes (section two) and to provide tools and strategies to address these challenges (section four). The M&E of a participatory planning process in the Rwenzori Region, Uganda, is used as an example to show how these challenges unfold on the ground and how they can be tackled (section three).

## 2. A quadruple challenge for M&E methods

Four main debates relate to the M&E of participatory processes. They pose a quadruple challenge to the selection and implementation of M&E methods. These debates are between: 1/ qualitative and quantitative methods, 2/ process and outcome-oriented M&E, 3/ theory-based and participant-based M&E and 4/ static and adaptive M&E. By selecting and implementing M&E methods, practitioners, decision-makers and researchers take a position among these debates. This position can impact the consideration given to the M&E

results by the different stakeholders. Evaluators need to be aware of these debates and make their position transparent.

## 2.1 Qualitative and quantitative M&E methods

When selecting M&E methods, practitioners can choose among a range of possible methods. These methods are often categorized in two clusters: methods which are more quantitative in nature such as surveys or questionnaires and methods which are more qualitative in nature such as interviews or participant observation. A plethora of manuals or books exist which explain in detail how to implement qualitative or quantitative methods (e.g. Hennink et al. 2010; Mack et al. 2005; Maxim 1999; Taylor 2005). Even though some authors, like Blackstock et al. (2007) or Forss (2005 p.54) underline that “there is a trend towards qualitative methods as evaluation tasks become more complex”, other authors suggest that the distinction between the two “seems of limited relevance, as the qualitative and quantitative nature of data tends to merge in the course of a practical evaluation”(De Vaus, 2001 in Forss, 2005 p.59). Other authors still, suggest to build on this distinction and to use both qualitative and quantitative methods. This “methodological pluralism” is advocated, among others, by authors in mixed-methods research (e.g. Brannen 1992; Brewer and Hunter 1989; Creswell 2003; Teddlie and Tashakkori 2009), public participation evaluation (e.g. Bamberger, 1990; Chess, 2000; Cook, 1997) and systems thinking (e.g. Cabrera et al. 2008). Rationale for this “methodological pluralism” is that multiple methods and triangulation of observation can contribute to methodological rigor in evaluation (Patton, 1987). It is especially relevant when neither qualitative nor quantitative methods alone are sufficient to monitor and evaluate the object under consideration (Teddlie and Tashakkori 2009), as is the case for participatory processes. Based on these considerations, we too, suggest to use mixed-methods when evaluating participatory processes. Creswell (2009) highlights that methodological challenges in using mixed-methods, particularly in interventions and action research, has only started being addressed recently. Methodological challenges identified so far include, among others, validity aspects, ethical issues, prevalence of one type of method over the other and timing of integration (qualitative before quantitative, vice-versa or simultaneity) (Creswell 2009; Greene et al. 2001). Our study aims to contribute to this endeavour.

## 2.2 Process and outcome-oriented M&E

A second dichotomy is between monitoring and evaluating the outcomes of a participatory process and the process itself (Chess and Purcell 1999; Rowe and Frewer 2000). The former focuses on monitoring and evaluating the results in order to determine whether the participatory means are successful. Results include, for example, better accepted decisions, consensus or education depending on the targeted objectives of the participatory process. The latter emphasizes the importance of the means – rather than the results – and looks at aspects such as fairness, information exchange, group process, and procedures (Chess and Purcell 1999). While some authors advocate for the assessment of outcomes when monitoring and evaluating a participatory process (Beierle 1999; Frewer and Rowe 2005), many recognize that the process, along with other external factors, may have an influence on the outcomes and therefore needs to be considered (Chess and Purcell 1999). Analysts who believe that both process and outcomes should be considered when monitoring and evaluating a participatory process belong to the “middle ground” (Carnes et al. 1996; IAP2 2007; Rowe and Frewer 2000). We adopt this “middle ground” approach. In order to take into account other possible external factors potentially impacting the process and outcomes, we also include a third cluster on the “context”. Extreme weather events, like droughts or floods for instance, can impact the process and its outcomes by modifying participants’ priorities and redefining their objectives. The importance of the “context” is often emphasized in the literature (e.g. Beierle and Cayford 2002; McAllister 1999; Midgley 2007), but few authors detail how to assess it (for an example see Blackstock et al., 2007). Our study aims at bridging this gap.

## 2.3 Theory-based and participant-based M&E

Another division which often appears when it comes to monitor and evaluate participatory processes is between those who define evaluation criteria a priori, based on the literature, and those who consider that participants should have a say in the M&E design. Both approaches have advantages. Theory-based evaluation makes the M&E generally more consistent and eases the comparability of results through more systematic criteria and methods (Fiorino 1990; Frewer and Rowe 2005; Webler 1995). Participant-based evaluation, on

the other hand, may allow 1/ for greater trust between the evaluator and the respondent (Conrad et al. 2011), 2/ to build on participants' knowledge of the context and therefore have methods which are more context-sensitive (Dietz and Stern 2008), 3/ for greater learning since "those who learn most in the process of evaluation are those who actually do the job – who interview, process surveys, etc." (Forss, 2005 p.48), and 4/ to capture the diversity of views about the M&E design, including the methods (Bellamy et al. 2001; Rowe et al. 2004). A "middle ground" exists in this division as well: certain authors recognize the possibility to combine both theoretical and participatory elements, for example by "deriving criteria from theory, and subsequently prioritizing these with the involvement of stakeholders" (Conrad et al. 2011 p.763; see also Chess 2000). If employed carefully, this approach allows to build on advantages of both approaches. However, we argue that this might be difficult to implement in practice. Indeed, if participatory M&E in itself can be challenging (Opondo et al. 2006), deconstructing theoretical assumptions and creatively designing and adapting new methods to each local situation with stakeholders can be even more difficult (Matthews 2004; Daniell 2012). Some practical and theoretical insights exist on how to combine both, such as Midgley's "creative design of methods" (2000) or Scriven's "goal-free evaluation" (1982), but they are few. In the former, Midgley suggests that different methods may be used to address people's purposes for the intervention. These are determined based on a series of systemically interrelated questions defined jointly. Goal free evaluation, just as its name states, involves carrying out an evaluation without predetermined goal. Methods are chosen based on their ability to uncover the actual effects or outcomes of a process which are then compared with the actual needs of the participants. Our paper provides a concrete example of how both theoretical and participatory elements can be combined. In order to account for the multiplicity of viewpoints related to the M&E, our framework encourages to clarify the "M&E viewpoints", including what the M&E objectives are, who the evaluators are and what methods are employed.

## 2.4 Static and adaptive M&E

Finally, a fourth debate is between an "old-fashioned" or static model of evaluation prevalent in the 1980's and more adaptive, pluralist, collaborative models of evaluation which developed strongly since the 1990's (Pollitt 1999). In the static model, M&E is seen as independent and scientific and requires the strict



comparison between the characteristics of an object (in our case a participatory process and its participants) in a point A in time (ex-ante) and the same characteristics of the same object in a point B in time (ex-post). An example of method to carry out a “static” M&E is Before After Control Impact (BACI) analysis (Smith et al. 1993). This model does not cater for any modification of the variables or the methods used while the M&E is running. The adaptive evaluation model encompasses various approaches: empowerment evaluation (Fetterman et al. 1996), fourth generation evaluation (Lincoln and Guba 1989), critical evaluation (Everitt 1996), utilization-focused evaluation (Patton, 1997), pluralist evaluation (Duran et al. 1995), systemic evaluation (Boyd et al. 2007), systematic evaluation (Rossi et al. 1999) and democratic evaluation (Floc’hlay and Plottu 1998). One common element among these approaches and a determinant of the adaptive model is “an agreement that active participation by major stakeholders is fundamental to good evaluation practice” (Pollitt 1999 p.79) and that the M&E design and methods can, or should, to a certain extent, be adaptive “on the way”. The latter element is based on the assumption that surprises may emerge in the course of the participatory process which the evaluators may not have expected and which might be “more interesting than ascertaining whether targets were met or analyzing how a project was implemented” (Forss 2005 p.48). Evaluators must then be equipped with adequate methods to capture or discover the “unknowable”. Following Chess (2000), we suggest that monitoring and evaluating change requires a rigorous comparison of the same object at two points in time but that the methods used should at the same time be adaptive to be able to capture the unexpected. Yet few theoretical or empirical sources explain how to do that. Our study aims at providing guidelines in that respect.

In summary, we argue that evaluators of participatory processes have to tackle a quadruple challenge when selecting and implementing M&E methods:

- Using mixed-methods, both qualitative and quantitative,
- Assessing the participatory process, its outcomes, and its context,
- Taking into account both theory and participants’ views,
- Being rigorous and adaptive.

These four challenges are strongly interconnected. For example, theory-based M&E is often associated with static M&E or outcome-oriented M&E with adaptive M&E. As highlighted by Chess (2000 p.779), “as the field

of social evaluation has matured, many of the dichotomies have become blurred". While acknowledging this interconnectedness and blurredness, we argue that practitioners, decision-makers and researchers need to recognize these challenges in order to make their position and methodological choices more transparent.

But tackling this quadruple challenge on the ground can be particularly difficult for practitioners willing to monitor and evaluate participatory processes. In section three, we take the example of the M&E of a participatory planning process in the Rwenzori Region, Uganda, to show how these challenges unfold on the ground and how they can be tackled.

### 3. Example of the M&E of the Rwenzori participatory planning process in Uganda

The Rwenzori is a mountain range located in western Uganda, at the border with the Democratic Republic of Congo. In 2010, a group of researchers from Mountains of the Moon Community University, based in the Rwenzori, answered a call from the European Union to participate in a project called AfroMaison<sup>1</sup>. AfroMaison's objective was to "contribute to put into practice the concept of Integrated Natural Resource Management (INRM) at the meso-scale in Africa" (AfroMaison 2010). Part of this project was dedicated to the proposal and the validation of INRM plans actively engaging concerned stakeholders (see section 3.1).

A framework was developed to monitor and evaluate the Rwenzori participatory process. The framework is based on three main clusters: context, process, and outputs, outcomes and impacts (See Figure 1 and Hassenforder et al. In review-b, for a detailed description of the framework development and implementation).

The application of this framework involves six phases:

---

<sup>1</sup> **AfroMaison project** (2011-2014): " Africa at a meso-scale: Adaptive and integrated tools and strategies for natural resources management " funded by the 7th Framework Program of the European Union, theme " ENV.2010.2.1.1-1" [Integrated management of water and other natural resources in Africa].

1. Description of the case,
2. Clarification of the M&E viewpoint(s) and definition of the M&E objective(s),
3. Identification of the context, process and outcomes analytical variables based on the M&E objective(s),
4. Development of the M&E methods to inform the variables and data collection,
5. Analysis of the data collected in order to inform the M&E objective(s),
6. Sharing of the M&E results.

Sections 3.1 to 3.6 detail the application of these six phases on the Rwenzori case. We specifically emphasize on the method-related phase of the framework (phase four) to identify challenges in selecting and implementing M&E methods.

### 3.1 Phase 1. Description of the case

The Rwenzori case study site covers 14,000 km<sup>2</sup> over seven districts and a population of about 2.4 million people. The main social and environmental issues in the area include massive deforestation and overexploitation of land and natural resources, including wetland encroachment, intensification of agriculture and pollution and depletion of freshwater resources. Regular food shortages and diseases outbreaks occur, adding to the burden of a population which is already partly below the poverty line.

The participatory planning process developed to address these social and environmental issues was adapted from the Aquastress project<sup>2</sup> (Ferrand et al. 2006) and comprised six phases:

1. Procedural agreement,
2. Evaluation and identification of long term common objectives,
3. Action proposal,
4. Selection and integration of actions,

---

<sup>2</sup> **AquaStress Integrated Project** (2005-2008): “Mitigation of WaterStress through new approaches to Integrating management, technical, economic and institutional instruments” funded by the 6th Framework Program of the European Union, Priority 1.1.6.3 [Global Change and Ecosystems].

5. Test of the plan using participatory simulation tools (role-playing games), and
6. Implementation plan.

This process was first implemented at the scale of the Rwenzori region, or “meso” scale, encompassing seven districts, with a group of about 30 stakeholders through a series of four workshops over a period of 16 months, from April 2012 to July 2013. The group included representatives of the civil society, local governments, the private sector and universities. The process was then extended to the local scale, with 35 groups of about 16 farmers each, in different communities throughout the region. Each group participated in seven to eight workshops.

### 3.2 Phase 2. Definition of the M&E viewpoints and objectives

In the Rwenzori, the M&E team was composed of “international” evaluators, namely researchers and a PhD student from international research institutes, and “local” evaluators, including researchers from Mountains of the Moon University and key participants. Due to the wide extension of the process locally and a strong transfer posture, five “rapporteurs” were hired to monitor and evaluate the process at the local scale. Each originated from one of the five to eight communities which they were in charge of and therefore spoke the local dialects. All evaluators were “insiders” or “internal” evaluators in the sense that they were involved in designing and implementing the participatory planning process.

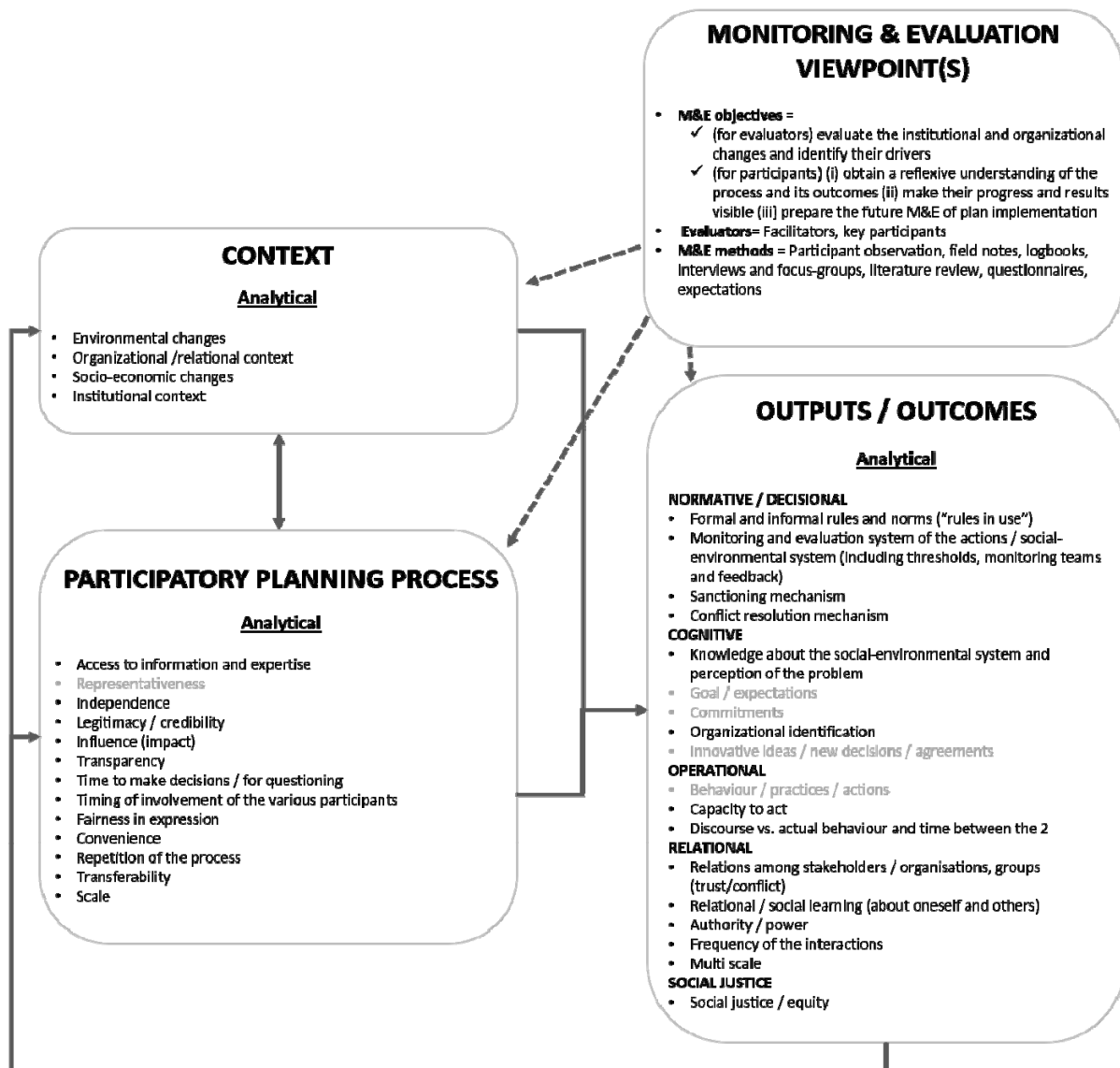
There were two main sets of M&E objectives in the Rwenzori. For evaluators, the M&E objectives were (i) to evaluate the institutional and organizational changes taking place among and beyond the group of participants and (ii) to identify the contextual and procedural drivers for those changes. For participants, their objectives for being involved in the M&E process were (i) to obtain a reflexive understanding of the participatory planning process and its outcomes (ii) to make their progress and results visible to themselves and higher policy makers and (iii) to set the scene for the future operational M&E of plan implementation and adaptation.

The M&E objectives were defined before the first workshop, during the procedural agreement phase, through interviews carried out by the PhD student with evaluators and key participants. Following the interviews, the M&E objectives were refined through discussions and trade-offs among evaluators. In parallel, the words and concepts included in the M&E objectives, such as “institutional change” and “organizational change”, were also clearly defined.

### 3.3 Phase 3. Identification of the analytical variables

Still during the procedural agreement phase, an initial list of variables to be monitored and evaluated was established for each cluster, context, process and outcomes, based on a literature review. The objective here is not to provide a full account of the literature reviewed, which is described elsewhere (Hassenforder et al., in review-b). This initial list of variables was then discussed with evaluators through informal discussions and with ten key participants through interviews. Involvement of participants at this stage allowed to ensure the context-specificity of the framework as well as to include analytical variables which were necessary to fulfil their own participants’ M&E objective. To ensure the context-specificity of the framework, this phase was supplemented by a document review on the Rwenzori, a baseline studies and a stakeholder analysis (see section 3.4).

The resulting M&E framework or list of variables for the M&E of the Rwenzori participatory planning process is illustrated in Figure 1. The analytical variables added by participants to fulfil their own M&E objectives appear in grey in Figure 1. Some of the variables in black, which had been identified through the literature, also contribute to the participants’ M&E objectives.



**Figure 1.** Preliminary analytical framework for the M&E of the Rwenzori participatory planning process (2-column fitting image) (Source: Hassenforderet al., in review-b; based on the ENCORE Framework: Ferrand 2004 summarized in Daniell 2012 p.65-66; Ferrand and Daniell, 2006)

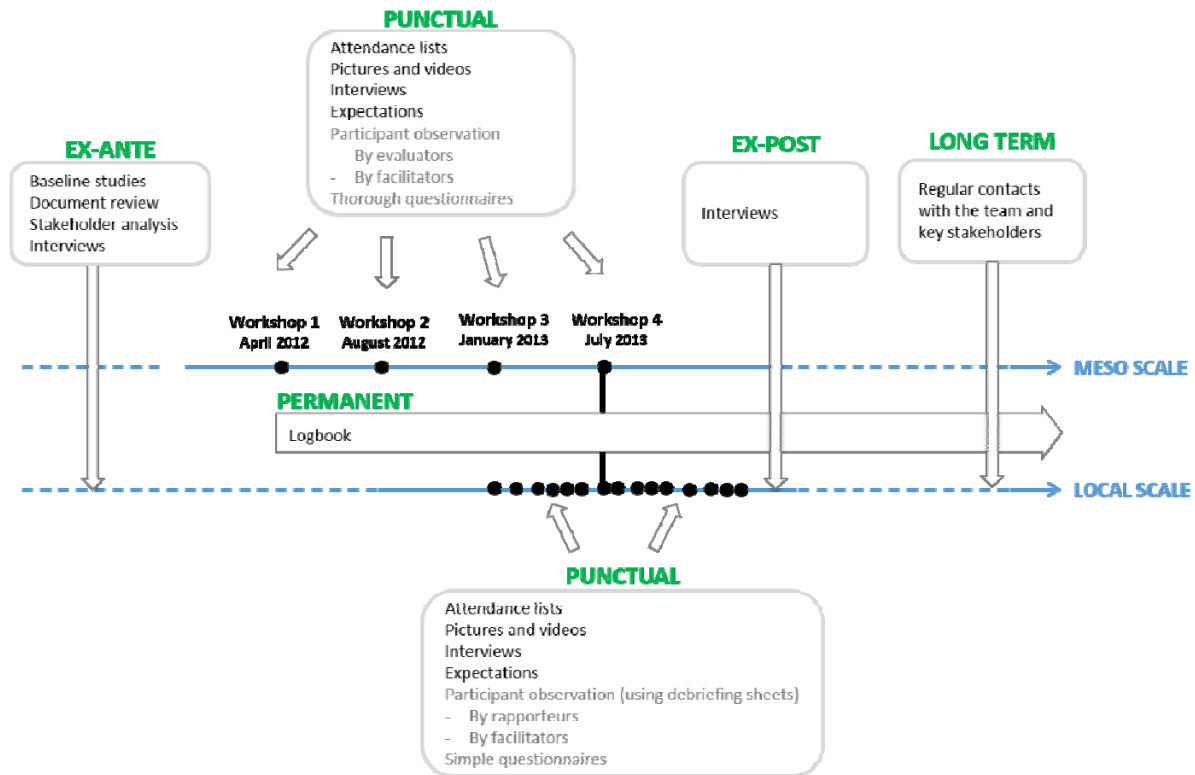
### 3.4 Phase 4. Development of the M&E methods and data collection

The concrete implementation of this framework on the ground goes through the development and use of various M&E methods to inform the variables listed in Figure 1.

In practice, the four theoretical challenges highlighted in section two took the shape of two practical issues. The first issue relates to the geographical scale: the participatory planning process took place both at the meso and local scales in parallel, and extension to the local scale was not initially planned. This multiplicity of scales required M&E methods to be adapted “on the way” to local participants whose literacy level was low. It also required to include more evaluators in the M&E team since the original team was not large enough and did not have the skills, for example the dialect, to monitor the process in the 35 communities. The second issue relates to the timing of the M&E. On the one hand, the “static” evaluation of the participatory process requires an assessment of the situation *ex-ante* and *ex-post* as well as *punctually*, during “key moments” of the process. “Key moments” are defined in the frame of participatory processes as moments when participants get together to work on a collaborative endeavour. In the Rwenzori case, key moments were the workshops. We argue that these moments are particularly important to monitor and evaluate because they are often at the origin of changes such as shifting viewpoints, perspective-taking and decision-making. On the other hand, the monitoring of the process also needs to track what is happening *permanently*, in between the workshops, which can be challenging because many decisions and actions might take place “behind closed doors” which are not accessible to evaluators. Several M&E methods were therefore selected and developed to monitor and evaluate the Rwenzori process at various points in time<sup>3</sup> (see Figure 2): *ex-ante*, *punctual*, *permanent*, *ex-post* and *long term*.

---

<sup>3</sup> It would be tempting to associate *punctual* and *permanent* M&E with *formative* evaluation and *ex-post* and *long-term* M&E with *summative* evaluation. Based on Scriven (1991), we define *formative evaluation* as evaluation intended to improve the participatory process while *summative evaluation* implies some form of final judgment of the participatory process. However, following Chambers (1994), we argue that the distinction between *formative* and *summative* evaluation is more based on the objectives of the M&E and the use which is made of the data collected than on the timing of methods’ implementation.



**Figure 2. M&E methods used at various points in time in the Rwenzori case** (2-column fitting image; M&E methods in black are the ones that are similar for both the meso and the local scales. M&E methods in grey are the M&E methods used for the meso scale and which were then adapted to the geographical extent and literacy conditions of the local scale)

Four main methods were used for the *ex-ante* M&E. They aimed primarily at establishing a baseline of the situation before the beginning of the process and to discuss the M&E objectives and variables with key participants. Two *baseline studies* were made to describe the baseline situation in the Rwenzori region and nationally including issues such as population, health, literacy, climate, vegetation, agricultural systems, social networks and NRM policies and institutions (Migongo-Bake and Catactutan 2012; Montserrat et al. 2013). These studies were supplemented by a *document review* specifically focusing on the M&E aspects of interest, namely NRM institutions and organizations. The review included mainly an examination of secondary documentation, including local council reports, PhD and master dissertations, other project reports and local media. Ten preliminary open qualitative *interviews* were also made with key participants and evaluators. A *stakeholder analysis* was established based on the baseline study, document review and interviews.



The main *permanent* M&E method was a “*logbook*” on the model developed in Etienne (2011) meant to record all interventions, sessions, interactions, events and other external or contextual factors, whether environmental, relational, socio-economic, or political, taking place in the area. It took the form of a computerized database whose entries were made by evaluators through a questionnaire available on a website. Information included in the logbook was based on the evaluators’ knowledge and observation and on primary documents, such as minutes of meetings, interview transcripts, email exchanges and local media. In total, 307 events were entered into the logbook, covering a period of four years between July 2010 and July 2014. As highlighted by Chess (2000 p.770) “One of the major difficulties of evaluating of environmental public participation programmes [...] is the lack of data collected as part of routine implementation”. He suggests for practitioners to “record data, using a computerized template to minimize reporting burden [...]. These data (e.g. numbers of participants at meetings, minutes of meetings and names of stakeholder groups, etc.) could provide a beginning for researchers’ evaluation of public participation efforts”. This is exactly what our logbook ought to do.

For the *punctual* M&E made during the workshops, various methods were developed (see Figure 2). These are attendance lists, pictures and videos, interviews, expectations, participant observation and questionnaires. For both the meso and the local scales, attendance at workshops was tracked by name thanks to *attendance lists* including information on gender, geographical provenance, profession and literacy. All sessions were *photographed* and some were partly *filmed*. Semi-structured *interviews* were conducted at the end of each workshop. They were made with facilitators, participants, non-participants living in similar conditions than the participants (for comparison between areas with and without the process) and non-participants who are participants’ relatives (friends, family and colleagues - to monitor the effects of the process outside of the group considered). Selection of interviewees within these groups was made using purposive and snowball sampling techniques, while trying to balance conditions in terms of gender, geographical provenance and profession. The list of questions used for the interviews is provided in Annex 1. Most of the 44 interviews were made by international evaluators. At the beginning of the workshops, participants enacted their *expectations* writing them on post-its or expressing them aloud during a round table or a video interview. At the end of each workshop, participants evaluated to what extent their expectations had been met using the same medium.

Two methods were used at the meso scale which were then adapted to the specific conditions of the local scale (in grey in Figure 2). These are: participant observation and questionnaires. *Participant observation* consisted in recording, during the workshops, interactions among participants, their physical behaviour, mental states (e.g. joy, discontent), and changes in space (e.g. people entering or leaving the room) (based on DeWalt and DeWalt 2002). At the meso scale, participant observation was made through “open” note-taking, with no guidance provided, by international evaluators and facilitators. At the local scale, the five rapporteurs were trained to participant observation. Since neither the rapporteurs nor the local facilitators were used to taking notes or debriefing workshops, guidance was provided to them respectively through a “*rapporteur debriefing sheet*” and a “*facilitator debriefing sheet*” (see Annexes 2 and 3). *Questionnaires* also differed between the meso and local scales to adapt to the low literacy level in the communities. At the meso scale, *thorough questionnaires* were distributed at the end of the workshops including aspects related to access to information, representativeness, transparency, fairness in expression or convenience (see Annex 4). These aspects were rated using a 5-point Likert scale and some were detailed through open questions. The questionnaires also included questions about the role-playing game used for participatory planning to allow evaluators and facilitators to get feedback about it and modify it accordingly. At the local scale, this *questionnaire* was simplified to a great extent to include only five questions related to the participants’ level of satisfaction, substantial learning, relational learning, innovation and creativity, and commitment for the future via a 5-point semantic differential scale. The questionnaire was designed such that it could be completed by an illiterate person without using a pen, by tearing notches (see Annex 5). In total, 137 questionnaires were collected across the four meso workshops and 475 across the local workshops. Rapporteurs were equipped with electronic tablets to take pictures of the workshops and of all the local M&E documents produced. This followed a request made by communities who were willing to keep their M&E documents to be able to track their progress. Rapporteurs then used the pictures of the documents to enter the data in an online database accessible by all evaluators.

The *ex-post* M&E method used was *interviews* based on the similar list of questions and interviewee selection process than for the punctual M&E (see Annex 1).

The *long-term* M&E is made by an evaluator using the logbook and with regular *updates via email and telephone* with facilitators and key participants. It lasts for a few months or years after the end of the process and looks at, in addition to the outcomes and impacts in the medium and long terms, the concepts of sustainability, viability and adaptation of the outcomes and impacts to further changing circumstances. As in many projects, the *long term* M&E in the Ugandan case was constrained by the fact that AfroMaison project had ended and therefore that no more budget was available for the M&E.

Figure 3 shows an example of the way in which variables were formulated into questions or items. Each variable was populated by at least two M&E methods.

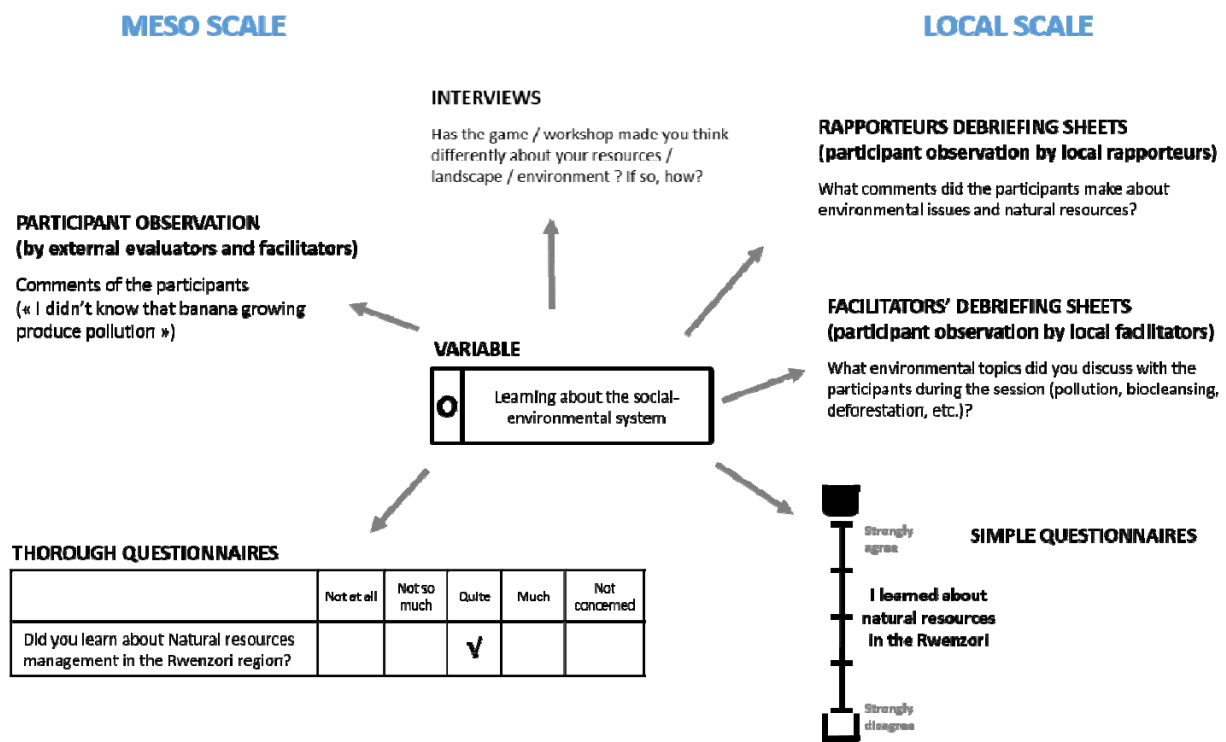


Figure 3. Example of the transformation of the “Learning about the social-environmental system” outcome (O) variable into questions and items in the M&E methods (2-column fitting image)

### 3.5 Phase 5. Analysis of the data collected

Data analysis was performed by the evaluators. Interviews, participant observations and questionnaires were transcribed after each workshop. Transcripts were qualitatively analysed to identify the presence of the variables, or codes, listed in the preliminary framework (Figure 1). All the data which did not correspond to any of these variables was assigned a new code, corresponding to “surprises” or variables which emerged during the analysis and had not been envisioned in the preliminary M&E framework. Some of the M&E methods used were deliberately open-ended enough to capture these “surprises”. These are the questionnaires, interviews and participant observation. For example, questions such as “what do you think of the planning process?” allowed to identify elements which played a role in the institutional changes under consideration and which had not been envisioned, neither by the literature, nor by participants. Coding was therefore made following both an inductive and a deductive process (Fereday and Muir-Cochrane 2006). Five emerging process variables or “surprises” were identified in such manner: the scale of the process, the use of role-playing-games, and the strategic role played by the problem framing phase, champions and facilitators (Hassenforder et al., in review-a). These new variables were then added to the interview list of questions which were to be asked after the following workshop. Coded data were subsequently grouped into context, process and outcomes according to their nature.

Data could be triangulated thanks to the multiplicity of M&E methods used ensuring for each variable to be populated by at least two methods (see Table 1). Coding of the data collected by the rapporteurs, which was the most subject to misinterpretation, was triangulated by one international evaluator, one local evaluator and one rapporteur.

Some of the data was analysed quantitatively. This included data collected through attendance lists, expectations, Likert scale items in the thorough questionnaires and semantic differential scale items in the simple questionnaires. This quantitative analysis allowed to have a larger sample of answers on variables such as learning or fairness in expression. The best and lowest rated items were then investigated further through interviews.

### 3.6 Phase 6. Sharing of the M&E results

In the Ugandan case, results regarding participants' M&E objectives were mainly a description of the participatory planning process, including quantitative elements about the number of participants, their representativeness in terms of gender, geographical provenance and profession. The M&E also allowed gaining an understanding of the participants' opinion about aspects of the process such as transparency, fairness in expression and legitimacy. The M&E results also encompassed a description of the main outputs and outcomes obtained through the process. The main output was the Rwenzori region INRM plan. However, the process also had "less tangible" outcomes such as learning, capacity-building, increased social capital and social learning. Participants also started implementing actions individually, such as picking polythene bags from rubbish pits or building energy saving stoves, or collectively, such as creating a pit for the local abattoir or moving the washing bay away from the river bank. These results were presented through posters to communities and presentations during workshops to meso scale participants. The latter were also provided with reports summarizing the main outputs and outcomes of the process. Policy-makers received a policy-brief. Presentations and reports also included an overview of the M&E methods employed which could be used for the future operational M&E of plan implementation and adaptation.

Results regarding evaluators' M&E objectives included the identification of the institutional and organizational changes taking place among and beyond the group of participants and of the contextual and procedural drivers for those changes. For this, two methods were used: the process-tracing method (George and Bennett 2005) and the causal cluster approach (Young 2008). The combination of those methods involved establishing links among clusters of contextual and procedural variables on the one hand and resulting institutional and organizational outcomes on the other. The objective here is not to give a full account of the analytical methods employed or the results obtained, which is provided elsewhere (Hassenforder et al., in review-a). Rather, we provide an overview of the results and the communication means used to share these results to the various audiences targeted. In Uganda, three main institutional and organizational changes were identified and analysed using this data analysis technique: social learning, the endorsement of the plan by the Rwenzori Regional Development Framework (RRDF), which is a coalition of regional civil society organizations and other

public and private stakeholders, and the integration of Mountains of the Moon University in the environmental cluster of the RRDF. These results were presented to the research community through peer-reviewed papers in scientific journals, conference presentations and project reports.

## 4. Discussion

In this section, we use the example of the Ugandan case to discuss how the four methodological challenges highlighted in section two can be tackled. We provide tools and strategies that can be used by evaluators to ensure that they make utile, feasible, coherent, transparent and adaptive methodological choices when monitoring and evaluating participatory processes for NRM.

### 4.1 Qualitative and quantitative M&E methods

Some of the M&E methods used were more quantitative in nature, such as questionnaires, attendance lists and Likert scales, while others were more qualitative in nature, such as interviews or participant observation. The multiplicity of methods used allowed triangulation of the data collected as each variable had to be populated by at least two different methods, as illustrated in Table 1.

Using both qualitative and quantitative methods allowed a wider collection of data over content, time and space as well as a complementarity in the data collected (McLaughlin et al. 2001; Patton, 1999). For instance, using questionnaires allowed collecting information from all participants and regularly throughout the process when interviewing all of them regularly was not possible due to a lack of time or budget. However, these methods did not allow “surprises”, or elements that were not included in the initial M&E framework, to be easily captured. They were therefore usefully complemented with interviews and participant observation. These allowed more in-depth information - such as participants’ values, concerns and perceptions - and additional observations - such as the environment in which the interview takes place, the behaviour of the respondent, his/her hesitations or the presence of other people around - to be collected (Morgan et al. 1992).

For in-depth discussions on the benefits and limitations of using mixed-methods, see e.g. Bryman (2006), Forss (2005) and Johnson & Onwuegbuzie (2004).

We suggest that using a simple table, such as the one presented in Table 1, allows to check for the complementarity of the mixed-methods used.

**Table 1. Mixed methods and complementarity among them - Example of the Rwenzori process variables<sup>a</sup> (X**

= “direct” M&E: data is collected directly, for e.g. through a direct question to participants, O = “indirect” M&E: no direct question on this variable but potentially addressed via an open question or item).

		MONITORING & EVALUATION METHODS												
		Quantitative data only	Qualitative and quantitative data						Qualitative data only					
		Attendance lists	Baseline studies	Logbook	Participant observation (meso)	Thorough questionnaires	Participant observation by rapporteurs (local)	Participant observation by facilitators (local)	Simple questionnaires	Document review	Stakeholder analysis	Pictures and videos	Interviews	Expectations
<b>ANALYTICAL VARIABLES</b>	Access to information and expertise				X		O					O	O	O
	Representativeness	X			X	X	O	X			X		X	O
	Independence							X				O		O
	Legitimacy / credibility				X		X					O	O	O
	Influence (impact)				X		O					O	X	O
	Transparency				X		X	O				O	O	O
	Time to make decisions / for questioning				X		X					O	O	O
	Timing of involvement of the various stakeholders	X		X										
	Fairness in expression				X	X	X					O	X	O
	Convenience				X	X	O						X	O
	Repetition of the process	X		X										
	Transferability				X		X	X				O	X	O
	Scale				X	X	X					O	X	O

<sup>a</sup> For concision purposes, only process variables were included in Table 3. A similar table can be drawn with context and outcome variables.

Table 1 can help evaluators to:

- ensure that each analytical variable (on the left) is populated,
- easily view which methods populates which variables,
- make sure that each variable is populated by at least two methods (triangulation),



- ensure that each analytical variable is “directly” monitored and evaluated (X) but also that “indirect” data is provided for this variable (O),
- easily view which methods provide quantitative data or qualitative data and therefore to easily identify where to find the data when undertaking their analysis.

## 4.2 Process and outcome-oriented M&E

The M&E framework used to monitor and evaluate the Rwenzori case, and illustrated in Figure 1, is based on three main clusters. Therefore, not only does it allow to monitor and evaluate the process and its outcomes, but also the context in which these take place.

The remaining difficulty for the M&E methods lies in monitoring and evaluating the simultaneous multiple dynamics and feedbacks among these three clusters of variables, as illustrated by the arrows in Figure 1. Indeed, these variables may change simultaneously. Context is not monitored “before”, process “during” and outcomes “after”. All evolve concurrently. For instance, certain outcomes, such as social learning, may emerge as a result of existing social inequality issues (context variable) and early involvement of participants in the process (process variables) and may in turn create new relationships among participants (context variable) and increase the legitimacy of some participants in the remaining of the process (process variables).

We argue that adopting a “causal cluster” approach (Young 2008) and the process-tracing method (George and Bennett 2005), as explained in section 3.6, allows to cater for this complexity. For a detailed explanation on how to use these methods, see Hassenforder et al. (In review-a).

## 4.3 Theory-based and participant-based M&E

Section 3.3 illustrated how the analytical variables were initially selected based on the theory and subsequently discussed and modified by evaluators and key participants involved in the M&E design (phase

three of the M&E framework). However, other phases of the M&E were also based both on theory and on participants' views, as shown in Table 2.

**Table 2. M&E phases based on theory and/or on participants' views**

	Phase 1. Description of the case	Phase 2. Definition of the M&E viewpoints and objectives	Phase 3. Identification of the analytical variables	Phase 4. Development of the M&E methods and data collection	Phase 5. Analysis of the data collected	Phase 6. Sharing of the M&E results
<b>THEORY-BASED</b>						
Literature	X	X	X	X	X	(Scientific publications)
<b>PARTICIPANT-BASED</b>						
Evaluators	X	X	X	X	X	X
Facilitators	X			X		X
Key participants		X	X	(as informants)		(as recipients)
All participants				(as informants)		(as recipients)

The description of the case (phase one) was based on a review of the literature as well as on evaluators' and facilitators' knowledge of the area. Evaluators coordinated the overall M&E process and were therefore involved in all phases. Definition of the M&E objectives (phase two) was made based on interviews of evaluators and ten key participants (see section 3.2). To a certain extent, the evaluators' M&E objectives, related to the monitoring of institutional changes, was also based on the literature as it had been identified by AfroMaison as a key study area, explaining the involvement of a PhD student in the investigation. The development of M&E methods (phase four) was initially based on the literature, and then extensively reviewed by local evaluators to adapt it to the case context. Local evaluators reformulated interview questions and questionnaire items for a greater understanding by respondents and selected the symbols to be used in the "simple" questionnaire. As primary users of the logbook, they advised on how to make it user friendly in a context where power cuts are frequent and internet unreliable. Facilitators were also involved in data collection as they distributed questionnaires and made participant observations of the workshops. Overall, the input of local evaluators and facilitators was of great value to maximize adaptability and transferability of the

M&E methods. For phase four, participants were involved as informants only. Data analysis and reporting (phases five and six), were made by evaluators based on guidelines provided in the literature and through scientific publications. Facilitators contributed to share M&E results with participants.

Participatory M&E may not always be relevant. When it is, we suggest that the role of the various stakeholders, whether evaluators, facilitators or participants, in the six phases of the M&E process be made clear from the very beginning of the collaboration. As suggested by Chess (2000), participatory evaluation may increase available information, interest and usefulness but it raises issues that must be discussed explicitly, such as: who should be involved? Will those involved have influence on the evaluation? Will certain interest groups have undue power? A table like Table 2 can be useful to remind the roles and responsibilities of each and everyone in the M&E.

#### 4.4 Static and adaptive M&E

The initial list of variables shown in Figure 2 was monitored and evaluated before, during and after the participatory process thanks to the various M&E methods, as presented in section 3.4. We suggest to use a comparative method like Before After Control Impact (BACI) to carry out the analysis (Smith et al. 1993). This allowed for a “static” ex-post comparison which revealed the changes of the system in the given period.

In parallel, three strategies were used to ensure the adaptivity of the M&E methods used: interaction between data collection and data analysis to uncover “surprises”, “thinking theoretically” and reformulation “on the way” of the misunderstood or repetitive items. First, the iterative interaction between data collection and data analysis detailed in section 3.5 allowed to attain reliability and validity of the M&E results (Morse et al. 2002). It allowed not only to uncover “surprises” but also for variables emerging from data to be reconfirmed in new data, giving rise to new variables which, in turn, were verified in the data already collected. Variables and methods were therefore revised and modified iteratively during several cycles of data collection and analysis. This strategy, called “thinking theoretically”, is a second strategy highlighted by Morse et al. (2002) to ensure reliability and validity. The third strategy used to ensure the adaptivity of the M&E methods used is the

reformulation “on the way” of the misunderstood or repetitive items. Following the data analysis of the first workshop, evaluators realized that some of the questionnaire items and some of the questions in the rapporteur and facilitator debriefing sheets had been misunderstood or considered repetitive by the respondents. These items were modified or reformulated, therefore leading to changes “on the way” to the M&E methods. For example the item “I think we'll be able to make it” in the Likert scale was replaced by “do you think that you will be able to implement the actions that were suggested during the workshop?”. Some changes made to the M&E methods “on the way” were also required by changes occurring in the participatory process itself. For instance, when the process was extended to local communities, the questionnaire and participant observation methods normally used with meso scale participants had to be modified to cater for the low literacy level in local communities.

These three strategies all contributed to address the staticity and adaptivity challenge. They illustrate that the implementation of a framework for monitoring and evaluating a participatory process is not linear but is rather an iterative dynamic among the six M&E phases to adapt to the complexity and uncertainty of the system under study.

## 5. Conclusion

This paper is based on the acknowledgement that participatory processes are increasingly used in NRM policies and programs and that these processes need to be monitored and evaluated in order to audit their effectiveness, make more informed decisions in the future or improve our learning based on their experience. We suggested that the M&E methods’ selection and implementation is particularly strategic and yet often obscure in published studies. The example of the M&E of a participatory planning process in the Rwenzori Region, Uganda, was used as an example to illustrate how the four challenges in methods’ selection and implementation could be tackled. For the qualitative/quantitative challenge, we suggested to use a table to check the complementarity and coherence among the M&E methods used (e.g. Table 1). For the process/outcomes challenge, we recommended the adoption of a causal cluster approach (Young 2008) and the process-tracing method (George and Bennett 2005) in order to cater for the complexity of the system

under consideration and to identify the causal relationships among the context, process and outcome variables. For the theory/participant-based challenge, we identified that clarifying the roles and responsibilities of the various stakeholders in the six phases of the M&E process was beneficial and that it could be made transparent through a simple table (e.g. Table 2). For the static/adaptive challenge, we suggested that an initial list of variables be evaluated before, during and after the participatory process to allow for a “static” ex-post comparison, while keeping some of the M&E methods adaptive to required changes “on the way” and open to “surprises”, that is to variables which may emerge from the ongoing data analysis. We demonstrated that the implementation of a framework for monitoring and evaluating a participatory process is not linear but is rather an iterative dynamic among the six M&E phases to adapt to the complexity and uncertainty of the system under study. Our final thought relates to the time and effort required to monitor and evaluate a participatory process. Undeniably, a well-thought M&E requires more time and resources than simply applying a ready-made formula. However, the extent of the M&E, illustrated by the number of variables and methods, should always be adapted to the M&E objectives and to the resources available, not the other way around. In the Rwenzori example, part of the AfroMaison project was dedicated to researching M&E methods, illustrated by the presence of international evaluators and a PhD student among the M&E team. This paper is one of the outcomes. But the Rwenzori should by no means be considered as illustrative of the extent of participatory processes M&Es. It is up to evaluators of each process to find their own balance between comprehensiveness and feasibility.

## 6. Acknowledgements

The authors would like to thank all Ugandan and international team members involved in the AfroMaison project, namely (by alphabetical order): Abrami, G., Akaganyira, S., Akugizibwe, L., Baha, K., Birungi, J., Bwambale, G., Gumpinger, E., Iwinamatsiko, H., Kabaseke, C., Kusemerersoa, P., Lemmens, R., Maathe Nzdghera, M., Muhemba, I., Muhumuza, M., Mwanguhya, S., Mwesige Mujuku, R., Semana, A., Tibasiima, T., as well as all the local facilitators. Work on the Rwenzori participatory process was supported by the AfroMaison European FP7 research project and the UNESCO Chair in Water Economics and Transboundary Water Governance. The donors did not have any direct role in study design, in the collection, analysis and

interpretation of data, in the writing of the report; or in the decision to submit the article for publication. The views expressed are those of the authors and do not reflect the official position of the donors. The authors thank the editors and the three anonymous reviewers for their constructive comments and suggestions.

## 8. References

- Abelson, J., P-G. Forest, J. Eyles, P. Smith, E. Martin, and F-P. Gauvin. 2003. "Deliberations about Deliberative Methods: Issues in the Design and Evaluation of Public Participation Processes." *Social Science & Medicine* 57 (2): 239–51.
- AfroMaison. 2010. *AfroMaison Grant Agreement Annex 1 "Description of Work" Part B1*. Brussels, Belgium.
- Bamberger, M. 1990. "Methodological Issues in the Evaluation of International Community Participation Projects." *Sociological Practice* 8 (1): 208–25. <http://digitalcommons.wayne.edu/socprac/vol8/iss1/23>.
- Beierle, T.C. 1999. "Using Social Goals to Evaluate Public Participation in Environmental Decisions." *Review of Policy Research* 16 (3/4): 75–103.
- Beierle, T.C., and J. Cayford. 2002. *Democracy in Practice: Public Participation in Environmental Decisions*. 1st ed. Washington D.C.: Resources for the Future.
- Beierle, T.C., and D.M. Konisky. 2000. "Values, Conflict, and Trust in Participatory Environmental Planning." *Journal of Policy Analysis and Management* 19 (4): 587–602. doi:10.1002/1520-6688(200023)19:4<587::AID-PAM4>3.0.CO;2-Q.
- Bellamy, J.A., D.H. Walker, G.T. McDonald, and G.J. Syme. 2001. "A Systems Approach to the Evaluation of Natural Resource Management Initiatives." *Journal of Environmental Management* 63 (4): 407–23. doi:10.1006/jema.2001.0493.
- Blackstock, K.L., G.J. Kelly, and B.L. Horsey. 2007. "Developing and Applying a Framework to Evaluate Participatory Research for Sustainability." *Ecological Economics* 60 (4): 726–42. doi:10.1016/j.ecolecon.2006.05.014.
- Boyd, A., T. Geerling, W.J. Gregory, C. Kagan, G. Midgley, P. Murray, and M.P. Walsh. 2007. "Systemic Evaluation: A Participative, Multi-Method Approach." *The Journal of the Operational Research Society* 58 (10): 1306–20. doi:10.1057/palgrave.jors.260228.
- Brannen, J. 1992. "Combining Qualitative and Quantitative Approaches: An Overview." In *Mixing Methods: Qualitative and Quantitative Research*, edited by J. Brannen, 3–37. Aldershot, England: Avebury.
- Brewer, J., and A. Hunter. 1989. *Multimethod Research: A Synthesis of Styles*. Newbury Park, CA: Sage.
- Bryman, A. 2006. "Integrating Quantitative and Qualitative Research: How Is It Done?" *Qualitative Research* 6 (1): 97–113. doi:10.1177/1468794106058877.
- Cabrera, D., L. Colosi, and C. Lobdell. 2008. "Systems Thinking." *Evaluation and Program Planning* 31 (3): 299–310.

- Carnes, S. A., M. Schweiter, E. B. Peelle, A. K. Wolfe, and J. F. Munro. 1996. *Performing Measures for Evaluating Public Participation Activities in DOE's Office of Environmental Management*. Oak Ridge, TN. <http://www.osti.gov/scitech/servlets/purl/366507>.
- Chambers, F. 1994. "Removing Confusion about Formative and Summative Evaluation: Purpose versus Time." *Evaluation and Program Planning* 17 (1): 9–12.
- Chess, C. 2000. "Evaluating Environmental Public Participation: Methodological Questions." *Journal of Environmental Planning and Management* 43 (6): 769–84. doi:10.1080/09640560020001674.
- Chess, C., and K. Purcell. 1999. "Public Participation and the Environment: Do We Know What Works?" *Environmental Science & Technology* 33 (16): 2685–92. doi:10.1021/es980500g.
- Conrad, E., L.F. Cassar, M. Christie, and I. Fazey. 2011. "Hearing but Not Listening? A Participatory Assessment of Public Participation in Planning." *Environment and Planning C: Government and Policy* 29 (5): 761–82. doi:10.1068/c10137.
- Cook, T. 1997. "Lessons Learned in Evaluation over the Past 25 Years." In *Evaluation for the 21st Century*, edited by E. Chelimsky and W. Shadish, 30–52. Thousand Oaks, CA: Sage.
- Creswell, J.W. 2003. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, CA: SAGE.
- . 2009. "Editorial: Mapping the Field of Mixed Methods Research." *Journal of Mixed Methods Research* 3 (95): 95–108. doi:10.1177/1558689808330883.
- Daniell, K.A. 2012. *Co-Engineering and Participatory Water Management: Organisational Challenges for Water Governance*. Cambridge, England: Cambridge University Press.
- De Vaus, D. 2001. *Research Design in Social Research*. London, England: Sage.
- DeWalt, K.M., and B.R. DeWalt. 2002. *Participant Observation: A Guide for Fieldworkers*. Participant Observation A Guide for Fieldworkers. Lanham, MD: AltaMira Press.
- Dietz, T., and P.C. Stern. 2008. *Public Participation in Environmental Assessment and Decision Making*. Washington, DC: The National Academies Press.
- Duran, P., E. Monnier, and A. Smith. 1995. "Evaluation a La Francaise: Towards a New Relationship between Social Science and Public Action." *Evaluation* 1 (1): 45–63. doi:0.1177/135638909500100104.
- Dyer, J., L.C. Stringer, A.J. Dougill, J. Leventon, M. Nshimbi, F. Chama, A. Kafwifwi, J.I. Muledi, J.-M.K. Kaumbu, M. Falcao, S. Muhorro, F. Munyemba, G.M. Kalaba, and S. Syampungani. 2014. "Assessing Participatory Practices in Community-Based Natural Resource Management: Experiences in Community Engagement from Southern Africa." *Journal of Environmental Management* 137: 137–45. <http://dx.doi.org/10.1016/j.jenvman.2013.11.057>.
- Etienne, M. 2011. *Companion Modelling A Participatory Approach to Support Sustainable Development*. Edited by M. Etienne. Versailles, France: Editions Quae.
- Everitt, A. 1996. "Developing Critical Evaluation." *Evaluation* 2 (2): 173–88. doi:10.1177/135638909600200204.
- Faber, A., and F. Alkemade. 2011. "Success or Failure of Sustainability Transition Policies. A Framework for the Evaluation and Assessment of Policies in Complex Systems." In *DIME Final Conference*. Maastricht, The Netherlands. [http://final.dime-eu.org/files/Faber\\_Alkemade\\_C5.pdf](http://final.dime-eu.org/files/Faber_Alkemade_C5.pdf).

- Fereday, J., and E. Muir-Cochrane. 2006. "Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development." *International Journal of Qualitative Methods* 5 (1): 80–92.
- Ferrand, N. 2004. "Participatory Tools in the WFD: What's for? Needs and Requirements from HarmoniCop & HarmoniQua." In *Harmoni Concerted Action Conference - 2nd Catchmod Technical Workshop "Integrating Tools and Toolboxes."* Copenhagen, Denmark.
- Ferrand, N., and K.A. Daniell. 2006. "Comment Évaluer La Contribution de La Modélisation Participative Au Développement Durable ?" In *Séminaire DDT*. Lille, France.
- Ferrand, N., M. Hare, and J-E. Rougier. 2006. *Iskar Test Site Option Description Living with Flood and Drought. Methodological Document to the Iskar Test Site, AquaStress IP, FP6, Europe*. Brussels, Belgium.
- Fetterman, D.M., S.J. Kaftarian, and A. Wandersman. 1996. *Empowerment Evaluation: Knowledge and Tools for Self-Assessment and Accountability*. Edited by D.M. Fetterman, S.J. Kaftarian, and A. Wandersman. Thousand Oaks, CA: Sage.
- Fiorino, D. J. 1990. "Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms." *Science, Technology, & Human Values* 15 (2): 226–43.
- Fitz-Gibbon, C.T., and L. Lyons Morris. 1987. *How to Design a Program Evaluation*. Newbury Park, CA: Sage.
- Floc'hlay, B., and E. Plottu. 1998. "Democratic Evaluation: From Empowerment Evaluation to Public Decision-Making." *Evaluation* 4 (3): 261–77.
- Forss, K. 2005. "An Evaluation Framework for Information, Consultation and Public Participation." In *Evaluating Public Participation in Policy Making*, 41–84. Paris, France: OECD.
- Frewer, L.J., and G. Rowe. 2005. "Evaluating Public Participation Exercises: Strategic and Practical Issues." In *Evaluating Public Participation in Policy Making*, 85–1008. Paris, France: OECD.
- George, A.L., and A. Bennett. 2005. "Process-Tracing and Historical Explanation." In *Case Studies and Theory Development in the Social Sciences*, edited by A.L. George and A. Bennett, 205–32. Cambridge, Mass.: MIT Press.
- Greene, J. C., L. Benjamin, and L. Goodyear. 2001. "The Merits of Mixing Methods in Evaluation." *Evaluation* 7 (1): 25–44.
- Hassenforder, E., O. Barreteau, K.A. Daniell, J. Pittock, and N. Ferrand. In Review-a. "Drivers of Environmental Institutional Dynamics in Decentralized African Countries." *Environmental Management Journal*.
- Hassenforder, E., J. Pittock, O. Barreteau, K.A. Daniell, and N. Ferrand. In Review-b. "The MEPPP Framework: A Framework for Monitoring and Evaluating Participatory Planning Processes." *Environmental Management Journal*.
- Hennink, M., I. Hutter, and A. Bailey. 2010. *Qualitative Research Methods*. Thousand Oaks, CA: Sage.
- IAP2. 2007. "IAP2 Core Values of Public Participation." *International Association for Public Participation*. <http://www.iap2.org.au/about-us/about/core-values>.
- IDRC. 1997. *Planning Monitoring and Evaluation of Program Performance, A Resource Book*. Ottawa, ON. <http://idl-bnc.idrc.ca/dspace/bitstream/10625/23368/1/113277.pdf>.



- Johnson, R.B., and A.J. Onwuegbuzie. 2004. "Mixed Methods Research: A Research Paradigm Whose Time Has Come." *Educational Researcher* 33 (7): 14–26.
- Laitinen, I. 2005. "Ethical Standards and Evaluation." In *Evaluating Public Participation in Policy Making*, 33–40. Paris, France: OECD.
- Lincoln, Y.S., and E.G. Guba. 1989. *Fourth Generation Evaluation*. Thousand Oaks, CA: Sage.
- Mack, N., C. Woodsong, K.M. MacQueen, G. Guest, and E. Namey. 2005. *Qualitative Research Methods: A Data Collector's Field Guide*. Research Triangle Park, NC: Family Health International.
- Matthews, D. 2004. "Rethinking Systems Thinking: Towards a Postmodern Understanding of the Nature of Systemic Inquiry. PhD Thesis." The University of Adelaide, Australia.
- Maxim, P.S. 1999. *Quantitative Research Methods in the Social Sciences*. New York, NY: Oxford University Press.
- McAllister, K. 1999. "Understanding Participation: Monitoring and Evaluating Process, Outputs and Outcomes." Rural Poverty and the Environment Working Paper. Ottawa, ON: International Development Research Centre. <https://idl-bnc.idrc.ca/dspace/bitstream/10625/24628/1/114210.pdf>.
- McLaughlin, J.S., G.W. McLaughlin, and J.A. Muffo. 2001. "Using Qualitative and Quantitative Methods for Complementary Purposes: A Case Study." *New Directions for Institutional Research*, no. 112: 15–44.
- Midgley, G. 2000. *Systemic Intervention: Philosophy, Methodology, and Practice*. New York, NY: Kluwer Academic / Plenum.
- . 2007. "Systems Thinking for Evaluation." In *Systems Concepts in Evaluation: An Expert Anthology*, edited by B. Williams and I. Imam, 11–34. Point Reyes, CA: EdgePress.
- Migongo-Bake, C., and D. Catacutan. 2012. *AfroMaison WP2 Report Chapter 6 Context Analysis of Rwenzori Mountains / Albertine Rift, Uganda*. Nairobi, Kenya.
- Montserrat, L.S., E.T. Cruz, and A. Anderson. 2013. *Baseline Report Rwenzori Region Case Study AfroMaison Project*. Fort Portal, Uganda.
- Morgan, M.G., C. Atman, A. Bostrom, B. Fischhoff, and L. Lave. 1992. "Communicating Risk to the Public: First Learn What People Know and Believe." *Environmental Science and Technology* 26 (11): 2048–56.
- Morse, J.M., M. Barrett, M. Mayan, K. Olson, and J. Spiers. 2002. "Verification Strategies for Establishing Reliability and Validity in Qualitative Research." *International Journal of Qualitative Methods* 1 (2): 13–22. <https://ejournals.library.ualberta.ca/index.php/IJQM/article/view/4603>.
- Opondo, C., P. Sanginga, and A. Stroud. 2006. *Monitoring the Outcomes of Participatory Research in Natural Resources Management, Experiences of the African Highlands Initiative*. Kampala, Uganda. [http://www.worldagroforestry.org/programmes/african-highlands/pdfs/wps/ahiw\\_p\\_02.pdf](http://www.worldagroforestry.org/programmes/african-highlands/pdfs/wps/ahiw_p_02.pdf).
- Patton, M.Q. 1987. *How to Use Qualitative Methods in Evaluation*. Newbury Park, CA: Sage.
- . 1997. *Utilization-Focused Evaluation: The New Century Text*. 3rd ed. London, England: Sage.
- . 1999. "Enhancing the Quality and Credibility of Qualitative Analysis." *Health Services Research* 34 (5 Part II): 1189–1208.

- Pollitt, C. 1999. "Stunted by Stakeholders? Limits to Collaborative Evaluation." *Public Policy and Administration* 14 (77): 77–90. doi:0.1177/095207679901400207.
- Rosener, J.B. 1981. "User-Oriented Evaluation: A New Way to View Citizen Participation." *Journal of Applied Behavioral Science* 17 (4): 583–96. doi:0.1177/002188638101700412.
- Rossi, P.H., H.E. Freeman, and M. Lipsey. 1999. *Evaluation: A Systematic Approach*. 6th ed. Thousand Oaks, CA: Sage.
- Rowe, G., and L.J. Frewer. 2000. "Public Participation Methods: A Framework for Evaluation." *Science, Technology & Human Values* 25 (1): 3–29.
- . 2004. "Evaluating Public-Participation Exercises: A Research Agenda." *Science Technology And Human Values* 29 (4): 512–56. <http://sth.sagepub.com/cgi/doi/10.1177/0162243903259197>.
- Rowe, G., R. Marsh, and L.J. Frewer. 2004. "Evaluation of a Deliberative Conference." *Science, Technology, & Human Values* 29 (1): 88–121. doi:10.1177/0162243903259194.
- Scriven, M. 1982. *Evaluation Thesaurus*. 3rd ed. Inverness, CA: EdgePress.
- . 1991. "Beyond Formative and Summative Evaluation." In *Evaluation and Education: At Quarter Century*, edited by M.W. McLaughlin and D.C. Phillips, 18–64. Chicago, IL: The University of Chicago Press.
- Smith, E.P., D.R. Orvos, and J. Cairns Jr. 1993. "Impact Assessment Using the Before-After-Control-Impact (BACI) Model: Concerns and Comments." *Canadian Journal of Fisheries and Aquatic Sciences* 50 (3): 627–37.
- Taylor, G.R. 2005. "Quantitative Research Methods." In *Integrating Quantitative and Qualitative Methods in Research*, edited by G.R. Taylor, 91–100. Lanham, MD: University Press of America.
- Teddlie, C., and A. Tashakkori. 2009. *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioural Sciences*. Edited by C. Teddlie and A. Tashakkori. Thousand Oaks, CA: Sage.
- The World Bank. 2004. *Monitoring & Evaluation, Some Tools, Methods & Approaches*. Washington D.C. [http://portals.wi.wur.nl/files/docs/ppme/ME\\_tools\\_methods\\_approaches.pdf](http://portals.wi.wur.nl/files/docs/ppme/ME_tools_methods_approaches.pdf).
- UNDP. 2009. *Handbook on Planning Monitoring and Evaluation for Development Results*. New York, NY. <http://www.undp.org/eo/handbook>.
- Vacik, H., M. Kurttila, T. Hujala, C. Khadka, A. Haara, J. Pykäläinen, P. Honkakoski, B. Wolfslehner, and J. Tikkanen. 2014. "Evaluating Collaborative Planning Methods Supporting Programme-Based Planning in Natural Resource Management." *Journal of Environmental Management* 144. Academic Press: 304–15.
- Webler, T. 1995. "Right Discourse in Public Participation: An Evaluative Yardstick." In *Fairness and Competence in Citizen Participation. Evaluating Models for Environmental Discourse*, edited by O. Renn, T.A. Wiedemann, and P. Webler, 35–86. Dordrecht, The Netherlands: Kluwer.
- Young, O.R. 2008. "Institutions and Environmental Change: The Scientific Legacy of a Decade of IDGEC Research." In *Institutions and Environmental Change, Principal Findings, Applications, and Research Frontiers*, 3–45. Cambridge, MA: MIT Press.



## Supplementary material / Annexes

Annex 1. List of questions used for the interviews

Annex 2. “Rapporteur debriefing sheet” used to guide evaluators in their participant observation of the local process

Annex 3. “Facilitator debriefing sheet” used to guide facilitators in their participant observation of the local process

Annex 4. Thorough questionnaires distributed at the end of each meso workshop

Annex 5. Simple questionnaires distributed at the end of each local workshop

## Annex 1. List of questions used for the interviews

### List of questions for interviews of participants AfroMaison Project

WHO? Participants to the workshops

OBJECTIVE = have their opinion about the participatory planning process and its outputs/outcomes

#### **Note to interviewer: don't forget, for each interviewee:**

Name	Date, time and location of the interview
Gender	Duration of the interview
Organization (if any)	In which workshop(s) he/she has participated
Contact (phone number)	Interview recorded? Yes / No

#### **Before the beginning of the interview:**

Explain the interviewee **why** you want to interview him/her (**objective**).

Explain that the interview will last for about **one hour**. If he/she has less time, prioritize the questions depending on whom you are interviewing.

Outline briefly the **structure of the interview**. Show the interviewee the list of questions if he/she asks for it.

Ask for his/her **consent to record the interview**. Remind him/her that he/she can ask for the recorder to be stopped at any time. Remind it again during the interview if you see that the interviewee is uncomfortable to speak on record.

Tell him/her that his/her responses will remain **anonymous**.

Ask him/her if he/she has any **question before starting the interview**.

---

### **1/ THE PARTICIPATORY PLANNING PROCESS, ITS METHODS AND MAIN OUTPUTS**

What do you think of the planning process?

Do you think that the right participants were there? Are there people who should have participated in the game/workshop but did not? If so, who should have been included?

Are certain people over represented, are some people unable to voice their opinions, are some people excluded from the process etc.?

Do you think that your point of view has been well taken into account by other participants?

Do you think that the game is a good tool for making plans about natural resources?

What do you think about the plan developed during the workshop??

### **2/ MOTIVATIONS FOR PARTICIPATING / LEVEL OF PARTICIPATION**

Have you participated in natural resources planning and implementation processes before? Which ones? What did you do, how did you participate?

Why did you participate in these workshops?

Would you like to be more involved in natural resources planning and implementation in the future? If so, how?

### **3/ DIFFICULTIES AND SUCCESSES**

What are the difficulties and successes you experienced in the planning process/the workshop?

What do you think are the objectives of these workshops?

Do you think the workshop achieves these objectives? How/Why? (weaknesses, difficulties, successes...)

Do you think that it will be possible to implement the plan?

What challenges do you think could occur in the implementation of the plan?

How could these challenges be overcome?

#### **4/ IMPACTS/OUTCOMES**

(Don't ask these questions to participants who have participated only in the third workshop)

##### **BETWEEN THE FIRST WORKSHOP AND NOW:**

What actual positive and negative impacts have you observed so far? for you individually? For your community?

Did you learn about natural resources management in the Rwenzori region?

Did you learn about planning and plan implementation?

Did you learn something about the challenges facing your neighbours/other stakeholders?

Did you implement any new activity to preserve the environment or change your current activities?? Which ones? You individually? With your community/organization?

Did you meet to discuss about the environment?

Did you decide about new rules / norms / agreements / bye-laws concerning the environment and/or the people or change existing ones?

Were there any new groups or associations for natural resources management formed?

Did the workshops change your relationships with other people? (trust, conflict...)

**Make sure that people talk about things that have been implemented (not things that they want to implement)**

**Make sure that people talk about things that happened after the process (and not things that existed already before)**

##### **IN THE FUTURE:**

What positive and negative impacts do you expect to see in the future? For you individually / for your community?

**Same questions than above but for future impacts.**

How will you share this experience with other people? With whom? When? Where?

**Are there any other comments you would like to add?**

**THANK YOU !**

**Annex 2. “Rapporteur debriefing sheet” used to guide evaluators in their participant observation of the local process**

**RAPPORTEUR DEBRIEFING SHEET**

Place: \_\_\_\_\_ Number of participants: \_\_\_\_\_  
 Date: \_\_\_\_\_ Gender: ..... women ..... men  
 Rapporteur’s name: \_\_\_\_\_ ..... adults ..... children  
 Local facilitator’s name: \_\_\_\_\_ Number of real players: \_\_\_\_\_

**INTRODUCTION**

Does the facilitator talk about:  
 How the participants were selected  
 Why they are here (the objectives)  
 What is expected from this meeting (the expected outcomes)  
 The various steps  
 The role of the various stakeholders in the process (himself, you, SATNET, MMU, AfroMaison)  
 How decisions are being made, the rules and mechanisms  
 The interactions among the participants (who will interact with whom and how)  
 The monitoring and evaluation (objectives, methods and feedback)

Start time of workshop:

Start time of the game:

**GAME**

<b>OBSERVE</b> People arriving or leaving, modification of space, time when nobody speaks...	<b>LISTEN</b> What comments do the participants make about:	<b>FEEL:</b> Attitudes of the participants (happiness, laugh, discontent, conflicts, they lean towards the game, sit backward, etc.)
	<p>The <b>game</b> and its processing rules:</p> <p>Their <b>current actions</b> (what they are doing now) and <b>alternative actions</b> (what they could do in the future) (list concrete actions):</p> <p>AfroMaison, SATNET, MMU and other local, regional or national <b>organizations and institutions:</b></p> <p><b>Environmental</b> issues and <b>natural resources:</b></p> <p>Requests and demands of the participants:</p>	<p>(be concrete):</p>

End time of the game:

Do the participants have enough time to make decisions and think about actions?

Were they creative? Did they suggest innovative ideas? Which ones ?

Other comments:





**Annex 3. "Facilitator debriefing sheet" used to guide facilitators in their participant observation of the local process**

**DEBRIEFING AFTER THE WORKSHOP**

*(To be filled in by the facilitator after each workshop)*

Name of the facilitator:

Number of participants:

Date:

Gender: ..... women ..... men

Location:

Geographical origin (village, parish, district)

Length : ..... hours / days

Describe the **main process** of the workshop (what did you do)?

Did you notice something surprising during the workshop? If yes, what?

Did you face any technical difficulty? If yes, which ones?

What questions or comments did the participants make?

To what extent did the game allow them to discuss about the impact of their actions on the environment?

To what extent did they learn about each other?

Was there any conflict / opposition during the workshop? (describe it briefly)

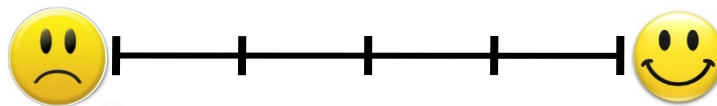
What environmental topics did you discuss with the participants during the workshop (pollution, biocleansing, deforestation, etc.)?

Did the participants suggest some new actions during the workshop? Which ones?

Do you think that the participants will implement some actions in their community? Which ones? Did they express commitments?

Did they propose other workshops or meetings using the game?

Yourself, are you satisfied with this workshop?



Why?

Thank you for taking the time to fill in this form. If you have any needs or questions regarding the organization of your future workshop, please contact us: *Clovis KABASEKE (MMU): 07 72 54 05 09*

*Please keep this form and give it back to SATNET or MMU along with the participants' questionnaires, the new actions suggested by the participants during the workshop (on the empty activity cards) and a copy of the pictures if you made some.*

#### Annex 4. Thorough questionnaires distributed at the end of each meso workshop

<b>Your name:</b> <b>Workshop:</b> <b>Place:</b> <b>Date:</b>
--

#### Evaluation of the workshop and future perspectives

Dear participant, thank you for taking part in this session. Could you please indicate hereafter your evaluation of the workshop? Thank you.

<b>About the workshop:</b>	Not at all	Not so much	Quite	Much	Not concerned
Did the workshop fulfil your expectations?					
Was it interesting?					
Was it useful?					
Was it innovative and creative?					
Do you think that your point of view has been well taken into account by others?					
Did you have any logistical difficulties to attend the workshop?					
Did you learn about plans and planning?					
Did you learn about natural resources management in the Rwenzori region?					
Do you think that the right participants were there?					
Do you think that you will be able to implement the actions that were suggested during the workshop?					
Do you think that it will change your own behavior?					
Do you think that it may change the actions, decisions, operations of your organization?					
Do you think that this workshop could lead you to modify your relationships with other actors?					
With which actors and in what ways?					

Would you like to be associated to this process in the future? If yes, how?

After this meeting, I commit to...

Are there any other comments you would like to add about the process and its outcomes?

#### Evaluation of the game

Could you please indicate hereafter your evaluation of the game process and some recommendations?



<b>About the game:</b>	Not at all	Not so much	Quite	Much	Not concerned
I have learnt about natural resources in the Rwenzori region					
It was realistic, well representing the situation					
I have learnt about plans					
I have learnt about actions for integrated natural resources management					
We could actually test new activities for the benefit of the region					
We had fun using it – it's attractive					
The game process has been going well					
We could interact and discuss the issues					
This game is good for us, representatives and intermediary stakeholders					
This game is good for people in villages					
This game can be used by policy makers and other government organizations					

Are there any other comments you would like to add about the game?

**THANK YOU !**

Annex 5. Simple questionnaires distributed at the end of each local workshop

DATE: ... / ... / ...      NAME: \_\_\_\_\_



 \_\_\_\_\_ 

**I enjoyed participating in this workshop**

**After this workshop, I will...**

**I learned about natural resources in the Rwenzori**      **Relevant actions were suggested**

**I could discuss and share with other participants**

 \_\_\_\_\_ 

Strongly agree      Strongly disagree      Strongly disagree      Strongly agree